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## A COMPARATIVE ANALYSIS OF LOCAL GOVERNMENT FINANCIAL AUTONOMY IN ALBANIA

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**Mariola Kapidani**

University of Tirana, Faculty of Economy, Department of Finance. Albania.

[mariolakapidani@feut.edu.al](mailto:mariolakapidani@feut.edu.al), ORCID: 0000-0001-6928-6009

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### ABSTRACT

**Purpose-** The financial aspect of local government autonomy is considered a very important topic in the public finance literature especially for the developing countries. Fiscal autonomy empowers the local government units with the right means to provide better services for the community and to proper allocate the funds based on the citizens needs. The purpose of this paper is to study the level of financial autonomy in Albanian municipalities and compare the characteristics within different units of local government.

**Methodology-** In this paper we analyze the financial autonomy of Albanian municipalities by proposing an index to compare the governmental units and classify them in four classes according to the degree of autonomy. Seven quantitative indicators are used in the index, with different importance coefficients.

**Findings-** In Albania, while important progress has been made on advancing the decentralization reform in the last decade, autonomy of local government still remains a challenge. Local authorities do not have appropriate financial resources and they are depended on transfers from the central government budget.

**Conclusion-** The index results show that only a small share of local expenditures is covered by local tax revenues, while intergovernmental transfers constitute an important source of funds for the execution of local functions and service delivery.

**Keywords:** Local government, fiscal autonomy, intergovernmental transfers, own revenues

**JEL Codes:** H70, H71, H72

### 1. INTRODUCTION

Over the course of long transformations in the democratization process of the government, local government autonomy has opened important topics to discuss and consider, as a core indicator of effective governance. More precisely, the financial aspect of local government autonomy is considered a very important topic in the public finance literature especially for the developing countries. Fiscal autonomy empowers the local government units with the right means to provide better services for the community and to properly allocate the funds based on the citizens needs. It is important not only to increase the effectiveness of public service allocation, but it also affects economic growth in a positive way, according to several studies (Ebel and Yilmaz, 2002). Fiscal federalism authors such as Tiebout (1956), Oates (1972), Musgrave and Musgrave (1973), argue that fiscal and administrative power delegated to local units can increase the responsiveness and the efficiency of the government. As a general argument, a government closer to the citizens is expected to accomplish better the requirements of the community. A definition given by Wolman et al. states that local autonomy is a system of local government where local government units have an important role to play in the economy and the intergovernmental system, have discretion in determining what they will do without undue constraint from high levels of government, and have the means or capacity to do so (Wolman et al., 2010: 70).

Political arguments regarding fiscal decentralization relate to the concept of local authority, which can lead to greater accountability to citizens as well as involvement of the community in defining better resource allocation policies. Since local expenditures are financed from their own incomes, citizens tend to closely monitor the local authorities. Decentralization also creates the right conditions to promote diversity and innovation in designing and implementing new approaches, in line with the current conditions of a jurisdiction (Blöchliger et al., 2006). The distinctions between economic and political

conditions through different countries or regions require measurement and comparison of the degree of fiscal autonomy with certain generalizations and assessing the importance of local governments in terms of the public sector and its developments in time. A common way to compare and assess fiscal autonomy is the extent to which resources and responsibilities are under the control of local and regional governments (OECD, 2006). Fiscal autonomy is multi-faceted and can be assessed using several distinct indicators, as it will be analyzed further in the paper. However, the methodology and chosen indicator's importance are also related to the specific characteristics of the country's economic and institutional developments.

Decentralization in Albania took part during the transformation process toward a democratic government that occurred in all former socialist countries in the 1990s. Even though there have been significant differences in the degree of decentralization and the achieved progress, transition economies share a common trait that they began from a highly centralized system of public finances with local governments acting mainly as administrative units with little independent fiscal responsibilities (Nenkova, 2014). The macroeconomic instabilities that were present during the process created several limitations to the decentralization initiatives in transition economies. Different studies demonstrated that decentralization process in these countries was followed by delegation of greater responsibilities to local authorities in terms of service provision, but without adequate financial backing or ensuring that local government had real decision-making power (Olivera and Martinez-Vazquez, 2001; Rodriguez-Pose and Kroijer, 2009; Wetzel, 2001). In Albania, while important progress has been made on advancing the decentralization reform in the last decade, several challenges were faced. These challenges consisted on the high fragmentation of local authorities causing lack of capacities of the local government, as well as lack of a national policy development framework (Ministry of Finances, 2015). However, significant changes have been made in the local government autonomy legal framework, including a new territorial division and increased competences for the local units.

Local government in Albania is organized in two tiers: the first tier includes 61 municipalities as the basic unit of local government; the second tier includes 12 regions. The establishment and functioning of the local government in Albania is determined by the Constitution of Albania, the European Charter for Local Self-Government and the Law "On the Organization and Functioning of Local Government". These documents provide a clear definition of governance levels in Albania and how they function. Prior to the implementation of the Law on the New Administrative and Territorial Reform (Law No. 115, 2014), Albania was divided into 308 communes and 65 municipalities in the first level and 12 districts in the second level. Several developments are present in the intergovernmental relations too. The legal framework defines four types of transfers: shared taxes, unconditional transfer, conditional transfer for delegated functions, and conditional competitive-based investment grants from the Regional Development Fund (NALAS, 2015). However the intergovernmental finance system in Albania faces many challenges, including a high level of unpredictability of governmental transfers over the years, and frequent changes in the formula of fund allocation.

In this study we analyze the ongoing process of fiscal decentralization and the financial autonomy level of governmental units in Albania. The first sections of the study present the theoretical framework for local government autonomy and the background of institutional changes in Albanian legal system regarding local government. A trend analysis of main indicators of local government finances in Albania is presented for the interval 2010-2016. An index of financial autonomy is modeled for the 61 municipal units of Albania, as the basic and first tier of local government. Seven quantitative indicators are used in the index, with different importance coefficients and scored from 1 to 4 according to the performance of each unit. The data used for the index is obtained from the Ministry of Finances in Albania, for the year 2016. Four classes of autonomy are created. The municipalities with higher scores are classified in class A, and those with lower level of financial autonomy in class D. The indicators included in the index are adapted for the Albanian model based in the reviewed literature and similar studies of the south European countries.

## **2. LITERATURE REVIEW**

Local government autonomy is an important condition in the way a state organizes its territory and provides services to its population, by managing its resources in the most effective way (Goldsmith, 1990). The quality and quantity of public services provided in a country depends on the financial rules and incentives that govern the interactions among the various actors of the public sector (Beer-Toth, 2009). Fiscal decentralization requires that local governments must control their 'own' sources of revenue in order to reach enough financial (fiscal) autonomy and accountability to their local tax payers (Oulasvirta and Turala, 2009). In Europe the importance of financial autonomy is clearly expressed in the European Charter of Local Self-government of 1985. The Charter states in Article 9, Paragraph 3 that at least a part of the financial resources of local authorities shall derive from local taxes and charges of which, within the limits of statute, they have the power to determine the rate. The term is often used synonymously with concepts such as local fiscal discretion, decentralization, and home rule, each of which, capture different and only partially overlapping dimensions of the broader concept of local autonomy as we use the term (Wolman, 2008).

The public sector is assigned three main roles: economic stabilization, income redistribution and allocation or public service provision (Musgrave, 1976). The first two roles are generally assigned to central government because of the competitive advantage in providing them and local attempts to address income disparities are likely to induce inefficient migration. But the allocation of public services is assigned to local government since the preferences vary among communities and jurisdictions (Dillinger, 1992; Mills, 1998). By considering this important function of local government, the fiscal autonomy has gained the interest of researchers over the years. Nevertheless the definition of the local autonomy concept is still problematic: "Local autonomy means many different things to different people" (Clark, 1984). Also, there is no agreement on the methods to measure the concept of autonomy, and the different degrees to which local government may be characterized as autonomous (Hansen and Klausen, 2002; Verhoest et al. 2004). Focusing on the financial aspects of local autonomy, two main aspects need to be addressed: the degree of income autonomy and expenditure autonomy. In a large scale, these concepts inquire the analysis of intergovernmental fiscal relations between central government and local units.

Income and expenditure autonomy are referred to as practical concepts that are more suitable for measurement purposes rather than overall financial autonomy. For instance, some types of revenue sources as earmarked grants from the central government to local governments are strictly for special expenditures on grant-eligible tasks (Oulasvirta and Turala, 2009). According to Olowu (1985) local authorities whether urban or rural, in developing countries have generally continued to rely rather too recklessly on uncertain and generally dwindling grants from the central government. Academic interest in intergovernmental fiscal relations emerged in 1950s with the article of Tiebout (1956), and the Theory of Public Finances of Musgrave (1959). Local autonomy cannot be complete unless local government units possess adequate sources of finances and the sufficient capacity and flexibility in budgeting to ensure a balance in the level of resources and spending. Income autonomy may be assessed according to the classification of income sources prepared by the OECD (2001); meanwhile the assessment of expenditure autonomy is treated differently in several studies.

The determinants of fiscal autonomy are classified in two main aspects. The first dimension involves the range and the relative importance of different functions and revenues assigned to local units, as well as the extent to which government functions are performed by the private sector. The second, more important, dimension concerns the decision-making power of sub-national governments regarding the assigned functions and revenue sources (Bahl and Linn, 1992; Molander, 2004; Stegarescu, 2005). According to Oulasvirta and Turala (2005), a systematic approach to classification, measurement and evaluation of financial autonomy may form a better basis for testing hypotheses concerning fiscal decentralization and local government autonomy in different countries. It may give some benefit for judging and comparing financial autonomy of local government levels for some normative purposes. Furthermore, it can be used as a framework aimed at supporting local governance and fiscal decentralization in developing countries.

As we mentioned earlier, there are several definitions to the concept of local autonomy, and several times different synonyms are used to refer the term. The differing treatment of local autonomy makes it difficult to generalize the indicators use for its measurements and to compare the results across authors. The level of fiscal decentralization has been commonly studied by calculating the local government share of total government expenditures and total consolidated general government revenue (Bahl, 1999; Stegarescu, 2005; Akai et al., 2007). Comparative studies orientated by the OECD framework concentrate mainly on the revenue side of fiscal decentralization and classify financial (tax) autonomy by considering the tax-raising powers of sub-central governments (Ebel and Yilmaz, 2002; Journard and Kongsrud, 2003; Meloche et al., 2004; Blöchliger and King, 2005). Main quantitative indicators used in indexing financial autonomy are: the share of own revenues in total local government revenues, the ratio of own revenues in total expenditures of local budgets and the level of self financing, share transfers and subsidies from other public budgets to local budgets, the local budget revenues per capita, the ratio of total local revenues or total local expenditure in gross domestic product, etc. However, the selection of indicators is affected by concrete characteristics of the economic and institutional development of a certain country or region.

### **3. THEORY AND EVIDENCES FROM ALBANIA**

Since the collapse of socialist regime and the beginning democratization process, Albania faced many challenges in the field of local government autonomy. There have been major incentives for a successful decentralization process, not only in the financial aspect but also in the decentralization of power. The decentralization reform has progressed during 1999 and 2000, based on the Constitution (1998), the European Charter for Local Self-Government (ratified in November 1999) and the National Decentralization Strategy, adopted in 1999. The most important specific step was the approval and implementation of the Law No. 8652 of 31 July, 2000, "On the Organization and Functioning of Local Government", which sanctions the rights and authorities of the local governments units in conformity with the Constitution and the European Charter for Local Self-Government, that was followed by other laws regulating the activity of the local government and consolidating the autonomy (Ministry of Finances, 2015). Other important steps include the implementation of unconditional transfer system for the local government budgets, adopted in the State Budget Law in 2001, and further

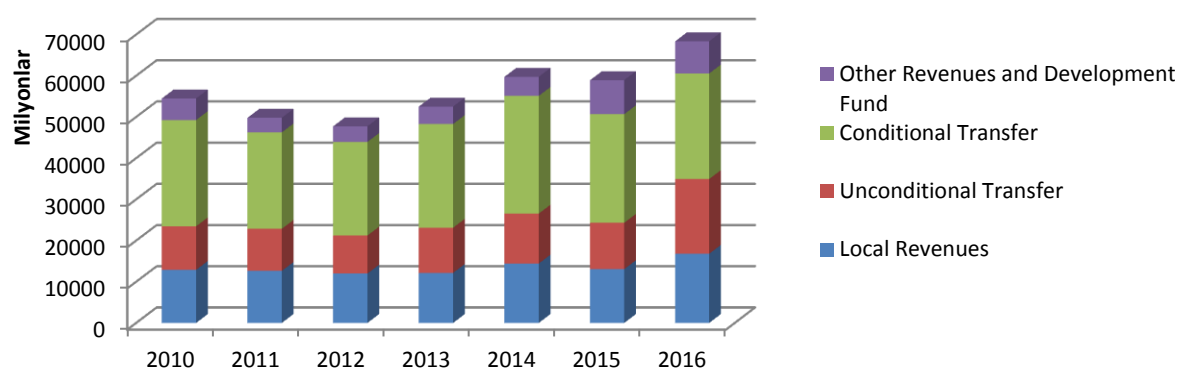


developed with the fiscal reform package adopted in 2002, increasing the autonomy of local government units to generate revenues from local taxes and fees. Since 2005, municipalities are responsible for the water and sewage service, as part of granting the right to administrate and develop public assets of local government.

Even though progress was achieved in these years, fiscal autonomy of local government still remains a challenge. Local authorities do not have appropriate financial resources and they are depended on transfers from the central government budget. According to the Ministry of Finances, for 2012 the state budgeted funded over 80% of the budget for 60% of the local government units. In terms of fiscal decentralization indicators, Albania is below other countries of Southeast Europe. Over the past decade, Albanian local governments have received less revenue as a share of GDP and of total public revenue than all their counterparts in South East Europe. This share fell from a high of 3.2% of GDP in pre-crisis 2008 to 2.5% in 2015, and is still below the level in 2006 (NALAS, 2016). Local governments also receive the lowest share of total public revenues in the region, which in 2015 fell to a record low of 9.3%. Overall, the national policies on the small business tax and the infrastructure impact tax have had adverse consequences on local government budgets (NALAS, 2016).

Looking closer at the progress of local government revenues in Albania, in 2016 the total revenues of local government increased by 15.5% compared to 2015. Meanwhile there is a slightly decreasing trend of total revenues in 2011, 2012, and 2013. As a percentage, 24% of total revenues in 2016 come from local sources such as local taxes and fees, which also represent the average share for the last six years. Meanwhile, 63% of the total revenues in 2016 come from the state budget in the form of conditional and unconditional transfer. In 2014, 67% of local budgets were financed by the central government. This numbers show the high dependency of local government units on the state budget transfers, considering also the low capacities for borrowing or other sources of self funding. Another consideration to take into account is the lack of predictability of state budget transfers, since the formula of fund allocation is not consistent in years and it changes with the implementation of the budget law every year.

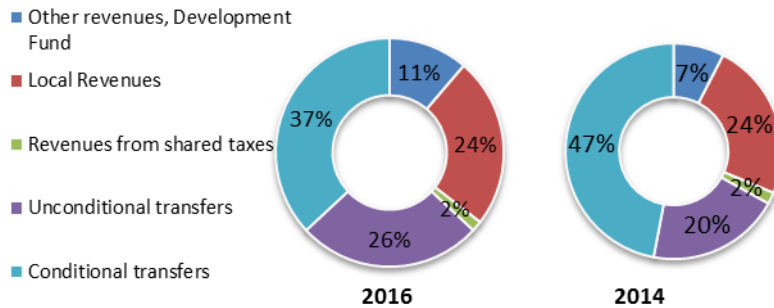
**Graph 1: Local Government Revenues Trend, 2010-2016**



Source: Ministry of Finances, Albania

The differences between 2014 and 2016 are presented in graph 2. As it is visualized in the graph, the dependency on central government grants was much higher in 2014, where 47% of local revenues were transferred as conditional grants from the state budget, while 20% were unconditional transfers, and 7% were grants allocated from the Development Fund, still a source of central government. In 2010 the Regional Development Fund was established in charge with management of conditional grants. Initially the competitive grants were used for financing the local infrastructure projects such as road, water and waste water, but in 2010 it also included projects related with the infrastructure of the shared functions such as education, health, and culture. However, according to the Ministry of Finances "The financial mechanism of conditional transfers including the Regional Development Fund needs to be revised with the aim of applying new models in the framework of regional and local development policies and should be based on some performance criteria and eligibility to obtain funds through this grant mechanism."

**Graph 2: Range of Local Government Revenues in 2016 and 2014**

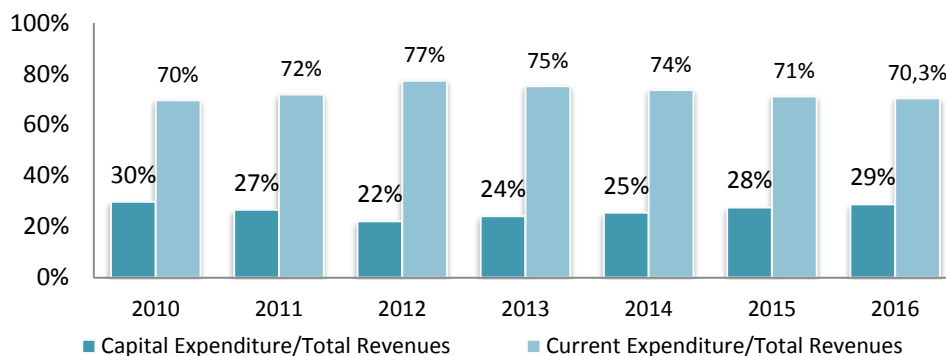


Source: Ministry of Finances, Albania

As part of setting up the policy development framework for decentralization, in July 2014 the Territorial and Administrative Reform was implemented, decreasing the number of local government units from 373 very fragmented communes and municipalities to 61 consolidated municipalities. Another important incentive was the ratification of Law on Local Self-Governance (2015), enhancing the capacities and rights of local government units with regard to income autonomy and expenditure allocation. However, according to the Ministry of Finances (2015) “elected structures of local governance have been incapable of governing with efficiency and transparency and of involving citizens in their decision-making. In general, local governance has been closed and failed to organize and engage communities. Lack of local government units’ accountability on spending of local budgets has led to failing trust among citizens and businesses, therefore, to the decline of revenues from local taxes and fees.”

Considering the expenditure trend of local government units in Albania, in 2016 there is a 16% increase in total local government expenditure. For the same year 44% of the total expenditures are allocated for investment purposes. Taking a closer look at the local expenditures as a percentage of total local government revenues, for the six year trend 2010-2016 the main allocation of revenues is for current expenditure purposes. In 2016, more than 70% of local revenues are used for short term usage. Meanwhile in 2012, the highest result is noticed, where 77% of expenditures are used for current expenses. When considering capital expenses, only 29% of revenues of 2016 were used for capital purposes. Meanwhile the trend is increasing from 2012, where 22% of revenues were allocated for capital expenditures. Results are shown in graph number 3, with data from Ministry of Finances. Another matter to consider is the stock of local debt. Local borrowing in Albania is very low, rating from 0.02% of national debt stock in 2010 to 0.08% in 2016. However, since 2013, the limitation on public borrowing to 60% of GDP is not in force and there is no limit on the public debt borrowing by the central government.

**Graph 3: Capital Expenditure and Current Expenditure as Percentage of Local Revenues**



Source: Ministry of Finances, Albania

#### 4. DATA AND METHODOLOGY

After reviewing the general background of Albanian financial local autonomy reforms and developments in the last decades, we go further with the analysis in proposing a methodology that allows us to make comparisons between the municipal units in Albania. By studying the previous literature on the subject of local government financial autonomy, we have modeled an index with seven quantitative indicators, as a measurement scale of degree of autonomy. The study of Cigu and Oprea (2012) for the EU countries was taken into consideration for the index adaption, and several authors as mentioned in the literature review section. The chosen population for the study consists of 61 municipalities of Albanian Republic, with statistics for the year 2016. The index shows data on the level of each indicator performance for the total population, as well as the classification of municipalities in financial autonomy classes. The source for the analyzed data was Ministry of Finances in Albania, with further procession of the information from the author.

Each indicator is given an importance coefficient (I), based on the significance on autonomy degree. The indicators that are considered more significant to the autonomy level, according to the previous literature studies, are measured with 0.2 and the less significant with 0.1. The total index value for the importance coefficient is 1. On the other side, scores from 1 to 4 are given to municipalities according to the level of autonomy they reach for each indicator. As an example, those municipalities that generate more than 81% of revenues from their local sources are considered more autonomous, and as a result they get a score of 4. Municipalities that are dependent on central government funds, as presented by the indicator of state budget transfers to total revenues for a level higher than 81%, are scored with 1. The total value of index for each of the municipalities creates further space for classification of local government units into classes of autonomy.

**Table 1: Index Structure for the Local Government Fiscal Autonomy**

|  | I coefficient | Valuation |            |            |         |
|--|---------------|-----------|------------|------------|---------|
|  |               | V=4       | V=3        | V=2        | V=1     |
| Own revenues/Total revenues                | 0.2           | >81%      | 51%-80%    | 21%-50%    | <20%    |
| Transfers from state budget/Total revenues | 0.2           | <20%      | 21%-50%    | 51%-80%    | >81%    |
| Unconditional transfer/Total transfers     | 0.1           | >81%      | 51%-80%    | 21%-50%    | <20%    |
| Hunter coefficient                         | 0.2           | 0.71 – 1  | 0.51 - 0.7 | 0.21 - 0.5 | 0 - 0.2 |
| Tax revenues/Total expenditures            | 0.1           | >51%      | 31%-50%    | 21%-30%    | >20%    |
| Shared taxes/Total tax revenues            | 0.1           | <5%       | 6%-10%     | 11%-20%    | >21%    |
| Share of local borrowing                   | 0.1           | >25%      | 20%-25%    | 10%-19%    | <9%     |

The most important indicators of financial autonomy are: the share of own revenues to the total revenues level, and the level of state budget transfers to the total revenues of local government. These two indicators show the dependency of local budgets on the central government, and the capacity of a municipality to generate its own revenues from own sources. Another important indicator, the Hunter coefficient, includes the analysis of local expenditure coverage by state budget transfers. The total score for each indicator (V) is than multiplied by the importance coefficient (I).

#### 5. FINDINGS AND DISCUSSIONS

The results are classified in four classes according to the total scores, as shown in table 2. Class A is considered the higher level of financial autonomy and class D is considered lowest level of financial autonomy. For practical reasons only the municipalities with the highest scores for each class are presented and visualized in this subsection.

The results of the index are briefly presented in the table below, for each class of autonomy five representatives with the highest points are shown. In class A, large municipalities such as Tirana, Fier and Durrës have the highest level of autonomy. Himara municipality has scored 2.9 even though it is a much smaller municipality considering the number of inhabitant. In Himara municipality 34.7% of the revenues come from local taxes and fees whereas 37.1% of the total revenues come from intergovernmental transfers. Whereas in municipalities like Bulqizë 94% of local revenues come from the state budget. This

percentage shows the very high dependency of Bulqizë municipality on central government funds. In class B, important municipalities that are also centers of regions (qark) are included. Elbasan, Berat and Vlorë show neutral levels of autonomy. Elbasan has a score of 2.3, the highest score in the class B compared with other units in this interval.

**Table 2: Classification of Municipalities in Autonomy Classes**

| Classes | Index Values | Municipalities                             |
|---------|--------------|--|
| A       | > 2.40       | Tiranë, Fier, Durrës, Korçë, Himarë        |
| B       | 2.00 - 2.30  | Elbasan, Berat, Vlorë, Përmet, Gjirokastër |
| C       | 1.60 - 1.90  | Lezhë, Librazhd, Shkodër, Kukës, Tepelenë  |
| D       | 1.00 - 1.50  | Pogradec, Peqin, Bulqizë, Përrenjas, Maliq |

In class C, municipalities show lower levels of autonomy with main representatives such as municipality of Lezha and Librazhd. Municipality of Shkodra, a large and important governmental unit of northern Albania is classified in class C, with a score of 1.6. Shkodra has a high dependency on state budget, with 77% of the revenues generated from the central government. Only 12% of the local expenditures are supported by tax revenues of the municipality. Class D represents the lowest score of financial autonomy, with municipalities of Pogradec, Peqin, Bukqizë, etc. High dependency of these municipalities on the central government is also a result of low levels of private and industry sector in these regions, as well as lack of capacities for income generation. In Memaliaj municipality, as an example of this class, the share of own revenues from local taxes and tariffs is only 6.6% of the total revenues for budget year 2016.

**Table 3: General Results for Each Indicator of Autonomy**

| Own Revenues /Total Revenues | State budget transfers/Total revenues | Unconditional transfer/Total transfers | Hunter Coefficient | Tax revenues/Total expenditure | Shared taxes /Tax revenues | Local Borrowing |
|------------------------------|---------------------------------------|--|--------------------|--------------------------------|----------------------------|-----------------|
| 63                           | 74                                    | 102                                    | 72                 | 51                             | 135                        | 54              |

When analyzing each indicator for the total of 61 municipalities, the lowest score is attained in the level of local taxes as a percentage of total local expenditures. As it results from the study, local government units are still dependent of state budget transfers and their capacity to generate revenues by local taxes is at low levels compared to other countries of the South East Europe region. The index results show that only a small share of local expenditures is covered by local tax revenues, while intergovernmental transfers constitute an important source of funds for the execution of local functions and service delivery. Another component to consider is the level of local debt, as argued in the study, most of the municipalities do not use debt instruments for funding purpose. This is considered a limitation of local autonomy, making municipalities more dependent on central government funds. However, the legal framework has progressively changed since 2009 when local borrowing process was legally and practically initiated. On the other hand, the structure of intergovernmental transfers has a higher result, which means that the level of unconditional funds is equilibrated in comparison with conditional funds. Further studies should analyze the intergovernmental transfer formula transformations and the fund fluctuations, as an important argument resulted from previous literature studies.

## 6. CONCLUSION

In this paper we have analyzed the ongoing process of fiscal decentralization and the financial autonomy level of governmental units in Albania. Fiscal autonomy empowers the local government units with the right means to provide better services for the community and to proper allocate the funds based on the citizens needs. Since the collapse of socialist regime and the beginning democratization process, Albania faced many challenges in the field of local government autonomy. Several legislation changes were present in the process of local government decentralization, as well as a new administrative and territorial reform. This transitional process was also affected by central government initiatives to decentralize its power in local units, which faced several challenges with regards to high fragmentation of local territorial units and lower economic capacities for development. However, as it results from the study, local government units in Albania are still dependent of state budget transfers and their capacity to generate revenues by local taxes is at low levels compared to other countries of the South East Europe region. After reviewing the general background of Albanian financial local autonomy reforms and developments in the last decades, in this paper we have proceeded with the analysis in

proposing a methodology that allows us to make comparisons between the municipal units in Albania. By the classification of local government units in four classes of autonomy, the lowest score is reached in the level of local taxes as a percentage of total local expenditures. The index results show that intergovernmental transfers constitute an important source of funds for the execution of local functions and service delivery. As it is argued, high dependency of municipalities on the central government is also as a result of low levels of private and industry sector in these regions, as well as lack of capacities for income generation.

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## BENEFITING FROM COLLECTIVE LABOUR AGREEMENT BY PAYING SOLIDARITY DUE

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**Ercument Ozkaraca**

Marmara University, Faculty of Law, Istanbul, Turkey.

[ercumentozkaraca@yahoo.com](mailto:ercumentozkaraca@yahoo.com), ORCID: 0000-0003-3625-9041

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## ABSTRACT

**Purpose-** Paying solidarity due is one of the ways to benefit from collective labour agreement for labours who work in the workplace in scope of the collective labour agreement but not a member of the labour union who made the agreement. Benefiting from collective labour agreement by paying solidarity due could begin after the signature date of the agreement. Labours who pay solidarity due could not be benefitted from retrospective clauses of collective agreement.

**Methodology-** In our study, the scope and provisions to benefit from the collective labour agreement by paying solidarity due would be discoursed.

**Findings-** There is no difference in the scope of benefit from collective labour agreement between paying solidarity due and being a member of the labour union except benefiting the retrospective clauses of the agreement.

**Conclusion-** In order to establish a balance between collective union freedom and negative freedom of trade union, the amendment of the law that permitted labours who pay solidarity due to benefit from the retrospective clauses is needed.

**Keywords:** Collective labour agreement, benefiting from collective labour agreement, solidarity due, retrospective effect, labour union membership

**JEL Codes:** J50, J51, K31

## 1. INTRODUCTION

Paying solidarity due to benefit from the collective labour agreement is one of the ways that allow labours who work in the workplace in scope of the collective labour agreement but not a member of the labour union (Aktay, 1998: 1 etc.; Şahlanan, 1992: 140-142; Tuncay and Savaş Kutsal, 2017: 290 etc.; Narmanlıoğlu, 2016: 444 etc.; Aktay and Arıcı and Senyen Kaplan, 2013: 538 etc.; Andaç, 1989: 47-48; Ekmekçi, 1996: 149 etc.; Caniklioğlu, 2006: 123-124; Özkaraca, 2014: 183). Solidarity due is an amount of money given to the union by labours who are not a member of the labour union that is a party to the collective labour agreement (Tuncay and Savaş Kutsal, 2017: 291; Sur, 2017: 341; Andaç, 1989: 48-49. For the information about solidarity due in Swiss Law see also Geiser and Müller, 2012: Rn. 841-842; Portmann and Stöckli, 2007: Rn. 1095-1096; Streiff and von Kaenel and Rudolph, 2012: Art. 356b, N.6).

Benefiting from collective labour agreement by paying solidarity due has always been one of the crucial and controversial debate in collective labour law practice. The labour unions are against this institution because of the idea that trade unions might lose their members. Labour unions are opposed not only applying same rules to the union members and others pay solidarity due but also keeping solidarity due amount low. Even though the same discussions occurred in enacting Law on Trade Unions and Collective Labour Agreements Law No. 6356, the law regulates the right to benefit from collective labour agreement not only for members of the labour unions but also for the labours who pay solidarity due (For the further discussion in this topic see also Özkaraca, 2014: 183-184). However, labours who pay solidarity due could be benefitted from collective labour agreement only after the date of signature. In our study, the scope and provisions of the benefiting from the collective labour agreement by paying solidarity due would be discoursed.

## **2. REQUIREMENTS OF BENEFITING COLLECTIVE LABOUR AGREEMENT BY PAYING SOLIDARITY DUE**

### **2.1. Being in Scope of Person or Workplace of the Collective Labour Agreement**

Main principles to benefit from collective labour agreement are same for the members of the labour union that is a party to the collective labour agreement and for labours who pay solidarity due to benefit it. In this sense, to benefit from collective labour agreement the labour should be in the scope of application for person or workplace of the agreement. This rule is also valid for labours who pay solidarity due and become member of the labour union.

The one who demands to benefit from the collective labour agreement must be a labour that works in the workplace or one of the workplaces of the employer the party of the collective labour agreement (or member of the employer-union) (Şahlanan, 1992: 140; Tuncay and Savaş Kutsal, 2017: 292; Özkaraca, 2014: 111). Therefore, the ones who work in the workplace that is in the scope of application of collective labour agreement, yet not work based on the labour contract, could not benefit from collective labour agreement (Narmanlioğlu, 2016: 447; Tunçomağ and Centel, 2013: 380; Aktay and Arıcı and Senyen Kaplan, 2013: 544; Sümer, 2016: 254; Akyiğit, 2015: 602; Kandemir, 2013: 185; Subaşı, 2009: 180-181; Özkaraca, 2014: 185). Similarly to that, labours who work in the workplace of the employer who is a party to the collective labour agreement, but not work in a workplace which is the scope of the collective labour agreement, could not benefit from the collective labour agreement (Şahlanan, 1992: 140; Aktay and Arıcı and Senyen Kaplan, 2013: 543; Sur, 2017: 334; Tuğ, 1996: 189-190; Kandemir, 2013: 185; Özkaraca, 2014: 185).

Another subject about benefiting from collective labour agreement is that, the persons who considered as workers within the meaning of the Law No. 6356 but not work based on the labour contract could not benefit from the collective labour agreement. Labour, employer and workplace concepts are as defined in the Labour Law No. 4857 for the purposes of the implementation of the Law No. 6356 (Article 2/3). According to the Labour Law, the labour is a real person working under an employment contract. The ones who considered as labour despite not working according to the labour contract widened in the Law No. 6356 compared to Law No. 2821. According to Law No. 6356, a natural person who carries out his professional activities independently for a fee, apart from a labour contract and in accordance with a transport contract, work contract, attorney agreement, brokerage contract, publishing contract and a commission contract shall also be considered as workers within the meaning of from the second to the sixth part of this Law (Article 2/4). Explicitly mentioned in the Article 2/4, those people who do not work based on to the labour contract are considered as workers only within the meaning of from the second to the sixth part of the Law. In other words, they will be considered as workers only for the provisions about unions but for the provisions about collective labour agreements (Özkaraca, 2014: 112; Şahlanan, 2013: 15; Okur, 2013: 81 etc.).

In the same context, the one who works in the same workplace as a labour of sub-employer could not benefit from the collective labour agreement that signed from the primary employer by paying solidarity due (Şahlanan, 1992: 140; Çelik and Caniklioğlu and Canbolat, 2017: 889; Süzek, 2016: 173-174; Sur, 2017: 330; Gerek, 2009: 138; Akyiğit, 2015: 604; Sümer, 2016: 254; Canbolat, 1991: 107; Başbuğ, 2012: 182; Özkaraca, 2014: 111).

Labours who could benefit from collective labour agreement by paying solidarity due, described in three groups in Law. The first group is the labours who are not members of the trade union that is a party to the collective labour agreement at the date of signature. That labours work in the workplace that collective labour agreement is applied, but they are not members of the labour union which signed the agreement. The second group is the workers who are subsequently recruited but do not join the union. The last group is the workers who are expelled or resigned from the union after the date of signature (Article 39/4). As it seen above, the common trait of the three group is that those labours are not a member of the labour union which signed the collective labour agreement at the date agreement is applied. There is no difference among the three groups of labours in the sense of benefiting from collective labour agreement by paying solidarity due.

The labour who becomes member of the union after the date of signature, benefits from the agreement as of the date when the labour union notify this membership to the employer through the end of union membership. Benefiting from collective labour agreement as a member of the labour union finishes with the end of the membership for any reason (Narmanlioğlu, 2016: 441; Tunçomağ and Centel, 2013: 377; Ekmekçi, 1996: 130; Kandemir, 2013: 182; Özkaraca, 2014: 185).

The collective labour agreement could be signed by the parties or by the High Board of Arbitration. The right to benefit from collective labour agreement by paying solidarity due would not be effected by it (Akyiğit, 2015: 615).



## 2.2. Not Being Excluded from the Scope of the Collective Labour Agreement

### 2.2.1. Representative of the Employer and Those Who Participate in the Collective Labour Agreement Negotiations in the Name of the Employer

Another requirement to benefit from collective labour agreement in Law is not being excluded from the scope of the collective labour agreement. As in Law No. 2822, in Law No. 6356 it is predicted that some of the labours could not benefit from the collective labour agreement even though they work under the employer who is party of the collective labour agreement and they fulfil other requirements envisaged in Law. According to the Law No. 6356 "*Employer's representatives within the meaning of this Law and those who participate in the collective labour agreement negotiations in the name of the employer shall not benefit from the collective labour agreement*" (Article 39/7). Due to the article that accepts the employer's representatives as persons authorised to manage an entire enterprise in the name of the employer (Article 2/1, e) and the article considers employer's representative as an employer for the purposes of the implementation of the Law, it would be possible to reach the same conclusion predicted in Article 39/7. Because of that reason, Article 39/7 contributes for those who participate the collective labour agreement negotiations in the name of the employer but not considered as an employer's representative (Özkaraca, 2014: 113). Those labours would not benefit from the collective labour agreement.

### 2.2.2. Labours Who have Worked in the Workplace during the Strike

Another group that could not benefit from the collective labour agreement is the labours who have worked in the workplace during the strike except the ones who shall be required to work during the strike according to the Article 65 of Law No. 6356 (Article 39/8). On the other hand, parties could provide a provision that allows those labours benefit from the collective labour agreement. The article 39 in Law No. 6356 allows the parties to make provisions about those labours. In this sense, if the parties provide provision that allows those labours benefit from the collective labour agreement, those labours could benefit from the agreement; otherwise, they could not benefit even by paying solidarity due.

A right to join a strike is entitled not only to members of the labour union but also to the other labours. The provision of not to be worked during the strike is in force for every labour works in the workplace in the scope of the collective labour agreement (Tuncay and Savaş Kutsal, 2017: 309; Narmanlioğlu, 1991: 202; Şahlanan, 1992: 151; Aktay and Arıcı and Senyen Kaplan, 2013: 557; Ekmekçi, 1996: 174-175; Canbolat, 2002: 188; Özkaraca, 2014: 114). Because of that reason, labours who have worked in the workplace during the strike, regardless of being member of the labour union or not, could not be benefited from collective labour agreement (Sur, 2017: 338; Tuğ, 1996: 192; Başbuğ, 2012: 184). On the contrary to that, labours who requested to work in the workplace during the strike but not to be worked by the employer are out of the Article 39/8 of Law No. 6356 and they remain their right to benefit from collective labour agreement by paying solidarity due without the necessity of any other particular provisions (Şahlanan, 1991: 151-152; Tuncay and Savaş Kutsal, 2017: 309; Aktay and Arıcı and Senyen Kaplan, 2013: 557; Sur, 2017: 339; Canbolat, 2002: 189; Özkaraca, 2014: 114).

The reason of not to work during the strike have no precedence. It might be because of illness, annual paid leave, parental leave or etc. Regardless of the reason, labours could benefit from the collective labour agreement without restriction of Article 39/8 (Oğuzman, 1987: 79; Aktay and Arıcı and Senyen Kaplan, 2013: 557; Narmanlioğlu, 1991: 203; Reisoğlu, 1986: 330; Sur, 2017: 339; Tuncay and Savaş Kutsal, 2017: 309; Ekmekçi, 1996: 175; Canbolat, 2002: 188-189; Özkaraca, 2014: 115).

The voting request on a strike does not affect the right to benefit from collective labour agreement. Labours who demand to vote on a strike remain their right to benefit from collective labour agreement providing the other requirements envisaged in Law (Narmanlioğlu, 1991: 203; Reisoğlu, 1986: 330; Şahlanan, 1992: 151; Aktay and Arıcı and Senyen Kaplan, 2013: 557-558; Özkaraca, 2014: 115). Those rules implement to benefit from the collective labour agreement by paying solidarity due.

### 2.2.3. Labours Excluded from the Scope

In practice, parties of the collective labour agreement could provide provisions that exclude specific labours for the scope of the agreement such as managers, directors, chiefs or even entire office staff. The right of the parties to exclude labours from the scope of the collective labour agreement is accepted by the Supreme Court practice. In this sense, even union member labours could be excluded and they could not benefit from the collective labour agreement (Supreme Court 9. Civil Chamber, 11.07.2011, 26214/23303; also look Supreme Court 9. Civil Chamber, 18.06.2007, 9594/19481, www.legalbank.net. Discussions about the institution's compliance with laws Çelik and Caniklioğlu and Canbolat, 2017: 902-903).

In the current view of Supreme Court practice, provisions that exclude labours in specific status from the scope of the collective labour agreement would be valid. As a result of that, those labours' rights would be determined only by their personal labour contracts. Those labours could not be benefited from the collective labour agreement by being a member

of the labour union or paying solidarity due (Şahlanan, 1992: 143; Tuncay and Savaş Kutsal, 2017: 292; Sur, 2017: 342; Akyiğit, 2015: 605; Tuğ, 1996: 193; Sümer, 2016: 255; Özkaraca, 2014: 115-116).

### **2.3. Making a Request**

Labours who demand to benefit from collective labour agreement by paying solidarity due should make a request for it. Even though the solidarity due would be paid to the labour union, the request would be directed to the employer (Tuncay and Savaş Kutsal, 2016: 281; Şahlanan, 1992: 144; Narmanlioğlu, 1991: 210-211; Aktay and Arıcı and Senyen Kaplan, 2013: 546; Gerek, 2009: 138; Sur, 2017: 342; Ekmekçi, 1996: 154-155; Akyiğit, 2015: 605; Başbuğ, 2012: 183; Caniklioğlu, 2006: 125; Canbolat: 2002, 176; Özkaraca, 2014: 186). Without any request, the employer could not deduct solidarity due from labours wage (Şahlanan, 1992: 143; Centel, 2003: 1 etc.; Sur, 2017: 342; Tuğ, 1996: 193; Supreme Court 9. Civil Chamber, 04.03.2003, 16415/2828). Any specific form for the request is not arranged. However written requests provide convenience for the proof (Sur, 2017: 342; Tuncay and Savaş Kutsal, 2017: 293; Şahlanan, 1992: 144; Gerek, 2009: 139; Akyiğit, 2015: 617). According to the Supreme Court, labours are responsible for proving that request is reached to the employer (Supreme Court 9. Civil Chamber, 17.3.1997, 4335/5219).

Labour's request is sufficient to begin to benefit from the collective labour agreement. The fact that employer did not send solidarity due to the labour union does not make any effect to the benefiting (Şahlanan, 1992: 146; Narmanlioğlu, 1991: 211; Sur, 2017: 343; Tuncay and Savaş Kutsal, 2017: 295).

The consent of the trade union or the employer shall not be required to benefit by paying solidarity due. That point clearly envisioned in the Law (Article 39/4 s. 2). This article brings a mandatory rule and contrary provisions could not be agreed by the parties. Provisions contrary to that is not valid (Tuncay and Savaş Kutsal, 2017: 293; Sur, 2017: 342; Sümer, 2016: 257).

When the new collective labour agreement is signed, the labour must re-establish his/her request (Şahlanan, 1992: 144; Sur, 2017: 342; Tuncay and Savaş Kutsal, 2017: 294; Gerek, 2009: 139; Akyiğit, 2015: 617; Sümer, 2016: 256). Benefiting from the previous collective labour agreement is not sufficient to sustain benefiting to the following one.

### **3. THE AMOUNT OF THE SOLIDARITY DUE**

In abrogated Law No. 2822, the amount of the solidarity due is envisaged lower than the membership due as a two out of three of it (Article 9/4). However, in Law No. 6356, it is envisaged that the amount of the solidarity dues shall be determined by the trade union statute, provided that the amount is not above of the amount of the membership dues (Article 39/5). Also in Law, any limit for the membership dues is not provided.

Under the Law No. 6356, the amount of the solidarity due could be equal to the membership due. A great number of labour unions that are against the provision that allows to benefit from collective labour agreement by paying solidarity due, redispensed provisions that accept the solidarity dues which are equal to the membership dues by their regulations (Centel, 2013: 60).

As it stated in doctrine, this provision is a result of the underdevelopment in labour unions other activities rather than making a collective bargaining and collective labour agreement. However, this article is unsuitable to the context of the negative freedom of trade union. The labour who will pay the same amount of money as a solidarity due could feel himself/herself under the pressure of becoming a member. There isn't any special provision for the condition that labour who wants to pay solidarity due to the labour union, despite s/he is already a member of another labour union. In this condition, labour could stand with economical struggle and might resign from his/her membership to the labour union (Tuncay and Savaş Kutsal, 2017: 295; Çelik and Caniklioğlu and Canbolat, 2017: 897-898; Aktay, 1998: 6; Tuncay, 2013: 84; Akyiğit, 2015: 621-622; Canbolat, 2013: 76-77; Özkaraca, 2014: 186-187; See also the issue in Swiss law. Streiff and von Kaenel and Rudolph, 2012: Art. 356b, N. 6; Geiser and Müller, 2012: Rn. 841-842; Portmann and Stöckli, 2007: Rn. 1095-1096).

Solidarity dues shall not be paid to the trade unions barred from carrying on any activity (Article 39/6). A collective labour agreement shall not cease to have an effect because the trade union which is a party to the agreement loses its legal personality, is barred from activity, or has lost its competence (Article 37/1). In these cases, labours who pay solidarity due keep benefiting from collective labour agreement without having to pay solidarity due (Şahlanan, 1992: 146, 149; Tuncay and Savaş Kutsal, 2017: 295-296).

### **4. FORWARD EFFECT OF BENEFITING FROM COLLECTIVE LABOUR AGREEMENT BY PAYING SOLIDARITY DUE**

To benefit from the collective labour agreement by paying solidarity due begins at the date on which such request is made. The requests before the date of signature shall be valid starting from the date of signature (Article 39/4 s. 3-4). The difference of that provision in Law No. 6356 from abrogated Law No. 2822 is that provision accepts requests before the date of the signature valid starting from the date of signature.

With this regulation two issues are enlightened. Firstly, sustainability of the Supreme Court decisions that declare requests made before the date of the signature invalid (even after the date of signature), is no longer sustainable. In the period of Law No. 2822, Supreme Court decided that the labours who made request before the date of signature, neither benefit from the collective labour agreement's retrospective clauses nor their request could not be interpreted as a request to benefit from the collective labour agreement after the date of signature (Supreme Court 9. Civil Chamber, 15.02.2006, 20647/3670, Tühis, C. 20, N. 3, 101-102, Caniklioğlu, 2006: 123 etc.). After the Law No. 6356 came into force, the requests before the date of signature shall be valid starting from the date of signature. So, the labour should benefit from the collective labour agreement without have to repeat request (Özkaraca, 2016: 295).

With the article 39/4, the doctrinal discussions about benefiting from the retrospective clauses of collective labour agreement by paying solidarity due came to the end. Due to the lack of legal regulations about benefiting retrospective clauses of collective labour agreements by paying solidarity due in Law No. 2822, the majority of the doctrine argued that labours who make the request to pay solidarity due could benefit from collective labour agreements' retrospective clauses. However, in Law No. 6356, those doctrinal arguments are not taken into consideration and Supreme Court decisions about that discussion became a legal provision. As a result of this, when parties of the collective labour agreement accepted a commencement date before the date of signature, only labours member of the labour union in the date of signature could benefit from the collective labour agreement from the date of commencement. However, the labours pay solidarity due could not benefit from the retrospective clauses (Çelik and Caniklioğlu and Canbolat, 2017: 896-897; Centel, 2013: 60; Özkaraca, 2014: 188).

According to our opinion, the regulation should be amended in a way that labours who are not members of the labour union can benefit from the collective labour agreement by paying solidarity due from the commencement date.

The justifications expressed in the period of the Law No. 2822 for the necessity of amendment about that issue are still valid. In order to preserve a balance between collective trade union freedom and negative freedom of trade union, the equality should be formed among the labours who have paid solidarity due and labours who are the member of the labour union in terms of benefiting from the monetary provisions of the collective labour agreement. If the equality is broken in favour of labours who have paid solidarity due, it would be against collective trade union freedom; if the equality is broken in favour of the members of the union, it would be opposed to the both positive and negative freedom of trade union. In order to be able to mention the existence of such equality, it is necessary that labours who pay solidarity due could benefit from the retrospective provisions of the collective labour agreement as the union members (Çelik and Caniklioğlu and Canbolat, 2017: 896-897; Ekmekçi, 1996: 162; Subaşı, 2009: 190; Özkaraca, 2014: 191).

The interpretation of Law No. 6356 Article 39/4, the last sentence, from this perspective, it is stated that the equality between the labours is deteriorated in favour of members of the labour union, and the benefit from the retrospective clauses of the collective labour agreement restricted with the members of the labour union. Thus, it is prevented to benefit from the retrospective clauses of the collective labour agreement to the labours who do not want to become members of any trade union, or who are members of another trade union are taken back to the beginning of their enforcement. The labours who are not a member of the labour union which signed collective labour agreement feel themselves under the pressure to become a member of the labour union to benefit from the retrospective clauses of the collective labour agreement. Due to the delays in the binding process of the collective labour agreements in our country, it is very frequent to determine a commencement date before the date of signature. Agreements can sometimes be put effective backwards for about a year. Considering the contracts are usually made for a period of two years, the worker is only able to benefit half of the time of the collective labour agreement by paying a solidarity due. If the parties agreed on the put into the force only for the previous period the workers could not benefit from the agreement by paying solidarity due. As long as the length of the retrospective effect increases, the pressure on labours to join the party labour union would be increased. This result does not coincide with the existence of the institution of benefit by paying solidarity due. Indeed, solidarity due has been recognised in order not to create such oppression on labours, and parallel to this purpose, the consent of the trade union shall not be required in this matter (Ekmekçi, 1996: 162-163; Özkaraca, 2014: 191-192).

On the other hand, while there is no difference in benefiting between being member or paying solidarity due when the collective labour agreement put into force in the date of signature, it is inconsistent to provide a difference when the collective labour agreement put into force before the date of signature (Özkaraca, 2014: 192; Oppositely Narmanlioğlu, 2012: 152; Taşkent, 2004: 263).

Because the new collective labour agreement shall not enter into force before the expiry of the previous agreement, an amendment must be made that allows labours to make a request to pay solidarity due after the expiration date of the previous agreement. In the case that a collective labour agreement lasting at the workplace, request to pay the solidarity due would be made at the end of the expiration of the agreement. So, the labours who pay solidarity due could benefit from the collective labour agreement from the commencement date. On the other hand, when the labours make a request after the commencement date, right to benefit starts at the date of request (Ekmekçi, 1996: 168-169; Özkaraca, 2014: 194).

If an amendment made in this direction, the question about the payment time of the solidarity due would be raised. As it stated in the doctrine, the labour who demand to benefit from the collective labour agreement should not have to pay solidarity due to begin benefiting in the date of request is made. Because of that, it would be appropriate to regulate an article that presumes full payment of the solidarity due should be accepted so that labour would be benefited from the retrospective effects of the collective labour agreement. A regulation could be envisaged in the regulation of the check-off system (Ekmekçi, 1996: 168; Özkaraca, 2014: 194-195). Because the labours who pay solidarity due could only benefit from the collective labour agreement not the other activities of the labour union, there wouldn't be any contradiction in the system that predicts the obligation to pay the solidarity due at the beginning of the utilisation.

## **5. THE SCOPE OF THE BENEFITING BY PAYING SOLIDARITY DUE**

There is no difference in the scope of benefit from collective labour agreement between paying solidarity due and being a member of the labour union except benefiting the retrospective clauses of the agreement. Labours who pay solidarity due could also benefit from all monetary terms of the collective labour agreement.

After the termination of the collective labour agreement, solidarity due would not be paid. The provisions of a collective labour agreement that has expired and that are related to labour contracts shall continue to be binding in the form of a contract of employment until a new collective labour agreement enters into force (Article 36/2). In order to benefit from the following effect of the collective labour agreement, the labour must be benefiting from it at the expiration date. There isn't any difference between members and the labours who paid solidarity due about benefiting following effect of the collective labour agreement. In other words, labours who benefit from collective labour agreement by paying a solidarity due could benefit the following effect, like the labour union members (Narmanlioğlu, 2016: 466, Tuncay, 2013: 84, Şahlanan, 1992: 149, Tuğ, 1996: 198-199, Sumer, 2016: 257, Sur, 2017: 322-323, 344, Ekmekçi, 1996: 172, Özkaraca, 2016: 307). In order to benefit from the following effect, solidarity due payment is not required (Tuncay and Savaş Kutsal, 2017: 296; Narmanlioğlu, 2016: 467; Tuncay, 2013: 84, Ekmekçi, 1996: 172, Sumer, 2016: 257).

## **6. CONCLUSION**

Labours who are not member of the labour union could benefit from the collective labour agreement by paying solidarity due to the union. However as in Law No. 2822, in Law No. 6356, it is stated that benefiting by paying solidarity due could begin only after the date of signature of collective labour agreement. When the collective labour agreement comes into force before the signature date, those who have paid solidarity due could not benefit from the retrospective provisions. In order to establish a balance between collective union freedom and negative freedom of trade union, the amendment of the law that permitted labours who pay solidarity due to benefit from the retrospective clauses is needed. In the same way, regulations that allow the amount of the solidarity due equal to the amount of the membership dues should be amended.

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## DEREGULATION, FINANCIAL CRISIS, AND BANK EFFICIENCY IN TAIWAN: AN ESTIMATION OF UNDESIRABLE OUTPUTS

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**Chang-Sheng Liao**

Samming University, College of Management, Fujian, China.

National Taipei University, Department of Finance and Cooperative Management, Taiwan, Republic of China.

[sheng2009tw@gmail.com](mailto:sheng2009tw@gmail.com), ORCID: 0000-0003-4501-6252

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### ABSTRACT

**Purpose-** This study investigates the undesirable impacts of outputs on bank efficiency and contributes to the literature by assessing how regulation policies and other events impact bank efficiency in Taiwan in regards to deregulation, financial crisis, and financial reform from 1993 to 2011.

**Methodology-** In order to effectively deal with both undesirable and desirable outputs, this study follows Seiford and Zhu (2002), who recommend using the standard data envelopment analysis model to measure performance by increasing the desirable outputs and decreasing the undesirables.

**Findings-** Empirical findings indicate that bank efficiency with undesirable outputs is more prevalent than bank efficiency without undesirable outputs, which implies that undesirable outputs play a key role in hampering bank efficiency. This study result show that the effect of deregulation on bank efficiency decreased during the initial financial reform period. Nevertheless, our empirical evidence shows that financial reform significantly improved bank efficiency in emerging countries in the long run.

**Conclusion-** First, in accounting for both desirable and undesirable output while evaluating and analyzing bank efficiency, it assumes that undesirable outputs operate as non-performing loans and offers a comparison of different results from perspectives that either consider undesirable output within the classical DEA model or do not. The second contribution stems from the fact that the processes of rapid growth and recovery in recent years have given emerging Asian countries undoubtedly key roles in world economics, and studies have responded by analysing data of emerging Asian countries, such as Taiwan. Thirdly, this study contributes to the literature by assessing how regulation policies and other events impact bank efficiency in Taiwan in regards to deregulation, financial crisis, and financial reform.

**Keywords:** Undesirable outputs, deregulation, financial crisis, data envelopment analysis, banks efficiency

**JEL Codes:** G21, G34, L51

### 1. INTRODUCTION

The idea of bank efficiency has long been a chief research topic for scholars and regulators who want to assess how well banks serve as pivotal intermediary institutions between finance and currency. In general, these scholars and regulars have found that bank operation efficiency is significantly relative to a nation's economic growth and its development of financial institutions. Studies in the literature can be categorized into two distinct scopes of research. On the one hand, scholars have focused on how to more effectively evaluate bank performance by providing new methods or revising pre-existing models to measure banks efficiency (Chiu et al., 2009; Koutsomanoli-Filippaki et al., 2009; Liu (2010); Ray & Das, 2010). On the other hand, scholars have also focused on specifying the determinants of bank efficiency. For instance, risk factors in the banking industry of developed and emerging countries have major impacts on bank efficiency, asset quality, and bank soundness. Recent scholars have analyzed individual risk indicators on bank performance (Chiu & Chen, 2009; Liu & Liao, 2013; Sun & Chang, 2011).

This study thus provides an interesting case study of efficiency regarding one basic problem with undesirable outputs. In doing so, it aims to extend the literature examining bank efficiency vis-à-vis undesirable outputs by reflecting true efficiency instead of excluding undesirable outputs in the DEA model. In conclusion, it offers three important contributions. First, in accounting for both desirable and undesirable output while evaluating and analyzing bank efficiency, it assumes that undesirable outputs operate as non-performing loans (NPL) and offers a comparison of different results from perspectives that either consider undesirable output within the classical DEA model or do not. The second contribution stems from the fact that the processes of rapid growth and recovery in recent years have given emerging Asian countries undoubtedly key roles in world economics, and studies have responded by analysing data of emerging Asian countries, such as Taiwan, and gathered results for various management, economics, and financial management topics. However, if NPLs are not accounted for in estimates, the DEA model could operate with severe bias, especially by neglecting how NPLs significantly interfere with bank development in emerging countries. By continuing the trend of examining emergent Asian economies, this study provides additional empirical evidence regarding how undesirable outputs affect bank efficiency outside the United States and European countries. Thirdly, this study contributes to the literature by assessing how regulation policies and other events impact bank efficiency in Taiwan in regards to deregulation, financial crisis, and financial reform. In this sense, it provides empirical evidence from a longitudinal analysis of financial reform's impact on bank efficiency in Taiwan from 1993 to 2011. It does so by comparing bank efficiency in three periods: pre-first financial reform (pre-FFR), financial reconstruction before the subprime mortgage crisis (FR), and post-subprime mortgage crisis (post-SMC). By comparison, then, this study offers a more comprehensive analysis of deregulation in regards to emerging countries than have previous studies, such as Zhao et al. (2010) in the Indian context, Berger et al. (2009) in the Chinese context, and Hsiao et al. (2010) in the Taiwanese context. Altogether, this study aims to examine how undesirable outputs affect bank efficiency for Taiwan. After implementing a DEA to estimate bank efficiency and productivity changes during the first stage, Tobin regression was used to further investigate the determinants of bank efficiency during the second stage.

This paper is organized as follows: section one contains the introduction; section two describes the model specification, data source, and empirical design; and section three presents the empirical results, while conclusions are drawn in section four.

## **2. LITERATURE REVIEW AND METHODOLOGY SPECIFICATIONS**

### **2.1 Bank Efficiency by Data Envelopment Analysis**

Many studies have acknowledged that any data envelopment analysis (DEA) model relies on the assumption that inputs must be minimized and outputs maximized. From the point of view of the classical model, ignoring undesirable output is a major oversight that will likely result in biased conclusions. In general, most scholars have thus assumed that non-performance loans (NPLs) are an undesirable output for the DEA model.

More specifically, Seiford and Zhu (2002) have described five possibilities for dealing with undesirable outputs while using the DEA-BCC framework. The first possibility is to simply delete undesirable outputs; the second, to treat undesirable outputs according to the non-linear DEA model; the third, to treat undesirable outputs as simply outputs and adjust the distance in order to restrict the expansion of undesirable outputs;<sup>1</sup> the fourth, to treat the undesirable outputs as inputs, though doing so does not reflect the true production process; and the first, to apply a monotone that decreases shifts to the undesirable outputs and to then use the adapted variables as outputs. Additionally, Fernandez et al. (2002) have illustrated that a production process must be clearly defined based on both desirable and undesirable outputs, for using desirable outputs only will fail to credit banks for their efforts to reduce undesirable outputs. Following Seiford and Zhu (2002), this study used a linear monotone to decrease the shift to undesirable outputs within the classical DEA model.

### **2.2 Data Envelopment Analysis (DEA) using an Undesirable Output Model**

A popular stochastic frontier approach used in the literature to estimate bank efficiency indicates that bank efficiency measures the extent to which a bank's costs approach those of banks with the best practices. In effect, this approach produces an identical output bundle under the same conditions. Following this approach, the best-practice production frontier for a sample of firms is constructed through a piecewise linear combination of an actual input-output correspondence set that envelopes the input-output correspondence of all firms in the sample (Thanassoulis, 2001).

The classical DEA model assumes that inputs must be minimized and outputs maximized. Seiford and Zhu (2002), however, have developed an alternative approach to treat both desirable and undesirable factors differently in the standard linear BCC DEA model provided by Banker et al. (1984). They suppose a DEA data domain can be characterized by data matrix

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<sup>1</sup> For more details illustrating directional distance function, see the weak disposability model in Fare et al. (1989).

$$P = \begin{bmatrix} Y \\ -X \end{bmatrix} = [P_1, L, P_n] \quad (1)$$

with  $s + m$  rows and  $n$  columns. Each column corresponds to one of the DMUs. The  $j$ th column can be written as

$$P_j = \begin{bmatrix} Y_j \\ -X_j \end{bmatrix} \quad (2)$$

Supposing, however, that some outputs are undesirable, the output matrix  $Y$  can be better represented by following the model of Seiford and Zhu (2002) who write the DEA data domain as

$$\begin{bmatrix} Y \\ -X \end{bmatrix} = \begin{bmatrix} Y^g \\ Y^b \\ -X \end{bmatrix} \quad (3)$$

which  $Y^g$  and  $Y^b$  indicate the desirable and undesirable outputs, respectively.

In general, we wish to increase desirable outputs and decrease the undesirables in order to improve performance. However, since the standard BCC model excludes undesirable outputs, all outputs are supposed to be improving performance. Fare et al. (1989) modified the traditional BCC model to the non-linear programming problem

$$\begin{aligned} & \max \quad \Theta \\ & s.t. \quad \sum_{j=1}^n z_j x_j + s^- = x_o \\ & \quad \sum_{j=1}^n z_j y_j^g - s^+ = \Theta y_o^g \\ & \quad \sum_{j=1}^n z_j y_j^b - s^+ = \frac{1}{\Theta} y_o^b \\ & \quad \sum_{j=1}^n z_j = 1 \\ & \quad z_j \geq 0, \quad j = 1, K, n. \end{aligned} \quad (4)$$

Based upon classification invariance, Seiford and Zhu (2002) show that an alternative to model (1) can be developed to preserve the linearity and convexity in DEA. They first multiply each undesirable output by -1 and then find a proper translation vector  $w$  to let all negative undesirable outputs be positive. The model (1) can thus be rewritten as the linear program model (2)

$$\begin{aligned} & \max \quad \Pi \\ & s.t. \quad \sum_{j=1}^n z_j y_j^g \geq \Pi y_o^g \end{aligned}$$



$$\begin{aligned}
\sum_{j=1}^n z_j \bar{y}_j^b &\geq \Pi \bar{y}_o^b \\
\sum_{j=1}^n z_j x_j &\leq x_0 \\
\sum_{j=1}^n z_j &= 1 \\
z_j &\geq 0, \quad j = 1, K, n.
\end{aligned} \tag{5}$$

The theorem ensures that the optimized undesirable output of  $y_0^b = (w - \Pi^* \bar{y}_0^b)$  cannot be negative.

Seiford and Zhu (2002) also assume that some inputs must be increased instead of decreased to improve performance. They thus rewrite the DEA date

$$\begin{bmatrix} Y \\ -X \end{bmatrix} = \begin{bmatrix} Y \\ -\bar{X}^I \\ -X^D \end{bmatrix} \tag{6}$$

which  $X^I$  and  $X^D$  represent inputs to be increased and decreased, respectively. The  $j$ th column of translated input to be increased is now  $\bar{x}_j^I = -x_j^I + k > 0$ . They therefore used (6) and model (2) to rewrite the DEA model as follows

$$\begin{aligned}
&\max \quad \nu \\
&s.t. \quad \sum_{j=1}^n z_j x_j^D + s^- = \nu x_0^D \\
&\quad \sum_{j=1}^n z_j x_j^I - s^- = \nu \bar{x}_o^I \\
&\quad \sum_{j=1}^n z_j y_j - s^+ = y_o \\
&\quad \sum_{j=1}^n z_j = 1 \\
&\quad z_j \geq 0, \quad j = 1, K, n.
\end{aligned} \tag{7}$$

in which  $X^I$  is increased and  $X^D$  is decreased to allow any decision-making unit (DMU) to improve performance.

The input-output specification of the present study is based on the intermediation approach suggested by Berger (1995), Hsiao et al. (2010), and Sun and Chang (2011). Like most studies, this study follows the intermediation approach definition of input-output variables, in which employee expense, physical capital expense, and fund expense are the input factors used to produce earning assets, labor, capital, and interest price.<sup>2</sup> The price of labor is defined as the total salary of all

<sup>2</sup> Sun and Chang (2011) used only two input variables to establish cost function and omitted labor input, which perhaps caused bias. With respect to input prices, the price of labor, capital, and funds are conventional input prices in previous studies, such as Berger (1995).

employees; the price of physical capital is defined as operating expense minus employee expense divided by fixed assets; and the price of funds is defined as the interest paid to all funding. Meanwhile, the two outputs are total loans and investment, which are commonly used in the literature (Berger, 1995; Bonin et al., 2005; Hsiao et al., 2010). For this study, the primary data source was Taiwan Economics Journal (TEJ). The unbalance panel data samples included 36 banks during 1993 to 2011. The total observation included 750 full samples.

### 2.3 Empirical Regression Design

This study relied on regression analysis to investigate the determinants of bank efficiency. Though many studies have explored the determinants of bank efficiency, this present study refers primarily to those that used the bank efficiency estimate derived from DEA estimations as the dependent variable. From there, a Tobin regression model was constructed for the determinants of bank efficiency. The empirical equation can thus be written

$$EFF_{it} = \beta_0 + \beta_1 Risk_{it} + \beta_2 SIZE_{it} + \beta_3 BRCH_{it} + \beta_4 RGR_{it} + \beta_5 EQAS_{it} + \beta_6 DV_{it} \varepsilon_{it} \quad (8)$$

which *EFF* indicates banks efficiency, *risk* indicates risk lever of banks measured by standard deviation of each bank's annual return on assets (ROA), *size* indicates the natural logarithm of bank assets, *BRCH* indicates the natural logarithm number of bank branches, *RGR* indicates revenue growth ratio, *EQAS* indicates the total equity divided by total assets, and *DV* indicates the dummy variable, which equals one if the bank is state-owned and zero if otherwise.

To further investigate the determinants of bank efficiency, a Tobin regression model was implemented to determine whether bank efficiency derived from the pooled sample is related to bank-specific factors. Following other studies, this study attempts to establish an empirical regression equation. Following Liu et al. (2012) and Liao (2013), *risk* was measured by ROA volatility. This rate is an accounting-based volatility indicator measured by standard deviation of each bank's yearly ROA. *Size* indicates bank scale and is measured by the natural logarithm of bank assets, with which empirical studies have found mixed relationships between bank size and efficiency. *BRCH* indicates number of branches and is measured by a natural logarithm. This variable is important since widespread networks of branches can provide more services for more customers; this study thus expected that the impact of a widespread network of branches on bank efficiency is positive. *RGR* indicates bank operating revenue growth rate; efficient banks should show more profitability and higher operating revenue growth rates. *EQAS* indicates the total equity divided by total assets. Results from studies by Hsiao et al. (2010) and Liu and Liao (2013) show that the capital ratio is positively associated to bank efficiency. *DV* indicates the dummy variable, which equals one if the bank is state-owned and zero if otherwise. Table 1 provides descriptive statistics of the empirical variables.

**Table 1: Descriptive Statistics**

|                     | Mean      | Std.      |
|---------------------|-----------|-----------|
| <i>Output items</i> |           |           |
| Investment          | 848,015   | 1,282,238 |
| Loans               | 3,753,923 | 4,160,833 |
| NPL                 | 3,393,025 | 2,131,694 |
| <i>Input items</i>  |           |           |
| Salary              | 32,735    | 31,433    |
| Interaset expense   | 134,382   | 159,396   |

|                             |         |        |
|-----------------------------|---------|--------|
| Physical expense            | 29,122  | 26,793 |
| <i>Regression variables</i> |         |        |
| RISK                        | 0.0113  | 0.0116 |
| BRCH                        | 3.925   | 0.7579 |
| ORG                         | 0.083   | 0.294  |
| EQAS                        | 0.064   | 0.088  |
| SIZE                        | 19.5091 | 1.136  |

Note: the primary data source for this study was the Taiwan Economics Journal (TEJ). The input-output variables unit measure by millions, fund and Capital price measure by percent.

### 3. EMPIRICAL RESULTS

#### 3.1. Results of Efficiency with Undesirable Outputs

This section reports estimations of the banks' average efficiency, which we ascertained using a DEA model. Our three-part efficiency index includes overall technical efficiency (TE), pure technical efficiency (PTE), and scale efficiency (SE). Table 2 presents the results of the banks' efficiency.

The mean technical efficiency, pure technical efficiency, and scale efficiency scores were 0.61, 0.845, and 0.706, respectively, which suggests that these banks improved their efficiency by 39%, 15.5%, and 29.4%, respectively. This result indicates that nearly 40% of banks' costs are wasted according to the best-practice frontier when facing the same output within samples. This result is consistent with both Sun and Chang (2011) and Liu and Liao (2013), whose results both report a general bank efficiency of approximately 0.6 for Taiwan. This figure reflects a generally low efficiency level for banks over the present study's data collection period. One possible reason for this phenomenon is that the Taiwanese government allowed new banks to enter into the financial market to increase competition as a measure to improve efficiency after deregulation, but over-competition deteriorated the quality of assets, reduced profitability, and even led some banks to bankruptcy.

Regarding bank efficiency sources, the mean pure technical efficiency is higher than the scale efficiency, which indicates that scale inefficiency is a major source of bank inefficiency. A bank's inefficiency can in turn be attributed to returns of scale diseconomies. The government encouraged banks to perform merger activities in order to increase bank efficiency because the government believed that larger banks would have better efficiency than smaller banks. Dark (2001) has suggested that the minimum efficient scale of operation in the United Kingdom is at an asset size ranging from GBP 18 to 23 billion. Liao (2009) has pointed out that regulators should not blindly merge to expand their asset base, for it is uncertain whether doing so improves efficiency and profitability. It was thus suggested that Taiwanese banks should promote scales of optimal operation.

We compared the results of bank efficiency scores estimated both with undesirable outputs and without undesirable outputs. Results show that the efficiency score estimated with undesirable output was slightly higher than that without undesirable outputs. Test results showed the same outcome, though overall technical efficiency and pure technical efficiency were significantly different.<sup>3</sup> This result is thus consistent with Assaf et al. (2012), who found that excluding crediting banks from their production of bad outputs resulted in misspecification, which appears as an underestimation of both efficiency and productivity change. This result also provides significant evidence suggesting that not accounting for undesirable output while estimating the evolution of the model may seriously distort efficiency results.

**Table 2: Results of Efficiency With Undesirable Outputs**

| Year | OTE   | PTE   | SE    |
|------|-------|-------|-------|
| 1993 | 0.724 | 0.853 | 0.834 |
| 1994 | 0.735 | 0.89  | 0.801 |
| 1995 | 0.634 | 0.82  | 0.741 |

<sup>3</sup> For brevity, this section excludes the results of these tests. For the TE test, the t value was -3.081 and the F value was 9.493 for the TE test. For the PTE test, the t value was -6.161 and the F value was 37.953.

|      |       |       |       |
|------|-------|-------|-------|
| 1996 | 0.394 | 0.803 | 0.464 |
| 1997 | 0.581 | 0.832 | 0.668 |
| 1998 | 0.546 | 0.811 | 0.653 |
| 1999 | 0.519 | 0.84  | 0.592 |
| 2000 | 0.62  | 0.78  | 0.764 |
| 2001 | 0.726 | 0.904 | 0.788 |
| 2002 | 0.604 | 0.796 | 0.722 |
| 2003 | 0.578 | 0.824 | 0.677 |
| 2004 | 0.465 | 0.714 | 0.602 |
| 2005 | 0.636 | 0.812 | 0.763 |
| 2006 | 0.583 | 0.852 | 0.654 |
| 2007 | 0.685 | 0.919 | 0.729 |
| 2008 | 0.636 | 0.817 | 0.747 |
| 2009 | 0.647 | 0.859 | 0.717 |
| 2010 | 0.688 | 0.857 | 0.792 |
| 2011 | 0.666 | 0.879 | 0.754 |
| Mean | 0.61  | 0.845 | 0.706 |

Note: the banks efficiency score that range from 0 to1.

**Table 3: Results of Efficiency without Undesirable Outputs**

| Year | OTE   | PTE   | SE    |
|------|-------|-------|-------|
| 1993 | 0.607 | 0.733 | 0.8   |
| 1994 | 0.398 | 0.674 | 0.567 |
| 1995 | 0.589 | 0.736 | 0.775 |
| 1996 | 0.415 | 0.603 | 0.673 |
| 1997 | 0.534 | 0.693 | 0.749 |
| 1998 | 0.404 | 0.597 | 0.634 |
| 1999 | 0.212 | 0.454 | 0.457 |
| 2000 | 0.5   | 0.665 | 0.733 |
| 2001 | 0.465 | 0.662 | 0.696 |
| 2002 | 0.506 | 0.625 | 0.799 |
| 2003 | 0.48  | 0.683 | 0.658 |
| 2004 | 0.468 | 0.656 | 0.7   |
| 2005 | 0.544 | 0.698 | 0.764 |
| 2006 | 0.652 | 0.803 | 0.787 |

|      |        |        |        |
|------|--------|--------|--------|
| 2007 | 0.698  | 0.854  | 0.791  |
| 2008 | 0.5    | 0.67   | 0.731  |
| 2009 | 0.464  | 0.652  | 0.659  |
| 2010 | 0.658  | 0.788  | 0.813  |
| 2011 | 0.624  | 0.829  | 0.728  |
| Mean | 0.5115 | 0.6882 | 0.7113 |

Note: the banks efficiency score that range from 0 to 1.

### 3.2. Comparing Three Stages of Bank Efficiency

This study compared bank efficiency over three periods from 1993 to 2011: pre-first financial reform from 1993 to 2001 (pre-FFR), financial reconstruction from 2002 to 2007 (FR), and post-subprime mortgage crisis from 2008 to 2011 (post-SMC). Table 5 presents the test results for the three periods. The mean overall technical efficiency was 0.6095, 0.5882, and 0.6543 for pre-FFR, FR, and post-SMC, respectively. These results show that the financial reconstruction period was lower during our study period, which is consistent with Hsiao et al. (2010) and Burki and Niazi (2010).<sup>4</sup> Although the U.S. banking industry faced a shocking subprime mortgage crisis in 2008, this event did not significantly impact bank efficiency in Taiwan. One reason may be that financial reform significantly improves bank efficiency. During FFR, the main objective was to improve the bank capital structure and quality of assets, thus the effect of FFR for bank efficiency offset the shock caused by the subprime mortgage crisis. However, mean technical efficiency has still existed, as 34 percent of bank costs are wasted according to best-practice frontier.

The success of meeting primary goals during deregulation in emerging countries has been mixed (Kumbhakar & Sarkar, 2003). The present study's results suggest that deregulation has improved bank efficiency in emerging countries, which is consistent with literature arguing that the effects of financial reform have significantly positive impacts on bank efficiency in emerging countries, such as Hsiao et al. (2010) has found with Taiwan, Atallah and Le (2006) have found with India, and Burki and Niazi (2010) have found with Pakistan. Furthermore, Bertrand et al. (2007) suggest that less state intervention in the banking sector is accompanied by a more efficient allocation of bank loans across firms, as well as an increase in restructuring activities. This study's results show that improved efficiency after the period of financial reform was possibly due to enhanced bank efficiency, improved risk management practices, and the benefits obtained from complying with the First Financial Reform for Taiwan (Hsiao et al., 2010). Hsiao et al. also suggest that deregulation enticed more banks to cultivate a more competitive market environment in order to raise bank efficiency and profitability. In theory, this idea suggests that a higher level of competition improved bank efficiency and incentivized the creation of new financial businesses' service skills and operating logistics but also produced banks with higher risk levels. Thus, the effect of deregulation may decrease bank efficiency during the initial stages of financial reform period. Nevertheless, most studies have found that financial reform significantly improved bank efficiency in emerging countries over a longer period of time.<sup>5</sup>

**Table 4: Comparison Among Different Periods**

|                       | T test  | One way ANOVA | Mann-Whitney-<br>Wilcoxon Test | Kolmogorov-<br>Smirnov Test |
|-----------------------|---------|---------------|--------------------------------|-----------------------------|
| <i>Period_1 vs. 2</i> |         |               |                                |                             |
| OTE                   | 0.812   | 0.66          | -0.745                         | 0.82                        |
| PTE                   | -0.505  | 0.255         | -0.55                          | 0.679                       |
| SE                    | 0.822   | 0.675         | -0.55                          | 0.95                        |
| <i>Period_2 vs. 3</i> |         |               |                                |                             |
| OTE                   | -1.927* | 3.712*        | -2.018**                       | 1.106                       |

<sup>4</sup> Burki and Niazi (2010) found that bank efficiency falls during initial reform periods in Pakistan.

<sup>5</sup> Hsiao et al. (2010) found that efficiency improves after the implementation of financial reform due to continuing the enhanced banking and risk management practices that were employed to satisfy new policy requirements. At the same time, they suggest that more time might be needed to reap the long-term benefits of restructuring.

|          |          |         |         |       |
|----------|----------|---------|---------|-------|
| PTE      | 0.127    | 0.016   | -1.576  | 1.105 |
| SE       | -2.015** | 4.062** | -1.951* | 1.177 |
|          | OTE      | PTE     | SE      |       |
| Period_1 | 0.6095   | 0.8368  | 0.7055  |       |
| Period_2 | 0.5882   | 0.8561  | 0.6868  |       |
| Period_3 | 0.6543   | 0.8481  | 0.7434  |       |

Note: the banks efficiency score that range from 0 to 1. Period\_1 indicates Pre-first financial reform (1993-2001), Period\_2 indicates financial reconstruction (2002-2007), and Period\_3 indicates post-subprime mortgage crisis (2008-2011). This study test whether has a gap with each other countries, as follows T test, one-way ANOVE test with F-statistics, Mann-Whitney-Wilcoxon Test with Z-statistic. Kolmogorov-Smirnov Test with Z-statistic.

\* Significant level at the  $\alpha=0.1$ , \*\*at  $\alpha=0.05$  and \*\*\*at  $\alpha=0.01$

### 3.3. Results of Productivity Changes

In line with previous studies that isolate the components of productivity changes, this study uses the acronyms TFPCH (Malmquist index of total factor productivity), TECHCH (technical change), EFFCH (efficiency change), PECH (pure technical efficiency change), and SECH (scale efficiency change). Table 5 presents the total factor productivity change indexes of banks. These data demonstrate that the mean values of TFPCH and TECHCH are greater than one, which indicates that banks experience positive productivity growth and technical progress. The mean values of EFFCH, PECH, and SECH are less than one, which demonstrates that they are unable to manage resourcing problems and the lack of scale efficiency. The mean value of TFPCH is 1.027, which indicates that bank productivity slightly improved over the study period. This result is consistent with Chen and Yen (2000) and Chiu et al. (2009), the former showing that the mean TFPCH is 1.013 and the latter showing a mean TFPCH of 1.049.

These results suggest that TFPCH has only slightly improved, mainly due to the frontier shift effect rather than the catch-up effect, which implies that deregulation policies can enhance bank productivity growth. At the same time, banks have generally experienced the benefits of technological progress since many new banks have entered the market and have provided many new ideas, cultures, and operating strategies. As for the idea that bank inefficiency is due to not "catching-up" to the efficient frontier (i.e., falling behind the best-practice), the mean EFFCH of 0.99 implies that banks require more in order to save on management costs or more utilized input resources.

The same holds for EFFCH and PECH, which are respectively 0.99 and 0.995. On the whole, this study suggests that banks increase productivity by more effectively utilizing input resources or management factors. This result is consistent with prior studies (Chen & Yen, 2000; Chiu et al., 2009; and Liao, 2009), which report a lesser influence of the catch-up effect for banks. The mean value of SECH is less than one, which indicates that the banks have not moved toward their optimal size and thus implies that banks must gradually adjust their operating scales. Hsiao et al. (2010) have found that the relationship between bank assets and efficiency is not insignificant. Shen (2005) has showed that the optimal fixed assets size is around NT 10 billion, which suggests that government encouraged banks to activate mergers and acquisitions (M&A) in order to increase profitability and competitiveness. In mergers and acquisitions theory, large banks exercise a wider array of resources, such as brand image and branch networks, to increase profitability more than smaller banks. While this study does not support the idea that grant banks are best for Taiwan, its resultant SECH value shows that banks have not come close to achieving optimal size.

**Table 5: Total Factor Productivity Changes**

|         | Average annual change |        |       |       |       |
|---------|-----------------------|--------|-------|-------|-------|
|         | EFFCH                 | TECHCH | PECH  | SECH  | TFPCH |
| 1994-95 | 0.216                 | 1.871  | 0.893 | 0.242 | 1.704 |
| 1995-96 | 4.837                 | 0.14   | 1.108 | 4.367 | 0.675 |
| 1996-97 | 1.065                 | 1.162  | 1.018 | 1.046 | 1.237 |
| 1997-98 | 0.838                 | 1.028  | 0.873 | 0.959 | 0.861 |
| 1998-99 | 0.677                 | 0.918  | 1.029 | 1.021 | 0.965 |
| 1999-00 | 1.051                 | 1.581  | 0.946 | 0.715 | 1.071 |
| 2000-01 | 1.452                 | 0.06   | 1.045 | 1.39  | 0.88  |

|         |       |       |       |       |       |
|---------|-------|-------|-------|-------|-------|
| 2001-02 | 0.868 | 1.289 | 0.993 | 0.87  | 1.119 |
| 2002-03 | 0.723 | 1.651 | 1.022 | 0.708 | 1.194 |
| 2003-04 | 1.585 | 0.479 | 0.984 | 1.611 | 0.759 |
| 2004-05 | 1.03  | 1.247 | 1.09  | 0.944 | 1.285 |
| 2005-06 | 1.029 | 1.026 | 0.98  | 1.05  | 1.056 |
| 2006-07 | 0.883 | 0.845 | 0.911 | 0.969 | 0.747 |
| 2007-08 | 1.063 | 1.068 | 1.057 | 1.006 | 1.136 |
| 2008-09 | 0.584 | 1.979 | 0.966 | 0.605 | 1.157 |
| 2009-10 | 1.886 | 0.488 | 1.071 | 1.761 | 0.92  |
| 2010-11 | 0.794 | 1.424 | 0.963 | 0.825 | 1.131 |
| mean    | 0.99  | 1.038 | 0.995 | 0.995 | 1.027 |

Note: The "mean" indicates the average the entire sample value over the period 1994 to 2011. TFPCH indicates the total factor productivity index and EFFCH the catch-up indicates the insurers efficiency change, Frontier-shift indicates the technology change, THCHCH, PECH are pure technical efficiency change, and SECH is the scale efficiency change.

### 3.4. Results of Baseline Regression

This section explains the determinants of bank efficiency estimates derived from the DEA model with undesirable outputs for Taiwan. First, a Variance Inflation Factor (VIF) was implemented to test whether the collinearity problem is significant. As shown in column 6 of Table 5, all variables of VIF were less than 10, which implies that there were no collinearity problems in the regression analysis. As can be seen in Table 6, the coefficient of *risk* is positive and significant in all columns. A higher operation uncertainty is seen when banks have a high ROA volatility, which indicates that banks with higher ROA volatility should be more inefficient than other banks. Strong evidence supports the idea that efficiency is associated with operating risk; banks still experience high efficiency even if they have high operating uncertainty. One possible reason for this phenomenon is that bureaucratic power and regulator interference still play important roles in improving efficiency in emerging countries, even for banks with higher operation uncertainty.<sup>6</sup>

The coefficient of BRCH is insignificant in all columns, implying that a greater number of branches does not improve bank efficiency. Regulations restricting banks from establishing new branches simultaneously encouraged merger activities among banks who assumed that a widespread network of branches would increase bank services, scope, and profitability. This study's results, however, show that an increased number of branches cannot significantly improve bank efficiency, Burki and Niazi (2010) have pointed out that delivery systems in rural areas are very costly, thus banks operating in a rural branch network are expected to maintain several loss-making branches. For this reason, banks prefer to establish new branches in urban areas, though doing so costs more and causes more competition than in rural areas. Therefore, only with great uncertainty can banks increase efficiency by cultivating a large network of branches.

The coefficient of RGR was significantly positive, which fulfills this study's expectations. This implies that banks with a higher operating revenue growth rate show better efficiency. The coefficient of *size* is positive and significant, indicating that managers could improve their bank's efficiency by increasing asset size. This result is consistent with Kwan (2006) and Liu and Liao (2013). As Ataullah and Le (2006) have shown, a positive relationship between size and efficiency is attributed to larger banks' market power and their ability to diversify credit risk in an uncertain macroeconomic environment.

The coefficient of EQAS was insignificant. The equity-to-assets ratio as a proxy of the external corporate governance indicator implies that equity stakes could put pressure on management to reduce efficiency shortfalls. The coefficient of *DV* was positive and significant, which indicates that state-owned banks experience greater efficiency than non-state-owned banks, which in turn implies that bureaucratic power still plays an important role for bank efficiency for emerging countries, as the regulator often intervenes on the financial market and on bank operating management. In short, most public policies to protect the benefits of state-owned banks.

<sup>6</sup> Bonin et al. (2005) and Liao (2013) have illustrated that state-owned banks continue to enjoy the advantages of government policies in emerging countries, as evidenced by their efficiency and profitability compared to private banks.

**Table 6: Results of Baseline Regression**

|                         | Full sample         |                      |                     |                       |          |     |
|-------------------------|---------------------|----------------------|---------------------|-----------------------|----------|-----|
|                         | OTE                 |                      | SE                  |                       |          | VIF |
|                         | OLS                 | TB                   | OLS                 | TB                    |          |     |
| <i>RISK</i>             | 1.495<br>(1.967)**  | 4.8457<br>(1.985)**  | 1.542<br>(2.361)**  | 5.791<br>(2.371)**    | 1.221    |     |
| <i>BRCH</i>             | -0.029<br>(-0.866)  | -0.0932<br>(-0.8734) | -0.035<br>(-1.221)  | -0.132<br>(-1.236)    | 4.896    |     |
| <i>ORG</i>              | 0.078<br>(1.723)*   | 0.2529<br>(1.733)*   | 0.074<br>(1.904)*   | 0.2784<br>(1.907)*    | 1.377    |     |
| <i>EQAS</i>             | 0.081<br>(0.577)    | 0.2676<br>(0.5916)   | -0.032<br>(-0.236)  | -0.1197<br>(-0.2646)  | 1.198    |     |
| <i>SIZE</i>             | 0.048<br>(2.15)**   | 0.1564<br>(2.17)**   | 0.04<br>(2.089)**   | 0.1515<br>(2.1036)**  | 5.0      |     |
| <i>DV</i>               | 0.081<br>(2.686)*** | 2.597<br>(2.69)***   | 0.068<br>(2.653)*** | 0.2573<br>(2.6648)*** | 1.427    |     |
| $R^2$                   | 0.036               |                      | 0.033               |                       |          |     |
| Log-likelihood function |                     |                      | -188.907            |                       | -75.3778 |     |

Notes: EFF indicates banks efficiency, Risk indicates risk lever of banks measured by standard deviation of each bank's yearly ROA, SIZE indicates the natural logarithm of bank assets, BRCH indicates natural logarithm of bank branches, RGR indicates revenue growth ratio, EQAS indicates the total equity divided by total assets and DV indicates dummy variable, which equals one if the banks is state-owned banks including actual-control power by government, and zero otherwise.

OLS is ordinary least square, TB is Tobit regression model.

\* Significant level at the  $\alpha=0.1$ , \*\*at  $\alpha=0.05$  and \*\*\*at  $\alpha=0.01$

### 3.4. Results of robustness test

Following previous studies, this section evaluates firm performance as measured by accounting variables, such as return of equity and return of asset. To further investigate the various dependent variables in our empirical equation and to decide whether to change our results, we re-estimated regression and used return of asset (ROA) as the dependent variable. Table 7 reports the results. It is found that the effect of ROA volatility on the banks performance is inconsistent with result of efficiency, meaning that a bank with higher ROA volatility is lower profitability than other banks. ROA regression has a higher R-square than efficiency regression, however these results still remain qualitatively similar, which implies that efficiency and performance regression are consistent.

**Table 7: Results of ROA Regression**

|             | OLS                  | TB                      | VIF   |
|-------------|----------------------|-------------------------|-------|
| <i>RISK</i> | -0.24<br>(-8.637)*** | -21.669<br>(-7.9856)*** | 1.212 |
| <i>BRCH</i> | -0.054<br>(-0.963)   | -0.1798<br>(-1.6286)    | 4.896 |
| <i>ORG</i>  | 0.05<br>(1.688)*     | 0.4548<br>(3.0546)***   | 1.377 |
| <i>EQAS</i> | 0.733<br>(26.583)*** | 11.625<br>(20.207)***   | 1.198 |
| <i>SIZE</i> | 0.21<br>(3.736)***   | 0.374<br>(4.9174)***    | 5.0   |
| <i>DV</i>   | -0.07<br>(-0.224)    | -0.041<br>(-0.4409)     | 1.427 |



|                         |       |         |
|-------------------------|-------|---------|
| $R^2$                   | 0.528 |         |
| Log-likelihood function |       | 1376.18 |

Notes: EFF indicates banks efficiency, Risk indicates risk lever of banks measured by standard deviation of each bank's yearly ROA, SIZE indicates the natural logarithm of bank assets, BRCH indicates natural logarithm of bank branches, RGR indicates revenue growth ratio, EQAS indicates the total equity divided by total assets and DV indicates dummy variable, which equals one if the banks is state-owned banks including actual-control power by government, and zero otherwise.

OLS is ordinary least square, TB is Tobit regression model.

\* Significant level at the  $\alpha=0.1$ , \*\*at  $\alpha=0.05$  and \*\*\*at  $\alpha=0.01$

#### 4. CONCLUSIONS

This study provides an interesting case study of efficiency for one basic problem concerning undesirable output. It has aimed to expand the literature examining bank efficiency by including undesirable outputs to reflect true efficiency instead of excluding undesirable output in the DEA model. Overall, this study's results indicate that nearly 40% of banks' costs are wasted according to the best-practice frontier while facing the same output within samples. This also shows that bank operated at a lower efficiency level over our study period. One possible reason for this is that the government allowed new banks to enter the financial market after deregulation in order to increase competition, which eventually improved bank efficiency. At the same time, over-competition deteriorated the quality of their assets, dropped their profitability, and even led to bankruptcy. Comparing the results of bank efficiency estimated either with undesirable outputs or without undesirable outputs shows that efficiency estimated with undesirable output was slightly higher than that of models without undesirable outputs. This result provides significant evidence that not accounting for undesirable outputs in the classical DEA model might seriously distort efficiency results.

The results of comparing three stages during 1993 to 2011 suggest that deregulation encouraged more banks to foster a more competitive market environment in order to raise bank efficiency and profitability. As such, this study suggests a higher of level of competition improved bank efficiency and incentivized the creation of new financial businesses with service skills and operating logistics but also produced banks with higher risk levels. Thus, the effect of deregulation on bank efficiency decreased during the initial financial reform period. Nevertheless, our empirical evidence shows that financial reform significantly improved bank efficiency in emerging countries in the long run.

Though most studies argue that banks with higher ROA volatility should be more inefficient than other banks, our study does not support this viewpoint. Instead, there is strong evidence to support the idea that efficiency is associated with operating risks, for banks still have high efficiency even when operating with high uncertainty. One possible reason for this is that bureaucratic power and interference from regulators still play important roles in improving efficiency in emerging countries, even for banks with higher operating uncertainty. State-owned banks have the duty to assist government enforcement of relative policies and obtain franchise value from bureaucratic power.

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## MOOD, CONSUMER INTERACTION STYLES, AND PERCEIVED RISK IN CONSUMER COMPLAINING BEHAVIOR

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Petek Tosun<sup>1</sup>, Selime Sezgin<sup>2</sup>, Nimet Uray<sup>3</sup>

<sup>1</sup>Istanbul Bilgi University, Santral Campus, Beyoglu, Istanbul, Turkey.

[petektosun@yahoo.com](mailto:petektosun@yahoo.com), ORCID: 0000-0002-9228-8907

<sup>2</sup>Istanbul Bilgi University, Santral Campus, Beyoglu, Istanbul, Turkey.

[selime.sezgin@bilgi.edu.tr](mailto:selime.sezgin@bilgi.edu.tr), ORCID: 0000-0002-2659-3639

<sup>3</sup>Kadir Has University, Cibali, Istanbul, Turkey.

[nimet.uray@khas.edu.tr](mailto:nimet.uray@khas.edu.tr), ORCID: 0000-0001-6507-7955

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### ABSTRACT

**Purpose-** Consumer complaining behavior (CCB) is an extensively studied subject in the literature. Many personal and situational factors have been identified as antecedents of CCB. However, previous research has relatively been less focused on the impact of perceived risk, assertiveness and aggressiveness on CCB. The purpose of this study is to elaborate the influence of these constructs on consumer complaining behavior, by combining them with the mood of the consumer.

**Methodology-** Through a literature review, mood, assertiveness, aggressiveness and perceived risk have been conceptualized as antecedents of CCB.

**Findings-** Literature suggests that mood, perceived risk, assertiveness, and aggressiveness may have an impact on CCB. As a result of this elaboration, a conceptual model depicting the relations among these constructs is proposed in this study.

**Conclusion-** A conceptual model that includes the interaction of personal variables with mood has contributed to the literature by achieving a novel perspective in explaining CCB.

**Keywords:** Consumer complaining behavior, assertiveness, aggressiveness, perceived risk, mood

**JEL Codes:** M11, M10, M31

### 1. INTRODUCTION

Consumer complaining behavior has attracted the attention of researchers since 1970s (Fornell and Westbrook, 1979). From then on, numerous publications have been made on consumer complaining behavior (CCB). Studies have focused on various aspects of CCB such as the factors that lead to CCB, complaint management of firms, the complaint responses of consumers, and CCB in different contexts such as service settings or consumer goods. In the vast literature of CCB, this study focuses on the initiation of CCB, or in other words, the factors that lead to complaining. There are many components of CCB, and it is already acknowledged in the literature that personal and situational factors may lead to complaint behavior (Blodgett et.al, 1993). Among personal factors, assertiveness and aggressiveness are argued to affect CCB, however, there is a gap in the recent studies in terms of focusing on these personal factors. Perhaps the most interesting and novel aspect of this study is its special focus on the mood concept, as an additional personal factor.

What makes mood interesting as a research topic in CCB literature is that although mood can affect consumers' satisfaction regarding a product or a service, studies that combine CCB with emotional factors are limited in the existing literature. Previous research has generally viewed emotions as the outcome of a dissatisfactory consumption experience or a process that accompanies service recovery efforts. On the other hand, in this study, customer's mood is considered as a variable

that affects complaining behavior, rather than a result of a product or service failure, in addition to the cognitive aspects that determine satisfaction. This study claims that, together with other factors, the consumer's mood influences CCB. In the following section, the literature about CCB, assertiveness, aggressiveness and perceived risk is summarized. Theoretical background is concluded by the key points of literature about mood and emotion concepts. The relationship of these constructs with CCB is summarized and as a result, conceptual framework is proposed.

## 2. LITERATURE REVIEW

### 2.1. The Definition and the Evolution of CCB in the Literature

Although the importance of consumer complaining behavior has been realized long ago, it has begun to receive attention beginning from only 1970s (Fornell and Westbrook, 1979). Research regarding dissatisfaction and complaining has intensified at that time because 1970s were an era of consumer-orientation (Stephens and Gwinner, 1998). Since then, CCB has been studied widely in the literature. In order to understand CCB, one has to think about dissatisfaction concept. Consumer dissatisfaction can be defined as a "case of interrupted or obstructed goal achievement" (Fornell and Westbrook, 1979). Landon (1980) has described consumer complaint phenomenon as "expressions of dissatisfaction on a consumer's behalf to a responsible party" (cited in Bearden and Oliver, 1985). Landon's definition of CCB has emphasized the "expression" aspect of complaints. Moreover, Jacoby and Jaccard's (1981) definition of consumer complaints include both action and communication parameters (cited in Bearden and Oliver, 1985) such as "consumer complaint is an action taken by an individual which involves communicating something negative regarding a product related to either the firm manufacturing or marketing that product or service, or to some third party organizational entity" (Jacoby and Jaccard, 1981). Singh (1988) has defined CCB as "a set of behavioral and non-behavioral responses, some or all of which are triggered by perceived dissatisfaction with a purchase episode". In 2003, Crie has defined complaints as "explicit expressions of dissatisfaction" (Crie, 2003).

The initial studies about CCB were focused on the incidence of complaints (Warland et al., 1975), and the occurrence of CCB across demographic groups (Best and Andreasen, 1977). Researchers have studied CCB from various perspectives and focused on a wide range of topics, constituting a rich literature. Some studies have associated CCB with existing theories as described briefly below.

- **Equity Theory:** According to Equity Theory, people evaluate their inputs and their outcomes in a social exchange relationship and compare the ratio of their inputs and outcome with the other person's ratio in the social exchange situation in order to have a fair and just distribution of rewards and costs (Adams, 1963). Huppertz et al. (1978) have applied Equity Theory in buyer-seller exchange situations and their research has revealed that people perceive situations with high price inequity less fair than situations with low price inequity. The research has also shown that people feel that the purchasing situation is unfair if the service they get is poorer than their expectations (Huppertz et al., 1978). In this context, Equity Theory suggests that providing a compensation would be efficient in restoring the perceived inequity resulting from a service failure (Rothenberger et al., 2008).
- **Attribution Theory:** Attribution Theory views consumers as rational beings who process information in order to interpret the meaning of events and the reasons for others' behavior (Weiner, 1985; Folkes, 1984). Attribution Theory provides a base for explaining CCB by pointing out that consumers try to predict the reason for the service failure, which defines the consumer's response to service failure (Folkes, 1984). Attribution of responsibility affects attitudes towards companies, products or services also in the online complaining context, and the opinions of reference groups in the Internet are influential on consumers' perception of responsibility for product or service failures (Lee and Song, 2010).
- **Theory of Planned Behavior:** The Theory of Planned Behavior states that social norms, perceptions of control over the behavior, and the attitude towards the behavior affect the behavioral intentions (Ajzen, 1991). Grougiou and Pettigrew (2009) state that this model can be adopted to CCB contexts such as perceptions of the consumer's ability to voice complaints and the attitude of the reference group towards complaining would influence the voicing of complaints.
- **Theory of Trying:** Hansen et al. (2011) have tried to explain complaining intentions with the Theory of Trying. Theory of trying (Bagozzi and Warshaw, 1990) can be interpreted as an extension of Theory of Planned Behavior (Ajzen, 1991). In Theory of Trying, the recency and frequency of past trying is added to the social norm and attitude constructs of the Theory of Planned Behavior. Adopting the Theory of Trying to CCB, Hansen et al. (2011) have argued that a person's attitude towards complaining, the social norm towards complaining and the frequency of past complaining behavior affect a consumer's intention to complain. Their empirical study revealed that the social norm towards complaining is not significant in explaining the intention to complain, but the consumer's attitude towards complaining is significant, and a proportion of the consumers are affected by their previous experiences while forming the intention to complain (Hansen et al.2011).

- **Cognitive Appraisal Theory:** Stephens and Gwinner (1998) have used Cognitive Appraisal Theory (Lazarus, 1966) in their model of complaints. Cognitive Appraisal Theory is used in explaining the individuals' cognitive processes in personal, situational and product-related evaluations, which can eventually turn into a complaint response (Stephens and Gwinner, 1998). In their model, personal factors, situational factors, and dissatisfying marketplace experience are the antecedents of the cognitive appraisal process, which includes appraisal and emotions, and results in one of the following coping strategies such as taking an action, self-blaming, seeking social support or avoidance (Stephens and Gwinner, 1998). It is postulated that when consumers feel a threat to their well-being and perceive themselves as having a strong coping power, they can pursue a problem-focused coping strategy and directly voice their dissatisfaction to the seller (Stephens and Gwinner, 1998). On the other hand, if consumers believe that their dissatisfaction is the result of their own actions and blame themselves, they may choose to remain silent, which is an emotion-focused coping strategy (Stephens and Gwinner, 1998). As a third option, consumers may pursue an avoidance coping strategy if they believe that complaining would not worth their effort or would not result in an efficient outcome (Stephens and Gwinner, 1998). In avoidance coping, consumers do not voice their complaints to the seller but may engage in negative word-of-mouth (Stephens and Gwinner, 1998). Word-of-mouth (WOM) refers to the interpersonal communication between people who exchange opinions on various goods and services offered by markets (Goyette et al., 2010).
- **Learning Theory:** When consumers fail to meet their goals in the marketplace, they may express assertive or aggressive behavior. For example, waiting in a line for a long time, encountering with a rude service employee or perceiving a problem in getting prompt service may trigger assertive or aggressive consumer reactions, because consumers behave in these cases upon learned reactions and response patterns, in accordance with learning theory (Crutsinger et al., 2010).

As summarized briefly in these theoretical perspectives, CCB has been studied in this rich context in the literature. Depending mainly on the learning theory perspective, this study focuses on the factors that lead to CCB. When assertiveness and aggressiveness, or some situational variables lead to CCB, consumers may behave in different patterns, which are explained in the following section as the classification of CCB.

## 2.2. The Classification of CCB

### 2.2.1. The Conventional Taxonomy of CCB

Researchers have tried to classify CCB into specific action types. These studies have revealed that CCB is not completely rational and consistent. For example, customers who are dissatisfied do not necessarily engage in complaint behaviors. Thus, researchers have categorized customers according to their complaint behavior as *action group* -consumers who seek for recovery and tell their complaints to the firm- and *no action group* (Mason and Himes, 1973). In 1977, Day and Landon (1977) have introduced the public-private distinction in the communication of complaint responses (also see Stephens and Gwinner, 1998). Researchers have also used different key terms to define and categorize customers such as *complainers vs. non-complainers and activists vs. non-activists* (Ndbusi and Ling, 2006).

In accordance with the classifications stated above, research has revealed that up to two third of consumers do not express their complaints when they are dissatisfied, rather they quietly exit or create negative WOM (Stephens and Gwinner, 1998). Hansen et al. (2011) state that approximately half of the dissatisfied consumers do not express their complaints because of cost-benefit judgements (Bearden and Oliver, 1985), attribution processes (Folkes, 1984), powerlessness (Bunker and Ball, 2009) and personality traits (Singh, 1990). An empirical study conducted in air service industry has revealed that only 23% of the consumers complain in case of a service failure, namely in case of a negative incident during the service encounter (Petzer et al., 2012; Rothenberger et al., 2008). In addition, Huppertz et al. (2014) point out that over 55% of consumers do not complain in a service failure situation, with the percentage of non-complaining consumers vary according to sectors such as 58% for travel and leisure, 61% for financial services, 83% for consumer goods and 66% for healthcare services.

Besides the complaining or non-complaining behavior of consumers, some researchers have focused on the timing of complaints as a definitional issue and most of the previous research has elaborated complaints as a post-purchase phenomenon (Hirschman, 1970; Day and Landon, 1977; Richins, 1983; Singh, 1988; Tax et al., 1998; Stephens, 2000). In this perspective, consumers engage in a complaining behavior in case of a problem after the purchase or consumption of the product.

There are plenty of studies about the types or categories of CCB. Researchers have tried to categorize complaining behavior and have generally modeled CCB as consisting of some specific dimensions such as listed below.

- Exit, voice, and loyalty (Hirschman, 1970),

- Take action or take no action options; take action includes public dimension (redress sought from seller, legal action, third party complaint) and private dimension (personal boycott of the brand, negative word-of-mouth behavior) (Day and Landon, 1977),
- Private, legal, remedial and non-complaining (Krishnan and Valle, 1979),
- Redress-seeking, word-of-mouth, exit, third party complaint and loyalty (Blodgett and Granbois, 1992),
- Voice, private and third-party action (Singh, 1988; Singh and Wilkes, 1996),
- Exit, complain to firm, third-party action, continued patronage (Tax et al., 1998),
- Complaint, legal action, inactivity, exit, negative WOM (Crie, 2003),
- Voice, exit, third party and WOM (Kim and Chen, 2010),
- No complaining, communication (friends, internet, legal authorities) and action (exit, reducing buying, switching to another firm) (Tronvoll, 2012),
- Negative WOM, voice to seller, complain to outside authorities and do nothing (Huppertz et al., 2014).

Among these, one of the most cited and validated taxonomy has been developed by Singh (1988), who has conducted an empirical study on CCB. Findings have indicated that the consumer complaining behavior can be classified into three dimensions: Voice, private and third-party actions (Singh, 1988). Voice dimension includes complaining behavior that is shared with the subjects that are external to the consumer's close social circle, such as, sharing the complaint directly with the seller. "No action" response is tentatively included in this dimension because it has an inherent meaning or feeling associated with the seller. While private dimension includes word-of-mouth consumer complaining behavior, third party actions are directing the complaining behavior to legal authorities or consumer agencies (Singh, 1988).

Singh's classification is in conformity with some other recent studies, such as the study of Crie (2003), Kim and Chen (2010), Tronvoll (2012) and Huppertz et al. (2014). These studies are also in alignment with Singh's classification, supporting its validity.

### 2.2.2. E-WOM as CCB

As early as 1955, it was pointed out that WOM was more effective than newspaper ads, radio advertising, and direct sales (Katz and Lazarsfeld, 1955). Arndt (1967) has shown that the probability of purchasing a new product increases if consumers receive positive WOM regarding that product. Previous research shows that consumers talk about their satisfaction or dissatisfaction regarding product or service with 10 people, where more than 13% of dissatisfied consumers share their dissatisfaction with more than 20 people (Şimşek and Noyan, 2009).

The diffusion of the internet and the easiness that is introduced to daily life by the mobile communication technologies have contributed to consumers' communication by introducing e-WOM, which can be explained as the consumer reviews and comments on the web (Sen and Lerman, 2007). E-WOM includes the communication in the social media, e-mails, web sites and messaging platforms (Strutton et al., 2011). E-WOM can also be defined as positive or negative statements of former, actual or potential customers that are shared with other people in the internet, regarding a product or a company (Hennig-Thurau et al., 2004). Authors include forwarding e-mails, instant messaging, and other communication media in e-WOM (Ho and Dempsey, 2010; Goyette et al., 2010).

In this context, the recent technological developments in digital communication have enabled consumers to express their complaints in the form of electronic word-of-mouth (e-WOM) (Blodgett et al., 2006). In addition to the conventional CCB channels, the developments in technology and communication mediums have added two new channels for CCB: Web sites or forums regarding the products and complaint responses; and the personal social media accounts of consumers. Consumers may share their negative consumption experiences in their personal social media accounts, in various forums or web sites such as mythreecents.com and sikayetvar.com, creating negative e-WOM. As e-WOM sources, complaint web sites enable consumers to discuss common matters, share product assessments and read other consumers' evaluations (Lee and Song, 2010).

### 2.3. Factors That Lead to CCB

The second prominent topic in CCB literature has been the factors that lead to CCB. Several personal factors have been studied regarding complaining propensity. Studies have shown that people who are in their middle ages, who have superior education, have a good job or high income, or who are parents tend to be more likely to voice their complaints (Moyer, 1984). The personal factors that are studied in association with CCB can be summarized as follows.

- Demographics (Warland et al., 1975; Zaltman et al., 1978; Jacoby and Jaccard, 1981; Moyer, 1984; Bearden and Oliver, 1985; Singh, 1990; Lee and Soberon-Ferrer, 1999; Grougio and Pettigrew, 2009),

- Attitudes toward complaining (Best and Andreasen, 1977; Zaltman et al., 1978; Jacoby and Jaccard, 1981; Richins, 1982; Day, 1984; Bearden and Oliver 1985; Richins, 1987; Singh, 1990; Bodey and Grace, 2007; Fernandes and dos Santos, 2008),
- Personality factors (Fornell and Westbrook, 1979; Jacoby and Jaccard, 1981; Richins, 1983; Singh, 1990; Harris and Mowen, 2001; Phau and Sari, 2004; Bodey and Grace, 2007; Grougio and Pettigrew, 2009; Sharma et al., 2010; Ekinci et al., 2016),
- Attitudes toward business and government (Jacoby and Jaccard, 1981; Moyer, 1984).

While researchers tried to explain complaint behavior with consumer demographics in 1970s, studies also began to take situational factors into consideration in addition to consumer characteristics in 1980s (Morganosky and Buckley, 1987). The major reasons of CCB have been found to be the failure to meet customer expectations and discourtesy by the company staff (Bennett, 1997). Besides, the situational or product-related factors that may affect consumers in communicating dissatisfaction as a complaint are stated below.

- Market conditions (Hirschman, 1970),
- Marketing practices that are perceived as unfair (Zaltman et al., 1978),
- Attribution of blame (Krishnan and Valle, 1979; Richins, 1983; Folkes, 1984; Stephens and Gwinner, 1998),
- The price and importance of the good to the consumer (Jacoby and Jaccard, 1981; Gilly and Gelb, 1982; Day, 1984; Bearden and Oliver, 1985),
- Characteristics of the problem (Richins, 1987),
- The role of provider responsiveness (Jacoby and Jaccard, 1981; Gilly and Gelb, 1982; Richins, 1983; Bolting, 1989; Brown and Beltramini, 1989),
- Consumer experience (Jacoby and Jaccard, 1981; Day, 1984; Moyer, 1984; Singh, 1990; Grougio and Pettigrew, 2009; Dalla Pozza, 2014),
- Social climate (Jacoby and Jaccard, 1981),
- Manufacturer's reputation (Jacoby and Jaccard, 1981),
- The cost or difficulty of complaining (Day, 1984; Huppertz, 2007; Grougio and Pettigrew, 2009),
- Involvement (Sharma et al., 2010),
- The magnitude of service failure (Bolting, 1989; Brown and Beltramini, 1989; Casado-Diaz and Nicolau-Gonzalbez, 2009),
- The prevailing product return policy of a country (Blodgett et al., 2006),
- Perceived outcome of complaining (Stephens and Gwinner, 1998; Grougio and Pettigrew, 2009).

While there are studies in which personality traits such as assertiveness and aggressiveness are significant in explaining CCB (Fornell and Westbrook, 1979; Richins, 1987; Phau and Sari, 2004; Ekinci et al., 2016); Kenrick and Funder (1988) have argued that personality is not a good predictor of behavior. This argument has also been supported by another study in which personality variables are found to be insignificant among complainers and non-complainers in terms of taking complaint behavior (Bodey and Grace, 2007). In this general context, the importance of instant factors becomes prominent in explaining the complex phenomenon of consumer complaints. As personality traits may become insufficient in explaining CCB, more instant parameters must have importance in complaining behavior, such as emotions and mood.

### 3. THE CONCEPTUAL FRAMEWORK

#### 3.1. Assertiveness, Aggressiveness and Complaining Behavior

Assertiveness and aggressiveness are described as interaction styles or consistent behavior patterns that consumers exhibit in the marketplace in order to achieve the desired outcome (Crutsinger et al., 2010). These two constructs have been studied together because although they are different, they may intersect or interact in some situations (Richins, 1983).

Assertiveness is defined as expressing one's feelings, attitudes and opinions directly and honestly while respecting others (Fornell and Westbrook, 1979). Authors who write in the mental health area have agreed upon the three attributes of assertiveness, which are, being honest in expressions, not being anxious, and not limiting the rights of other people (Richins, 1983). Requesting help from service employees, and not hesitating to ask questions about a product are considered as assertive behavior in the marketplace. Returning unsatisfactory products to a store or keeping such items rather than seeking redress are some other examples of assertive interaction styles (Crutsinger et al., 2010).

On the other hand, expression of one's feelings, attitudes, and opinions in a hostile, offensive or threatening manner is aggressiveness (Fornell and Westbrook, 1979). Richins (1983) has exemplified aggressive behavior such a raising one's voice, using insulting language and being rude. Expressing non-verbal noxious behavior has also been considered as

aggressiveness (Crutsinger et al., 2010). In their qualitative study, Rose and Neidermeyer (1999) have tried to develop a typology of aggressive behavior in the marketplace. The most common two situations that lead to marketplace aggression have been identified as waiting in line and discourteous employees (Rose and Neidermeyer, 1999).

Assertive people are more likely to express their opinions about a product or service failure than non-assertive or non-aggressive people. Richins (1983) states that assertive consumers are better in standing up for their rights and complain more frequently than non-assertive consumers. The assertive consumers are more likely to complain and ask for redress, where non-assertive consumers experience an anxiety when forced to complain, thus non-assertive consumers are more likely to behave to gain the compliance of other people in a marketplace context (Burns, 2007).

While assertiveness is seeking for one's rights without violating other people's rights, aggressiveness includes some noxious behavior and less concern about other people's rights (Richins, 1983; Burns, 2007). Aggressive individuals can express hostility or rudeness if they perceive that the conditions are appropriate to express such behavior (Burns, 2007). Therefore, aggressive consumers who experience a problem with a product or service are more likely to complain than non-aggressive consumers.

Thus, the propositions about assertiveness and aggressiveness are formed as follows:

- Proposition1: Assertive people are more likely to complain in case of a product or service failure than non-assertive people.
- Proposition2: Aggressive people are more likely to complain in case of a product or service failure than non-assertive people.

### **3.2. Perceived Risk and Complaining Behavior**

Perceived risk can be explained as the perceived cost of the consumption for the customer. Consumers perceive risk when they realize that a purchase goal cannot be satisfied (Chang and Hsiao, 2008). These costs are multi-dimensional as including psychological, physical, temporal, financial and opportunity costs. In addition, the perceived risk may stem from the imperfect and asymmetric information in the market about a brand (Erdem and Swait, 1998). This situation leads to customer uncertainty and even after active information gathering, consumers may face perceived risk (Erdem and Swait, 1998).

Perceived risk is generally accepted to have six dimensions, which are functional, physical, financial, psychological, social and temporal risk (Chang and Hsiao, 2008). Functional risk refers to the performance of the product; physical risk is explained as the risk of getting a physical injury while using the product; financial risk refers to the risk of losing money because of purchasing the product; psychological risk is associated with the self-consciousness of the consumer related with using the product; social risk is the risk of embarrassment regarding the usage of the product; and temporal risk refers to the time cost that is associated with searching for an alternative product in case the purchased product does not perform as expected (Chang and Hsiao, 2008).

High levels of perceived risk are associated with higher customer focus on the product or service. Thøgersen et al. (2009) have stated that consumers are more likely to complain if their loss is high. Lilleker et al. (1969) and Broadbridge and Marshall (1995) report that the price of the product is correlated with CCB. In their study, Phau and Sari (2004) have shown that consumers are more likely to complain when the product that has a failure is expensive. In addition, Day and Landon (1977), Richins (1983), Bolting (1989) and Ekinçi et al. (2016) have pointed out that in general consumers avoid CCB for low-cost and low-involvement products but complain if the product's importance is high. Therefore, even the most assertive or aggressive people may choose to not complain about products or services that have a lower level of perceived risk.

On the other hand, perceived risk is also related with the Cognitive Dissonance Theory. Cognitive Dissonance Theory claims that when there is an inconsistency between beliefs and actions of human beings, a cognitive dissonance occurs (Festinger, 1957). People can change their beliefs, change their actions or change their action perceptions in order to reduce cognitive dissonance (Festinger, 1957). In the literature, consumer behavior regarding cognitive dissonance has focused primarily on the relationship between a person and a product (Huppertz et al., 1978), making dissonance relevant to purchases and consumption. Therefore, in order to decrease cognitive dissonance regarding a specific consumption, people may change action perceptions, or in other words, rationalize their actions. Depending on the level of perceived risk, tendency to decrease dissonance may lead to different consumer actions: In the case of dissatisfaction with a product or service that has a high level of perceived risk, individuals may not complain. In this case, preferring not to complain may be the result of rationalization process, in which the customer tries to reduce dissonance.

In this context, this study conceptualizes perceived risk as a mediator variable that mediates the relationship between assertiveness and aggressiveness constructs and CCB. Fornell and Westbrook (1979) have pointed that assertiveness can be



elaborated together with dissatisfaction level and the importance of the problem; which is addressed as the perceived risk. So, it is suggested that assertiveness and aggressiveness have an indirect effect on CCB, through perceived risk. Therefore, the propositions have been constructed as follows:

- Proposition3: Perceived risk mediates the effect of assertiveness on CCB.
- Proposition4: Perceived risk mediates the effect of aggressiveness on CCB.

### 3.3. Mood, Emotion, and Consumer Complaining Behavior

Emotions are “*mental and physical processes that include aspects of subjective experience, evaluation and appraisal, motivation, and bodily responses such as arousal and facial expression*” (Smith and Kosslyn, 2007, p. 328). Emotions are also defined as “*the most immediate but complex responses of a person involved in the process of adaptation to the changes of internal states and external conditions*” (Brandstatter and Elias, 2001, p. 95).

The theories that identify and classify emotions are clustered into three major categories as psychological, neurological and cognitive dimensions (Choraria, 2013). The common point of these theories is the basic definition of emotions as psychological reactions of individuals. Emotions occur as reactions to events that are limited in time such as hearing news or experiencing joy (Smith and Kosslyn, 2007, p. 328).

Emotions organize human activities by telling people what they want or not, such as wanting to prepare a good meal or avoiding hassle and arguments (Butler and McManus, 1998, p. 56). Emotions can even act as motives as in the case of a scared child who looks comfort in her mother’s arms, namely, logic is not sufficient for organizing or explaining human behavior (Butler and McManus, 1998, p. 56). Distinct basic emotions, which can be differentiated by specific facial expressions such as anger, disgust, fear, happiness, sadness, and surprise are universal across cultures (Smith and Kosslyn, 2007, p. 330).

Even though some authors have used the concepts “mood” and “emotion” interchangeably in the literature, many scholars in the field of emotions differentiate between these two concepts (Brandstatter and Elias, 2001, p. 5). The mood is defined as “*a diffusive affective state that is more pronounced as a change in subjective feeling*” (Smith and Kosslyn, 2007, p. 328); a “*low-key, diffuse affective state*” (Turner, 2007, p. 116); or a “*nonintentional state*” (Ekman and Davidson, 1994, p. 60). Kumar (1997) defines mood as “*a form of affect that is not associated with a particular stimulus*” and continues by stating that moods are “*lower-intensity affective states that tend to be more enduring than emotions.*” Forgas defines mood as a “*low-intensity, diffuse and relatively enduring affective state*” (Forgas, 1995). Although moods are less intensive affective states than emotions, they have relatively longer duration (Smith and Kosslyn, 2007, p. 328). On the other hand, some authors state that mood is an instant stage of affection compared to emotions (Bronner et al., 2007; Ekman and Davidson, 1994). Mood is also referred to as an emotional state that may last for hours, days, or weeks, as a “*low-intensity background*” (Oatley and Jenkins, 1996, p. 125).

Moods do not have a salient antecedent cause, but emotions usually have a cause and a cognitive content; feeling good or bad is a mood but being angry to a person or fearing from snakes are emotions (Forgas, 1994). A spontaneous feeling of gloom or cheerfulness can be an example of mood as an affective state (Smith and Kosslyn, 2007, p. 328). Unlike emotions, moods are often “*objectless or free-floating*” (Oatley and Jenkins, 1996, p. 125), in other words, mood does not have a clear intentional object, i.e. sadness (an emotion) must be directed at some loss which the individual views as its cause, but if a person feels listless (a mood), he can look for a reason like low blood sugar but he is not listless *at* something (de Sousa, 1997). Thus, even though mood and emotion concepts can be confused and be used interchangeably; moods differ from emotions, feelings or affects in that they are less specific, less intense, and less likely to be triggered by a particular stimulus or event.

Luomala and Laaksonen (2000) state that moods are affective states that include emotions. Moods are less intense than emotions and they are generally unintentional (White, 2006). Although making a strict distinction between emotions and moods is hard, there are some common bases of differentiation that are previously stated in the literature (Ekman and Davidson, 1994). In order to clarify the concepts, the differences between moods and emotions are illustrated in Table 1.

**Table 1: The Differences between Moods and Emotions**

| Attribute | Moods   | Emotions  | Contributor*     |
|-----------|---|---|------------------|
| Function  | Moods' function is to modulate or bias cognition. | Emotions' function is to modulate or bias action. | Davidson (p. 52) |

| Attribute         | Moods   | Emotions  | Contributor*   |
|-------------------|---|---|--|
| <b>Initiation</b> | Moods are already "present" and constitute the base for emotions.   | Emotions can be present or not. They arise in cases where an adaptive action is necessary.  | Davidson (p. 52)   |
|                   | People often cannot specify the event that has triggered a specific mood.   | People usually can specify the event that has triggered an emotion.   | Ekman (p. 57)  |
|                   | Moods are nonintentional states and they do not involve a particular object. Rather, they are of the entire world or environment of the subject.  | As an intentioned psychological state, emotions involve relationship of the subject with a particular object; i.e. Angry at someone, happy about an event   | Frijda (p. 60)<br>Kagan (p. 74)<br>Watson and Clark (p. 89)  |
|                   | Moods are the result of milder and sustained arousal of affective systems.  | Emotions are the result of intense arousal of brain systems that strongly encourage the subject to behave impulsively.  | Panksepp (p. 86)   |
|                   | Triggers of mood are usually perceived as occurring in a slower time period; i.e. A sunny and bright day may lead to a positive mood.   | Triggers of emotions usually occur quickly and without warning; i.e. Losing the control of the car triggers fear in the driver.   | Davidson (p. 53)   |
|                   | Moods refer to the subject's appraisal of the ongoing relationships with the environment. What is appraised is the existential background of a subject's life. A negative mood can be attributed partially to an encounter, but it is a more general state regarding the subject's evaluations of the environment and life. | Emotions refer to the subject's appraisal of the ongoing relationships with the environment. What is appraised is a goal-centered issue. When the specific adaptation encounter ends, in other words, the goal-centered issue is resolved; emotions end, too. | Lazarus (p. 83)  |
| <b>Affect</b>     | Moods shift the modes of cognition and patterns of information processing; i.e. Positive moods facilitate creative responses.   | Emotions shift the action; i.e. Fear changes action.  | Davidson (p. 52)   |
|                   | Moods may affect the type of emotion that will be triggered.  | Emotions may affect the state of mood.  | Davidson (p. 53)   |
| <b>Duration</b>   | Moods last longer, typically for hours or a few days.   | Emotions are held briefly, for a shorter time period, typically for seconds or minutes, or a few hours.   | Davidson (p. 51)<br>Ekman (p. 56)<br>Frijda (p. 61)<br>Goldsmith (p. 72)<br>Kagan (p. 74)<br>Lazarus (p. 83) |
| <b>Expression</b> | Moods do not own their own unique facial expression.  | Not all but many emotions have their own unique facial expression.  | Ekman (p. 57)<br>Watson and Clark (p. 89)  |

Prepared by the researcher. (\*Book chapter in Ekman and Davidson, 1994.)

Previous research has demonstrated that negative moods tend to bias individuals' judgements of life satisfaction (Schwarz et al., 1991; Ekman and Davidson, 1994). Kim has elaborated emotions as antecedent variables for consumer dissatisfaction and argued that anger influences complaining (Kim, 2014). Similarly, anxious or angry mood is a persistent and diffuse negative feeling, in which even a minor event can evoke anxious responses, frustrations or angry feelings (Ekman and

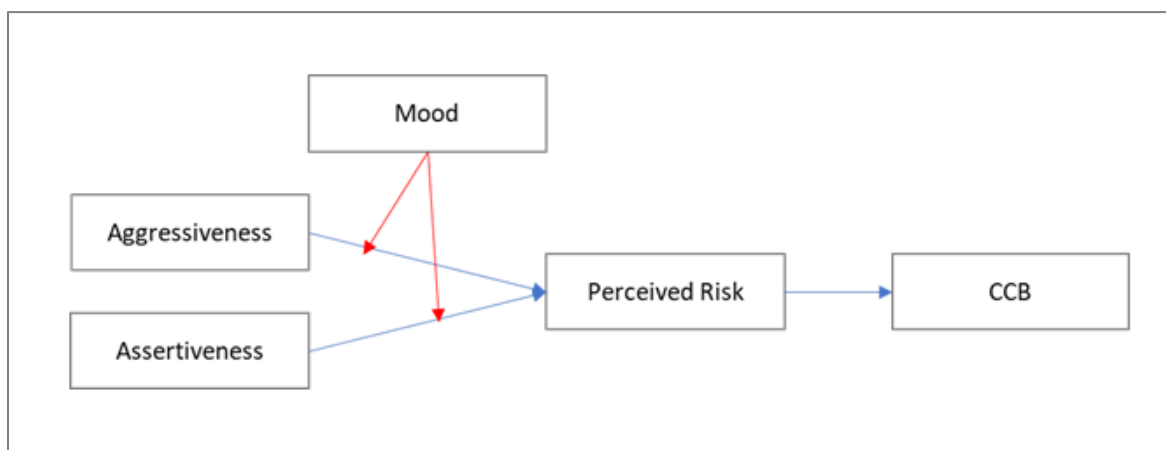
Davidson, 1994). Thus, a person can become angry more easily when he or she is in an irritable mood, and events that would be tolerated otherwise can turn out to be bringing forth anger (Ekman and Davidson, 1994). Previously, White (2006) has found that mood states significantly affect consumers' perceptions of service quality. This also supports that a negative mood state may lead to complaining behavior in a consumption context, where the consumer would not complain if he or she were in a good mood. Therefore, the proposition is formed as follows:

- Proposition5: The effect of assertiveness and aggressiveness on CCB -through the mediating effect of perceived risk- increases, if mood gets more negative.

### 3.4. The Proposed Model

According to the literature review, and the propositions, the conceptual model is illustrated in Figure 1. It is proposed that assertiveness and aggressiveness influence CCB through the mediating role of perceived risk. Mood is included in the model as a moderator that influences the effects of assertiveness and aggressiveness.

Figure 1: The Conceptual Model



## 4. CONCLUSION

Consumer complaining behavior is a complex phenomenon (Bearden and Oliver, 1985), which has become the focus of extensive academic study. It is logically accepted that customer dissatisfaction, which depends on situational and personal factors (Blodgett et al., 1993) triggers customer complaint behavior directly. On the other hand, it is empirically tested and argued that the relation between these two variables are not as high as expected (Singh and Pandya, 1991), and that customer satisfaction is not sufficient for explaining CCB (Jacoby and Jaccard, 1981). Consumers behave differently in exactly the same circumstances regarding a product or a service experience, depending on several factors such as personality, expectations, and tastes (Day and Landon, 1976). This variety and unpredictability in CCB constitute the foundation for this study.

Consumer complaining behavior is a widely studied subject in the literature. Among the existing findings in this extensive literature, the main contribution of this study is its special focus on consumer's mood as an emotional and personal factor that is influential on CCB. Mood has been an interesting research topic for psychologists and marketing scholars, but in most of the research, moods, and emotions have been identified as outcomes of service failures, rather than the cause of complaining (Choraria, 2013; Svavi et al., 2011; Tronvoll, 2011). On the other hand, this study conceptualizes mood as a construct that increases the effect of aggressiveness and assertiveness on CCB.

The second important contribution of this study is its focus on assertiveness and aggressiveness constructs. Although there are numerous studies about consumer activism, most of the research about assertive and aggressive interaction styles have been limited to clinical research and psychological settings (Crutsinger et al., 2010). Few studies have focused on assertive and aggressive behavior in the marketplace (Fornell and Westbrook, 1979; Richins, 1983; Crutsinger et al., 2010). This study aims to fill this gap by proposing a conceptual model about assertive and aggressive consumer interaction styles and the relationship of these constructs with perceived risk and CCB.

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## DETERMINING THE RIGHT MARKETING-RELATED METRICS TO MAXIMIZE PROFITABILITY IN BANKING<sup>1</sup>

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Cagla Burcin Akdogan<sup>1</sup>, Nimet Uray<sup>2</sup>, Burc Ulengin<sup>3</sup>

<sup>1</sup> Istanbul Technical University, Istanbul, Turkey.

[caglaburcindakilic@gmail.com](mailto:caglaburcindakilic@gmail.com), ORCID: 0000-0001-5590-0223

<sup>2</sup> Kadir Has University, Istanbul, Turkey.

[nimet.uray@khas.edu.tr](mailto:nimet.uray@khas.edu.tr), ORCID: 0000-0001-6507-7955

<sup>3</sup> Istanbul Technical University, Istanbul, Turkey.

[ulenginbur@itu.edu.tr](mailto:ulenginbur@itu.edu.tr), ORCID: 0000-0001-5276-8861

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### ABSTRACT

**Purpose** - Securing a sustainable competitive advantage is crucial in today's highly turbulent market environment. One of the requirements for achieving this objective is understanding the interrelationships between marketing activities and business performance through the use of a suitable method of marketing performance assessment. Accordingly, the purpose of this study is to propose a model that can be used to assess the business performance of banks from the perspective of marketing resources, marketing activities and customer-based brand equity.

**Methodology** - The study employs panel data derived from the banking industry in Turkey. The model is tested using panel data regression with the EViews 9 program for short-term and long-term perspectives.

**Findings** - The analyses show that the business performance of banks is affected by marketing resources, marketing activities and customer-based equity with variable impacts affecting short-term and long-term outlooks.

**Conclusion** - Marketing performance assessment is a key requirement for creating the most effective marketing strategy and that can be done by determining how marketing-related factors impact business performance. Rather than only examining the impact of a marketing mix, marketing performance assessments need to employ a comprehensive approach by also including investigations of the effects of marketing related resources and customer-based indicators on business performance.

**Keywords:** Marketing performance, panel data, profitability, banking.

**JEL Codes:** C10, M10, M31

### 1. INTRODUCTION

Companies invest a large portion of their budgets in marketing in order to increase their brand performance and therefore secure long-term financial benefits. However, in the past they lacked the tools to properly assess marketing performance, which can be defined as "the effectiveness and efficiency of an organization's marketing activities with regard to market-related goals, such as revenues, growth, and market share" (Homburg et al., 2007, p. 21). For that reason, companies were unable to clearly define the returns on their marketing investments, and that is why, especially since the 2000s, the literature on marketing has focused on assessment as a way to develop new approaches which can define those returns. The tools that have been developed can be used for developing marketing strategies that enhance brand performance and marketing productivity.

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As Verhoef and Leeflang (2009) emphasize, in particular after the 2000s the marketing literature started drawing attention to the decreasing impact of marketing departments in organizations. This situation came about as a result of the perception that marketing has little accountability, which detracts from its credibility and position within organizations (Rust et al., 2004a; Lehmann, 2004). From this perspective, marketing is unable to explain the outcomes of marketing efforts and the resources that have been utilized (Petersen et al., 2009). Notably, studies about the relationship between marketing and organizational goals have been unable to offer further explanations of the matter (Ambler et al., 2004).

Indeed, Webster et al. (2005) pointed out that the impact of marketing is stronger at firms where there are clear means of showing its contribution to business performance. Clearly, the ability to assess builds up the credibility of marketing departments, and it is indisputable that proper assessments play a critical role in achieving organizational success. As Peter Drucker notes, "you can't manage what you don't measure." As such, a critical prerequisite for successful management is assessment of the actual situation. Only after strengths and weaknesses have been identified can the right actions be taken. For that reason, marketing researchers, as well as marketing professionals, have started to develop tools which can be employed to enhance the accountability of marketing by confirming and demonstrating its contributions to business performance (e.g., Morgan, 2012; Rust et al., 2004a; Gupta and Zeithaml, 2006; Srinivasan et al., 2010).

The tools developed for marketing performance assessment should indicate the direct linkages between marketing efforts, customer mindsets and financial performance (Petersen et al., 2009). However, this can only be achieved by using the appropriate marketing metrics. Various types of metrics, including those that are financial and non-financial, have been developed to assess marketing decisions (Lehmann, 2004). Especially after the emergence of service marketing, the importance of non-financial metrics has dramatically increased thanks to their ability to assess customer-based and long-term predictions of marketing performance (Chendall and Langfield-Smith, 2007). For this reason, a perfect marketing mix employed in a proper marketing assessment system becomes an ideal means of shedding light on the proper examination of returns on marketing investments.

Securing a sustainable competitive advantage is crucial for the majority of companies in today's highly turbulent market environment. Undoubtedly, understanding the interrelationships between marketing activities and business performance is one of the key priorities of the management teams of those companies. In addition, as Dekimpe et al. (2006) state, long-run market responses are also a critical input for companies striving to establish a sustainable competitive advantage since the long-run approach is central to marketing strategies. Therefore, a long-term perspective adds value to studies which are related to that issue. It can thus be seen that a proper means of marketing performance assessment adhering to these aspects is essential for securing a competitive advantage which in turn makes it possible for firms to be aggressive with their competitors using effective marketing strategies.

Along with generating market success, proper marketing assessment is needed for other reasons as well. First, marketers need to examine and fully grasp the relationships between marketing actions and their commercial and financial outcomes, as the resultant insights can then be used in the creation of suitable strategic marketing plans. Second, marketing professionals need to justify marketing budgets to create a sense of accountability, and that in turn will positively impact perceptions of marketing departments in organizations. Finally, marketing performance assessments should take into account how marketing activities first affect consumers' mind because only after their impressions have been shaped by marketing efforts does business performance appear as an outcome of that impact. For that reason, understanding the influence of marketing actions in shaping consumer mind is crucial throughout the marketing performance assessment process. As Kotler (2003) claims, "companies that make steady gains in mind share and heart share will inevitably make gains in market share and profitability". Hence, understanding the black box of customers' minds makes a significant difference in the success of marketing performance. In fact, several studies approach marketing performance from different perspectives, with many of them focusing on examining the direct relationship between marketing actions and a given company's market performance (Lehmann, 2004; Srinivasan and Hanssens, 2009). However, some researchers have stated that attention needs to be drawn to mediating measures related to customer perceptions, attitudes, and intentions (e.g., Gupta and Zeithaml, 2006). In addition, the Marketing Science Institute also announced that marketing performance measurement was among its top research priorities in several years, and it was a top research priority in 2008-2010 (O'Sullivan and Abela, 2007; Lamberti and Noci, 2010).

In the light of these motivations, the aim of the study is to develop a model which indicates the impact of marketing activities, marketing resources, and customer-based brand equity on business performance. By taking up such an approach, this model also aims to provide deeper insights regarding the effects of marketing actions both from a short-term and long-term perspective. With these goals, the expected contributions of this study are as follows. First, it proposes a tool which can be used in the creation of the most effective marketing mix consisting of appropriate marketing activities so that a perfect marketing mix can be established. Second, the right marketing budget with proper allocation for each marketing

activity can be constituted with the help of this model. Most importantly, this model aims to help in the creation of the right marketing strategy and contribute to the success of that strategy.

The paper is organized as follows. It starts with a literature review highlighting the importance of marketing performance and marketing performance assessment. In the following section, the link between marketing and the business performance is discussed in light of related studies. Lastly, the model is proposed and the methodology is discussed, which in turn is followed by a presentation of the analysis, related findings and conclusion.

## **2. THE IMPORTANCE OF MARKETING PERFORMANCE FOR ORGANIZATIONS**

The concept of marketing performance is crucial because of the significant implications of performance outcomes; for that reason, the assessment of marketing performance holds an important place in the marketing performance literature. The studies that have been conducted on the issue are based on the belief that marketing accountability is of critical importance. In other words, marketing needs to be able to demonstrate its contributions, which add value to the firm and to society (Sevin, 1965) through accountability. These contributions can be expressed as returns on marketing, which can be defined as “the revenue or margin generated by a marketing program divided by the cost of that program at a given risk level” (Powell, 2002, p. 6). Such a definition of a “return on marketing” is a financial metric and hence is approached from a financial perspective. Stewart (2009) claims that marketing accountability needs to be expressed via a financial rubric because the language of finance is taken to be the common language within companies. According to researchers studying the issue from this perspective, thanks to increased marketing accountability better decisions can be made based on financial metrics and that will result in improved business performance. At the same time, marketing’s position in the company will be impacted in a positive way (e.g., Rust et al., 2004a) because it is more accountable and hence the marketing department will acquire more clout in the making of strategic decisions.

One of the main goals of marketing assessment is to validate marketing practices in the eyes of the management of the organization (Clark et al., 2004). Because marketing is constantly challenged to justify its investments and to demonstrate the relationship between marketing investments and marketing performance, researchers started to examine marketing metrics and the relationships that exist among them (e.g., Morgan et al., 2002; Lehmann, 2004; Morgan, 2012; Rust et al., 2004a; O’Sullivan and Abela, 2007). Through such efforts, it can be shown that there is a positive relationship between marketing investment and business performance, as noted by Rao and Bharadwaj (2008). They argue that as marketing investments increase, shareholder value improves accordingly in a positive way.

Another point is that marketing performance assessment makes a strong contribution to market learning. It provides insights about progress in the market (Argyris and Schon, 1978) and offers information about the results of marketing actions (Clark et al., 2004). When making decisions, it is very helpful to have a system that guides a marketing strategy in light of crucial factors and the decisions related to them (Van Bruggen et al., 1998). Performance assessment boosts marketing performance; as the saying in the literature goes, “what gets measured gets done” (Ouchi, 1979). By detecting weaknesses and taking appropriate actions for further improvement, enhanced marketing performance can be achieved. As time goes on and the ability of an organization to make proper measurements improves, the information gathered through measurement practices will improve as well and that leads to better decisions and more efficient use of organizational resources (Clark et al., 2004). As argued by Pimenta da Gama (2011), organizations need to have an effective and efficient system of marketing coupled with performance assessment if they want to achieve marketing goals and business objectives. On the one hand, improving marketing performance through assessment generates significant positive effects on business performance, and on the other hand it leads to appropriate implementation (Rust et al., 2004a; Morgan et al., 2002; Morgan, 2012). Hence, marketing performance assessment is an important component of marketing information (Menon and Varadarajan, 1992) and learning processes (Morgan et al., 2002). From a general perspective, the learning approach delivers overall performance (Baker and Sinkula; 1999). As Pimenta da Gama (2011) claims, organizations should give priority to implementing marketing assessment so that they can better compete in a highly turbulent market. In addition, the sustainability of such assessments is another important factor for success because a continuous record of marketing performance provides a consistent means of control and therefore sustainable business performance.

According to Srivastava et al. (1998), without a structured system linking marketing and finance, assessments of marketing activities would appear to be difficult to make. When a measurement system is lacking, investments made for marketing purposes will remain limited. In turn, if we hold to the assumption that value for an organization is mainly created by intangible assets rather than tangible ones, this negatively influences the value generated for the shareholder (Srivastava et al., 1998). Therefore, understanding budgets and resultant actions is crucial for evaluating the effects of marketing actions (Sevin 1965). Marketing uses the resources of an organization and in return the management of the organization needs to be informed regarding the returns on the investments made (Clark et al., 2004). As the financial perspective is crucial in

organizational management, marketing should bolster itself through measurements and reports that create linkages with the financial approach and create accountability through justifications of the results with numbers (Bodell and Earle, 2004).

However, organizational learning does not lead to favorable results in all situations (Huber, 1991). According to some research, business performance improves the ability to properly evaluate increases in marketing performance (O'Sullivan et al., 2009). Hence, a reliable learning mechanism is a prerequisite, as is the reliable information gathered through it, and organizational attitudes are formed according to the outcomes (Clark et al., 2006).

### **3. MARKETING PERFORMANCE ASSESSMENT**

Researchers have approached the issue of marketing performance assessment from different perspectives. Morgan et al. (2002) conclude that there are two main streams of research in marketing performance assessment: marketing productivity analysis and the concept of marketing audits. The marketing productivity approach adopts an approach based on efficiency, while the concept of the marketing audit is centered on effectiveness.

#### **3.1. Marketing Productivity**

Marketing productivity deals with input-output relations (Mistereck et al., 1992). Accordingly, the marketing productivity approach makes two contributions to marketing performance assessments. First, it brings efficiency to marketing performance (Morgan et al., 2002), measuring efficiency based on the conversion between input and output (Sink, 1985). Second, it offers a detailed examination of marketing expenses (e.g., Sevin, 1965) and returns (e.g., Feder, 1965). According to this perspective, the success of a marketing action is evaluated according to the level of gains it provides in return for the investments made for it.

After the study carried out by Sevin (1965), two emerging approaches were recognized in the marketing productivity approach. The first is the tendency to use non-financial metrics as a marketing output. The second is interest in the adaptability and innovativeness of productivity evaluations (e.g., Walker and Ruekert, 1987) with the inclusion of multidimensional metrics (Bhargava et al., 1994). Both of these approaches in metric usage add value to marketing performance assessment practices with new perspectives, and the usage of non-financial and multidimensional metrics enriches the contents of assessments. Hence, the field of application for assessments has grown larger, so the outcomes of assessments have found an area of utilization for measuring the health of marketing performance.

However, according to Morgan et al. (2002) there are still some concerns about this approach in terms of how it can threaten usability. This approach is based on the assumption that inputs and outputs are accurately evaluated and do not change over time. Such a perspective is difficult to confirm, especially for intangible inputs and outputs (e.g., Herremans and Ryans, 1995). Moreover, from a conceptual point of view, the time lags between inputs and outputs are not taken into consideration in this approach which also makes it hard to differentiate the cumulative effects (Foster and Gupta, 1994). In addition, the assessments address the quantitative value of inputs and outputs rather than qualitative ones (Morgan et al., 2002). This places a certain limitation on evaluations. Finally, marketing productivity approaches primarily deal with efficiency, but they fall short in terms of measuring effectiveness and adaptiveness (e.g., Richardson and Gordon, 1980).

#### **3.2. Marketing Audits**

Marketing audits, an approach which was proposed in an American Management Association report (AMA, 1959), represent another approach for marketing performance assessment. They draw upon the studies of Crisp (1959), Sessions (1959), Shuchman (1959) and Oxenfeldt (1966). A marketing audit is defined as a comprehensive analysis of the whole marketing effort including goals, plans, human resources and the organization itself (Shuchman, 1959) with the aim of applying procedures and realizing targets.

Later, Kotler et al. (1977) brought a new approach to marketing audits. He defined them as regular, in-depth analyses of an organization's goals, strategies, actions and environment as a means of scanning the situation in terms of weaknesses and opportunities, and as such it was argued that they can be used to make recommendations in order to enhance an organization's marketing performance. This model consists of six elements, including: 1) a marketing environment audit, which covers an examination of the environment, 2) a marketing strategy audit, which is used to evaluate the marketing strategy to ensure that it is in line with environmental advantages and disadvantages, 3) a marketing organization audit, which is employed as a means of analyzing the connection between marketing and sales, 4) a marketing system audit, which makes it possible to assess the processes that have been designed in order to check marketing actions, 5) a productivity audit, which is used to examine financial data to increase profits, and 6) a marketing function audit, which is utilized to examine the main functions of marketing.

Marketing audits represented a new perspective on marketing performance assessments. The marketing audit concept had a considerable impact because it introduced the first systematic approach to marketing effectiveness (Kotler, 1977). However, it also had drawbacks from the point of view of usability. The first problem was that there were not enough skilled auditors (Kotler et al., 1977), so only a limited number of people could properly carry out audits. The second difficulty was a lack of management collaboration (Capella and Seckely, 1978), as demand and enthusiasm were not very high. The third barrier was a lack of accessibility to information (Rothe et al., 1997) because of the limited channels available. The fourth issue was the lack of efficient connections with high-level managers (Bonoma, 1985). As a result of those drawbacks, the marketing audit approach faced conceptual criticisms. First, it was argued that these systems do not engage with the entire auditing mechanism (e.g., Brownlie, 1993) and as a result, the area of implementation could not be expanded. In addition, such systems were criticized for being regular applications but not continuing evaluations of marketing performance (Kotler et al., 1977). The sustainability of an implementation is a significant factor, and this approach failed in that regard. Another criticism was that the main goal of these systems is to identify problems without proposing a concrete solution for them (e.g., Wilson, 1980). From this perspective, the expectation of such a system is that it should not just detect problems but also solve them. Lastly, auditing systems' lack of experimental validity led to further criticism which emphasized that they function from a qualitative perspective that lacks information about measurement features such as validity and reliability (Rothe et al., 1997).

Hence, by looking at the various aspects of marketing productivity and marketing audits, it can be concluded that both approaches have drawbacks in terms of usability and their conceptual frameworks which prevent them from being ideal solutions (Morgan et al., 2002).

#### **4. LINKING MARKETING AND BUSINESS PERFORMANCE**

In the marketing literature, studies have been carried out which link marketing and business performance (e.g., Morgan, 2012; Katsikeas, 2016; Rust et al., 2004a). These studies start with marketing resources and strategies, analyze their impacts on customer-based metrics and ultimately determine their effects on business performance. These studies offer chain-like models for examining marketing productivity.

##### **4.1. Resources and Capabilities**

The resource-based view (RBV) underlines the significance of key resources as a means of creating a competitive advantage and highlights the importance of establishing a competitive position (Hooley et al., 2001). Wernerfelt (1984) claimed that resources and the capabilities of a firm determine its profits and he posited that companies can be defined as a set of tangible and intangible resources. His study highlights the benefits of examining companies from the perspective of resources. According to this approach, the resource perspective is quite beneficial for companies in terms of providing insights about strategic options (Wernerfelt, 1984).

Another study which constitutes a milestone regarding resources and related issues is the work of Barney (1991) in the literature on strategic management. In his study, Barney (1991) examined the relationship between company resources and ensuring the existence of a sustained competitive advantage. The author stated that the attributes needed for resources to generate a sustained competitive advantage are value, rareness, inimitability and non-substitutability.

The RBV provides significant insights regarding the securing of a competitive advantage and competitive positioning. As markets become more complex in terms of the number of players and different types of customers, competitive positioning decisions become more important, such as those regarding the determination of target markets and the subsequent steps needed to achieve competitive gains (Hooley and Saunders, 1993). Such gains need to be established based on the distinguishing of resources and capabilities (Hamel and Prahalad, 1994; Webster, 1994). According to RBV, a strategy is developed based on the resources of the company. Undoubtedly, strategies should be put into place by matching the strategy with the resources and capabilities of the company so that they are sustainable (Hooley et al., 1998). Hence, the resource-based view considers firm-specific resources to be the center of competitive advantages and firm performance (e.g., Peteraf, 1993; Wernerfelt, 1984). According to this approach, differing company resources result in different strategies which lead to different performance outcomes (e.g., Amit and Shoemaker 1993).

##### **4.2. Marketing Strategies**

In general terms, the aim of marketing strategy decisions is to set priorities and define the related resource deployment in order to achieve company goals (Slater, 1995). These marketing strategy decisions cover strategic marketing objectives, market selection, value proposition and timing (Morgan, 2012).

However, without successful implementation marketing strategy decisions do not lead to success. Therefore, marketing strategy implementation is just as important as marketing strategy decisions. The implementation of a marketing strategy

includes selecting the most appropriate set of marketing tactics and, in accordance with those, deploying marketing resources in order to realize marketing strategy decisions (e.g., Day and Wensley 1988). For that reason, effective marketing strategy implementation involves both creating an appropriate marketing program and allocating the related resources in the most efficient manner so that the marketing program can be put into place (e.g., Day and Wensley 1988). Here, the creation of a marketing program refers to translating each marketing strategy decision into specific action-oriented tactics (Bonoma 1985). But, of course, translating strategic decisions into more concrete tactical marketing actions is not easy. As there are several options for different marketing programs in the realization of a marketing strategy, the alternatives need to be evaluated strategically and the most effective one should be selected (Morgan, 2012). Therefore, in order to make the right choice and apply the right strategies, it is necessary to first understand those factors which have an impact on customer behavior. Accordingly, resources should be allocated to the right customer at the right time with the right offer (Rust et al., 2004a). For that reason, a definition of a concrete marketing program is not enough on its own; rather, the resources and capabilities for the application of a program need to be identified, since the success of the realization of a marketing program is directly linked to the deployment of those resources and capabilities which will be used for marketing program actions (e.g., Crittenden and Crittenden 2008). So, the level of success of a marketing program depends on how efficiently resources are allocated for each marketing action and how wisely capabilities are used to enact marketing strategy decisions. In addition, the performance analysis of marketing strategies offers insights about what kinds of impacts marketing decisions create on market and financial performance (Rust et al., 2004b). This information can later be used as a guideline when creating future marketing strategies and deciding on future marketing objectives. Apart from the strategic approach, the measurement of marketing performance at the tactical level can be carried out by examining individual tactical marketing actions so that the impact of specific marketing actions can be understood by identifying effective and ineffective marketing actions. With this knowledge, more effective marketing actions can be planned for future marketing programs.

When creating marketing strategies and putting into place marketing programs related to those strategies, companies should keep in mind that one of the most valuable assets is the set of intangible assets represented by its brands. Therefore, the management of brands—in other words, the enhancement of the value of brands—is critical. Keller and Lehmann (2003) proposed a brand value chain with several phases. According to the brand value chain model (Keller and Lehmann, 2003), the brand value creation process begins with marketing programs which are implemented by companies based on their marketing strategies. Marketing investments are directed to those marketing programs so that the defined target customers can be reached. After the application of marketing programs, marketing activities associated with the marketing program affect customers' mindsets with respect to the brand. Hence, the knowledge and feelings of customers regarding the brand are constituted with all of the influences generated through marketing activities. Hence, the customer mindset involves everything that exists in the minds of customers with respect to the brand (e.g., thoughts, feelings, experiences, images, perceptions, beliefs, and attitudes). The customer mindset is the precursor of brand performance, since customer behavior and attitudes directly reflect their opinions (Keller and Lehmann, 2003). Therefore, companies should carefully define their marketing strategies, keeping in mind that there is a relationship between marketing strategies and the customer mindset, which consequently leads to brand value.

#### **4.3. The Impact of Marketing Strategies on Customers**

Obviously, all firms investing in marketing programs would like to make a profit and gain a market share in return. Hence, all marketing efforts which ultimately aim to create profitability first need to win over the minds and hearts of the customer (Kotler, 2003). While the mind share is based on the cognitive evaluations of the customer, the heart share is based on their emotions and feelings regarding a brand (Pitta and Franzak, 2008). These elements can be approached in terms of the cognitive, conative and affective effects of communications (Fishbein and Ajzen, 1975). The mind share refers to the cognitive effects of marketing activities, and the heart share refers to the affective effects, which are the outcome of customer experiences and memories about the brand. The market share, on the other hand, represents the outcomes of behavior (Pitta and Franzak, 2008). In this continuum, the heart share stands in the middle between the mind share and market share (Day, 1989). Heart share occurs after the mind share and leads to the market share (Pitta and Franzak, 2008). In other words, brands which can create positive emotional connections and maintain those connections will win over the heart of the customer. Those brands which win over and keep their hold on the hearts of customers will achieve a sustainable competitive advantage over their rivals in the market (Pitta, 2007). This can only be achieved through the long-term investments of marketing. Therefore, at its core marketing is not a short-term activity, so companies make long-term marketing investments by means of which they seek to create long-lasting relationships with the customer. It is a well-known fact that the long-term impact of marketing is always higher than the impact of short-term marketing activities such as promotions, discounts and other one-shot activities. Thus, through marketing investments the brand will first win over the minds of customers and then win over their hearts, ultimately becoming a brand that the customer loves, and in doing

so gain a market share over its competitors. In the end, the market performance generated in that sequence will bolster the financial performance of the company.

The marketing literature indicates that there are some key dimensions of the customer mindset (Keller and Lehmann, 2003; Ambler et al., 2002) which are connected to brand equity. Therefore, the right customer mindset is crucial for obtaining brand equity benefits and value (Keller and Lehmann, 2003). Aaker (1991) defined brand equity as “a set of assets and liabilities linked to a brand, its name and symbol, that add to or subtract from the value provided by a product or service to a firm and/or that firm’s customers” (p. 15). Based on the definition provided by Aaker (1991), it can be seen that brand equity consists of five dimensions: brand awareness, brand associations, perceived quality, brand loyalty, and other proprietary brand assets such as patents, trademarks and channel relationships. Brand associations consist of the cognitive bonds which are created in the minds of customers who have a relationship with the brand (Keller, 1993). Perceived brand quality refers to customers’ perceptions about the overall satisfaction provided by a product relative to the other alternatives (Zeithaml, 1988) and brand loyalty is defined as “a deep-held commitment to rebuy or re-patronize a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behavior” (Oliver, 1999, p.34). Customer-based brand equity encompasses customer evaluations of brand equity with those measures.

#### **4.4. Business Performance**

The ultimate step in the marketing productivity chain is business performance (Morgan, 2012). Performance is the core dimension of a company, and since it has many dimensions, it can be examined from various perspectives. According to Morgan (2012), business performance can be examined mainly through two perspectives; namely, market performance and financial performance.

##### **Market Performance**

Market performance deals with feedback concerning customer purchasing behavior (Morgan et al., 2002). The customers perceive a firm’s value in a more positive way when a positional advantage is created relative to other competitors (Morgan, 2012). These positive perceptions affect the customer’s buying behavior in a positive way for the firm (Narver and Slater, 1990) by enhancing sales volume, increasing customer satisfaction and loyalty, lowering price sensitivity and increasing the firm’s market share (Morgan, 2012).

The impact of marketing activities on the customer leads to changes in marketing assets such as brand equity and therefore affects the competitive market position of the firm through market share and sales. At this point, successful brands build enhanced customer satisfaction and perceptions of the value of the firm’s offer will be high from the customer’s point of view (Rust et al., 2004a). Hence, the consequences of such an offer lead to superiority in the various dimensions of market performance (Srivastava et al., 1998) such as lower price elasticity (Boulding et al., 1994), customer loyalty (Srivastava and Shocker, 1991), price premiums (Farquhar, 1989), market share (Taylor, 2002), efficient marketing programs (Smith and Park, 1992), brand extensions (Keller, 1998) and profitability (Venkatesan and Kumar, 2004). Hence, brands can enjoy their success in marketing activities with numerous positive gains.

There are different approaches to examining market performance. For example, it can be examined from customer, competitor and internal perspectives (e.g., Day and Nedungadi, 1994). From the customer point of view, market performance refers to customer responses to the positional advantages achieved by the firm. From the internal perspective, market performance can be assessed in terms of unit sales or sales revenue as an outcome of customer behavior. From the competitor point of view, market performance can be identified through mind share and market share. Hence, each perspective makes a different assessment by highlighting the different strengths of the brand.

Market performance models are generally developed in quantitative research aiming to build a link between marketing expenditures and metrics such as market share and sales (Hanssens et al., 1990). An important outcome of these studies is the notion that long-term impacts differ greatly from short-term impacts (e.g., Dekimpe and Hanssens, 1995). This difference arises as the result of the characteristics of marketing actions (Rust et al., 2004a). Some marketing activities like sales promotions, for example, reveal their effects more quickly but the impact that is produced can be minimal. In contrast, some marketing actions produce their impacts more slowly over time, as is the case with advertising. In addition, monitoring the competitive environment and responding with the correct actions becomes crucial in the long-term perspective (Kumar, 1994). For that reason, marketing resource allocation studies examine the optimal level of marketing investments according to customer segments and markets in terms of the marketing mix elements and marketing channels in order to achieve higher profitability (e.g., Mantrala et al., 1992).

In the final stage of the marketing productivity chain, the market performance of a company will be followed by financial performance in terms of cash flow, profitability and similar financial indicators (e.g., Day and Fahey, 1988).

## **Financial Performance**

Financial performance is a focal dimension of business performance (Morgan, 2012). Being able to affect customer perceptions and attitudes is a very significant indicator of marketing efforts, which in turn lead to enhanced sales performance and an increased market share. However, financial performance is considered to be the most important indicator in assessing the marketing efforts of a company (Rust et al., 2004a). The financial position of a company is directly influenced by marketing activities, which lead to several financial parameters such as profits and cash flow (Rust et al., 2004a). Therefore, the link between marketing activities and their financial results should be examined by marketers.

Marketing expenditures are considered to be investments. Therefore, the financial impact of marketing is an outcome of the revenue and the expenditures which are needed to generate that revenue. Thus, the financial outcome of investments can be measured by the return on investments where the return can be expressed as a percentage of the expenditure (Rust et al., 2004a). Apart from the return on investment (ROI) approach, there are different metrics which can be used to define the financial performance of a company such as cash flow, profitability, financial market indicators of investor value (Srivastava et al., 1999), market value, stock risk (Morgan, 2012), investor returns, equity risk, credit rating, cost of capital (Katsikeas et al., 2016), market capitalization, Tobin's q (Rust et al., 2004a), and so on. Hence, financial performance can be measured from varying perspectives reflecting the financial position of the company.

As mentioned above, linking marketing and business performance provides important insights for marketing researchers as well as marketing professionals. Based on the insights acquired in marketing performance assessment, various studies have contributed to the development of this field through attempts to link marketing to business performance. Table 1 indicates some of the selected empirical studies on marketing performance assessment.

As can be seen in Table 1, a limited number of studies have been carried out in the service field. Most of the studies apply to the FMCG sector, automotive sector, and other tangible goods-related areas, as those dominate the content of research on marketing performance assessment. However, service marketing started drawing more attention after the 2000s with a shift from marketing's focus on the exchange of tangible goods toward the exchange of intangibles, skills and knowledge, as well as processes which combine goods and services. This indicates that marketing has shifted its focus from a goods-dominant view to a service-dominant view in which intangibles, exchange processes, and relationships generate the focus of the domain (Vargo and Lusch, 2004). Vargo and Lusch (2004) emphasize that service is the "fundamental basis of exchange" and is crucial for activities occurring between markets and society (Gamble et al., 2011). Therefore, this shift requires new approaches for assessments of marketing performance to define the different dynamics behind marketing performance from the perspective of service.

There are many differences between the goods-dominant and service-dominant perspectives. One of the most significant factors that creates a difference between these two perspectives is the metrics used in marketing performance assessment approaches. When the current empirical studies in this field are examined in terms of the metrics that are used, it can be seen that measures mainly related to sales are employed because they are the most important indicator in the goods-dominant perspective and because of the ease by which data can be acquired. However, from the service point of view, non-financial measures are of major importance in providing insights about how to further improve service quality. Furthermore, service-dominant companies have different financial parameters indicating performance.

Moreover, marketing performance assessment is a major means of contributing to the development of future marketing strategies. However, in order to be open to generalization, the studies should have broad coverage in terms of the time line involved. So, while there are some studies that take a longitudinal approach in the goods-dominant sector, they are few and far between. In addition, few longitudinal studies have been carried out in the service sector. Of course, acquiring data for longitudinal studies is more difficult than for cross-sectional studies. However, with improved data-mining capabilities and the development of technological applications used by companies, this problem has been minimized through improved data resources which enable the usage of longitudinal data in marketing performance assessment studies.

Lastly, as mentioned above, marketing resources play an important role in the entirety of the marketing productivity chain. However, even though there are conceptual studies which include marketing resources in the marketing productivity chain approach as a whole, the existing empirical studies are lacking in this regard.



**Table 1: Selected Empirical Studies Related to Marketing Performance**

| Paper  | Author, Year                  | Dependent Variable   | Industry               |
|--|-------------------------------|--|------------------------|
| Mindset metrics in market response models: an integrative approach   | Srinivasan et al. (2010)      | sales volume   | FMCG                   |
| Consumer attitude metrics for guiding marketing mix decisions  | Hanssens et al. (2014)        | sales volume   | FMCG                   |
| The impact of brand equity on customer acquisition, retention, and profit margin   | Stahl et al. (2012)           | customer lifetime value (CLV)  | automotive industry    |
| New Products, sales promotions and firm value: the case of the automobile industry   | Pauwels et al. (2004)         | firm revenue, firm income, market capitalization to book value ratio | automobile industry    |
| Advertising spending and market capitalization   | Joshi and Hanssens (2004)     | Tobin's q  | computer manufacturers |
| The impact of brand equity and innovation on the long-term effectiveness of promotions   | Slotegraaf and Pauwels (2008) | sales unit   | FMCG                   |
| Product innovations, advertising, and stock returns  | Srinivasan et al. (2008)      | stock returns  | automobile industry    |
| The impact of marketing on customer equity: from relationship marketing to product marketing                                     | Yoo and Hanssens (2004)       | customer equity  | automobile industry    |
| Long-run effects of price promotions in scanner markets  | Dekimpe et al. (1999)         | sales volume   | FMCG                   |
| The persistence of marketing effects on sales  | Dekimpe and Hanssens (1995)   | sales revenue  | home-improvement       |
| How dynamic consumer response, competitor response, company support, and company inertia shape long-term marketing effectiveness | Pauwels (2004)                | unit sales   | frozen food            |

While the number of studies in the literature seeking to measure marketing performance has been increasing, the marketing literature has been critiqued (Ambler et al., 2004) in terms of: a) low indicative capability (Day and Wensley, 1988), b) a short-term approach (Dekimpe and Hanssens, 1995; 1999), c) excessive inclusion of non-comparable metrics

(Clark, 1999), d) the stickiness of the perceived performance result in terms of the metrics used (Murphy et al., 1996) e) a lack of focus on increasing shareholder value (Doyle, 2000), and f) a lack of appropriate metrics (Ambler and Kokkinaki, 1997). In particular, a lack of appropriate metrics is a major problem in the marketing performance literature. That problem is a result of the complication of time-lagged effects (Dekimpe and Hanssens, 1995), the complexity of measuring brand equity, and the priority given to financial metrics (Kokkinaki and Ambler, 1999). In addition to these difficulties, another problem is that the choices underlying the selection of marketing metrics are not very well understood (Gao and Liang, 2016). Hence, because of the lack of the right metric choices, the assessments remain limited. Another point of criticism is that the applicability of marketing metrics is highly dependent on organizational and environmental aspects, so a common effective marketing measurement approach does not exist (Frösen et al., 2013). Factors such as the existence of a CMO (Mintz and Currim, 2013), marketing dashboard usage (O'Sullivan and Abela, 2007), the complex structure of marketing (Homburg et al., 2012), market turbulence (Mintz and Currim, 2013), technological turbulence (Jaworski and Kohli, 1993) and the intense competitive environment (Bennett, 2007) might have an impact on the existing approaches.

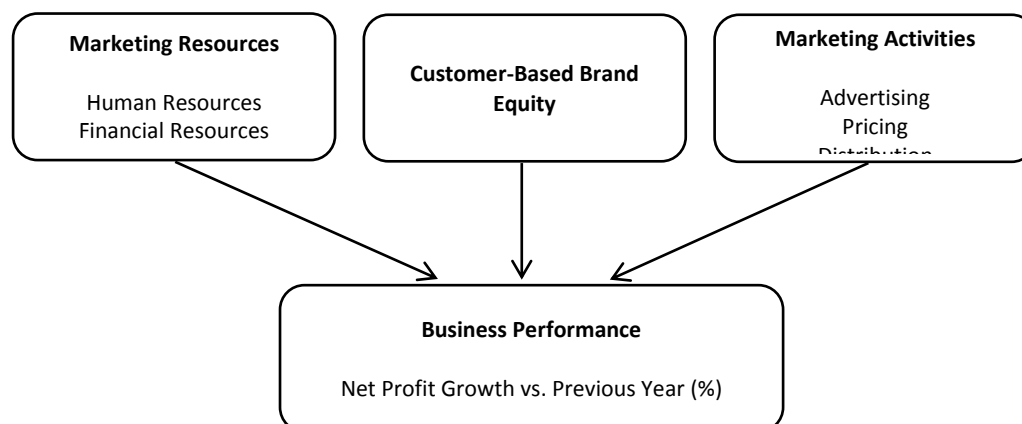
It should be noted that there are some limitations in this field. The limitations of marketing performance assessment are a result of the complicated nature of marketing relationships, which slows down the development of marketing performance assessment (Kotler, 1971). Emphasizing that marketing performance assessment is not an easy job, Clark et al. (2006) note that there are a number of reasons for this state of affairs. The assessment of time-lagged effects is always difficult, as the results of actions do not appear immediately but later. Since marketing performance assessment encompasses the time-lagged effects of marketing actions, the assessment of these actions requires special work. In addition, marketing includes several roles which are interlinked. As these roles create a complicated structure in which each role affects the other, the assessment process needs to be designed carefully. Moreover, marketing involves several players such as consumers and competitors. As a consequence of the various actors who take part in the assessment process, any assessment needs to broaden its view to include all of the players who have an effect on the process as a whole. In short, all of these characteristics make the measurement of marketing efforts a difficult and complicated task (Clark et al., 2006).

All of these issues place a certain amount of stress on marketing practitioners and researchers as they are expected to demonstrate the added value of marketing on shareholder value (Doyle, 2000). As stated before, it has been argued that improved accountability is necessary for understanding marketing (Morgan et al., 2002). As a result of the debates that have arisen, new studies have emerged in the literature which are based on the notion that business performance is enhanced by improved marketing accountability, which also improves marketing credibility (Morgan et al., 2002). Day and Fahey (1988) emphasize the significance of the new metrics when defining business performance. Rust et al. (2004a) highlight that introducing new techniques and processes to evaluate marketing productivity enhances marketing's stature in organizations. Several studies have been carried out as a reaction to calls for more marketing performance assessment research (e.g., Rust et al., 2004a; Ambler et al., 2004; Clark et al., 2006). In addition to researchers, marketing practitioners have also been regularly called upon to clearly show the impact that marketing has on business performance (Ambler, 2003). In this way, marketing performance assessment has become an increasingly engaging issue for both researchers and practitioners.

Because of the gaps in the literature, as well as criticisms of the field of marketing in terms of accountability and credibility, this study aims to analyze the impact of marketing resources, marketing activities, and customer-based brand equity on business performance in the service industry from both a short-term and long-term perspective.

## **5. METHODOLOGY**

This study focuses on the banking sector in Turkey for several reasons. First, banking is a very competitive sector, so banks are quite active in their marketing activities as a means of acquiring a competitive position. They make sizable investments in their marketing programs based on particular strategies, which require large budgets. Therefore, it would be useful for the banking sector to have guidance in the development of effective marketing strategies and efficient usage of their marketing budgets. Second, few studies have examined the impact of marketing activities on business performance from the perspective of the entire marketing productivity chain (e.g., Morgan, 2012; Katsikeas et al., 2016). To date, no empirical studies in the literature have examined the banking sector across the entire chain, starting from marketing resources to business performance. For that reason, this study aims to address this lacuna, as a marketing productivity perspective will be useful for both researchers and practitioners alike. The model proposed for this study can be seen in Figure 1.

**Figure 1: Proposed Model**

### 5.1. Variables, Measures and Data Collection

#### Marketing Related Resources

This study uses panel data related to the banking industry. Based on the availability of data, the financial resources related to marketing activities and the human resources of marketing and support staff are included in the empirical part of the study. The data related to human resources and the financial resources of marketing activities was obtained from the public tables of the Banks Association of Turkey. Those tables report on the related variables separately for each quarter. Hence, the data was consolidated and processed by the researcher for all the quarters for a four-year period between 2012 and 2015 so that it could be integrated into the study.

The study used three types of operationalization for the financial resources of marketing activities and the human resources of the marketing and support staff. In the first form of the operationalization of the financial resources related to marketing activities and human resources related to marketing and support staff, the growth rates of these expenditures were used in comparison to the previous year. In the second form of operationalization, the ratio of the human resource expenditures of marketing and support staff to total bank expenditures was used for the human resources of the marketing and support staff variable. For the financial resources of the marketing activities variable, the ratio of the financial expenditures of marketing activities to total bank expenditures was used. In the third form of operationalization, the ratio of the human resource expenditures of the marketing and support staff to total bank assets was used for the human resources of the marketing and support staff variable. For the financial resources of marketing activities variable, the ratio of the financial expenditures of marketing activities to total bank assets was used.

#### Marketing Activities

For the marketing activities variable, data related to advertising, pricing and distribution was used. The first marketing activity included in this model is "advertising intensity". The conceptual definition of the advertising variable which is used in this model refers to how much the customer is exposed to the advertising activities of the banks in question. The archive of Nielsen Turkey was used to cull the advertising data of all the banks examined here, which were integrated through the use of calculations. The media covered in this calculation method are national TV, radio, print media, internet, cinema, outdoor advertising and local TV. As a result of these calculations, the data for each type of media was obtained for all of the fourteen banks on a quarterly basis for a four-year period between 2012 and 2015. This data was then processed and consolidated by the researcher so that it could be integrated into the study.

The second marketing activity included in this model is "pricing mark-up". The operationalization for the pricing mark-up was carried out in terms of the difference between two interest rates; respectively, the interest rate that the banks apply to customer loans and the interest rate that the banks apply to deposits. This data was obtained from the public tables of the Banks Association of Turkey, which reports on the related variables separately for each quarter. Hence, the data was then consolidated and processed by the researcher for all the quarters for a four-year period between 2012 and 2015 so that it could be integrated into the study.

The last body of data which was included in the marketing activities variable is "distribution intensity". Distribution intensity was operationalized by the logarithmic versions of data related to the number of branches, ATMs and personnel. The

figures for the number of branches and personnel was obtained from the public reports of the Banks Association of Turkey. The tables report on the related variables separately for each quarter. Hence, this data was then consolidated and processed by the researcher for all the quarters for a four-year period between 2012 and 2015 so that it could be integrated into the study. Data about the number of ATMS, on the other hand, was obtained from the activity reports of the banks which in turn were accessed through the websites of each bank for all the quarters for a four-year period between 2012 and 2015.

### Customer-Based Brand Equity

As discussed above, customer-based brand equity is "the differential effect that brand knowledge has on consumer or customer responses to the marketing of that brand" (Keller, 1993, p. 2). In this study, customer-based brand equity is measured with a simple version of Aaker's (1991) brand equity scale. This measure includes three dimensions, namely brand awareness, brand loyalty and brand associations. The data collection was conducted with GfK for the four-year period of time via an omnibus panel.

Among the dimensions of customer-based brand equity, brand awareness was identified with three questions referring to aided and unaided recall in this study. As for brand loyalty, it was identified with a combination of satisfaction and endorsement questions. Lastly, the dimension of customer-based brand equity was measured with statements referring to brand associations. Four statements were used to measure the brand association variable.

An omnibus panel including all of these questions was conducted in quarterly periods for a four-year period between 2012 and 2015. Lastly, all the data referring to customer-based brand equity was consolidated and processed by the researcher for all the quarters for a four-year period between 2012 and 2015 so that it could be integrated into the study.

### Business Performance

This study measures the business performance of banks in terms of financial performance, which in turn was measured in terms of "net profit growth vs. the previous year". The data related to financial performance was obtained from the public tables of the Banks Association of Turkey. The tables included here indicate the related variables separately for each quarter. Hence, the data was consolidated and processed by the researcher for all the quarters for a four-year period between 2012 and 2015 so that it could be integrated into the study. Table 2 and Table 3 provide the variables, their measures and the sources of data.

**Table 2: Variables and Data Sources**

| Variables                               | Data Source                     | Data Type          | Period               |
|---|---------------------------------|--------------------|----------------------|
| <b>Marketing Resources</b>              |                                 |                    |                      |
| Human Resources Intensity               | The Banks Association of Turkey | Panel Data         | 2012-2015, Quarterly |
| Financial Resources Intensity           | The Banks Association of Turkey | Panel Data         | 2012-2015, Quarterly |
| <b>Marketing Activities</b>             |                                 |                    |                      |
| Advertising Intensity                   | Nielsen                         | Panel Data         | 2012-2015, Quarterly |
| Pricing Mark-Up                         | The Banks Association of Turkey | Panel Data         | 2012-2015, Quarterly |
| Distribution Intensity                  | The Banks Association of Turkey | Panel Data         | 2012-2015, Quarterly |
| <b>Customer-Based Brand Equity</b>      | GfK                             | Omnibus Panel Data | 2012-2015, Quarterly |
| <b>Business Performance</b>             |                                 |                    |                      |
| Net Profit Growth vs. Previous Year (%) | The Banks Association of Turkey | Panel Data         | 2012-2015, Quarterly |

**Table 3: Variables and Measures**

| Marketing Resources                |  | Related Variable                     | Measures  |
|------------------------------------|--|--------------------------------------|---|
| <i>Human Resources</i>             |  | <i>Human Resources Intensity</i>     | three types of operationalization   |
| <i>Financial Resources</i>         |  | <i>Financial Resources Intensity</i> | three types of operationalization   |
| Marketing Activities               |  | Related Variable                     | Measures  |
| <i>Advertising</i>                 |  | <i>Advertising Intensity</i>         | marketing expenditure per media   |
| <i>Price</i>                       |  | <i>Pricing Mark-Up</i>               | interest rate of loans - interest rate of deposits                              |
| <i>Distribution</i>                |  | <i>Distribution Intensity</i>        | three types of operationalization   |
| Customer Based Brand Equity        |  | Related Variable                     | Measures  |
| <i>Customer-Based Brand Equity</i> |  | <i>Brand Awareness</i>               | multiple types of questions   |
|                                    |  | <i>Brand Loyalty</i>                 | 5-point Likert scale (satisfaction)<br>question of bank dimension (endorsement) |
|                                    |  | <i>Brand Associations</i>            | four questions of bank dimensions   |
| Business Performance               |  | Related Variable                     | Measures  |
| <i>Business Performance</i>        |  | <i>Financial Performance</i>         | net profit growth vs. previous year (%)   |

## 6. ANALYSIS AND FINDINGS

Before starting the analysis, the data was screened via an outlier examination and missing data. The analysis consists of four steps. In the first step, factor analysis was used to derive the customer-based brand equity variable from the three dimensions mentioned above. The factor analysis was executed using the SPSS 20 program. For the rest of the analyses in the second, third and fourth steps, the EViews 9 program was utilized. In the second step of the analysis, unit root tests were carried out including all the variables. Unit root tests were used to investigate whether or not the variables are stationary or non-stationary. In the third step, the panel data regression was applied to define the relationship between the variables. Initially, all the variables were included in every equation. But in every iteration, non-significant variables were eliminated using the backward method. Hence, the final version of the equation only includes the significant variables for the relevant equation. The panel data regression analyses determine the short-term and long-term relationships between the variables. However, only the significance level of short-term coefficients can be estimated with this test. Therefore, in order to define the significance level of the long-term coefficients, the Wald test was carried out as the fourth step of the analysis. The short-term period represents approximately three months, and the long-term period represents around two years. The findings are presented and discussed in two different time horizons in Table 4.

**Table 4: Factors Impacting the Growth of Net Profit**

| Dependent Variable: Net Profit Growth   | Short Term |     | Long Term |     |
|---|------------|-----|-----------|-----|
| <b>Customer-Based Brand Equity</b>      | 2.51E-01   | *** | 7.36E-01  | *** |
| <b>Growth of Marketing Expenditures</b> | -1.28E-01  | *** | -2.70E-01 | *** |
| <b>Pricing Mark-Up</b>                  | 8.92E-02   | *** | 1.36E-01  | *** |
| <b>Number of Branches</b>               | 1.67E+00   | **  | 2.56E+00  | **  |
| <b>Number of Personnel</b>              | -9.09E-01  | *** | -1.39E+00 | *** |

|   |           |     |                    |        |
|---|-----------|-----|--------------------|--------|
| <b>TV (national) Advertising Expenditures</b>                 | -4.63E-10 | **  | -7.07E-10          | **     |
| <b>Radio Advertising Expenditures</b>                         |           |     | 4.05E-07           | ***    |
| <b>Print Advertising Expenditures</b>                         | -3.44E-08 | *** | -1.82E-07          | ***    |
| <b>Internet Advertising Expenditures</b>                      |           |     | 2.95E-07           | ***    |
| <b>Cinema Advertising Expenditures</b>                        | 2.69E-08  | **  | 4.11E-08           | **     |
| <b>Outdoor Advertising Expenditures</b>                       |           |     | 4.28E-07           | ***    |
| <b>TV (local) Advertising Expenditures</b>                    | 6.83E-07  | **  | -3.57E-06          | ***    |
| <b>Human Resources Expenditures / Total Bank Expenditures</b> | -3.04E+00 | *** | 7.89E-01           |        |
| <b>Marketing Expenditures / Total Bank Expenditures</b>       |           |     | -1.97E+01          | ***    |
| <b>Weighted Statistics</b>                                    |           |     |                    |        |
| R-squared   | 0.722     |     | Mean dependent var | 0.011  |
| Adjusted R-squared  | 0.629     |     | S.D. dependent var | 0.547  |
| S.E. of regression  | 0.333     |     | Sum squared resid  | 13.879 |
| F-statistic   | 7.729     |     | Durbin-Watson stat | 1.953  |
| Prob(F-statistic)   | 0.000     |     |                    |        |

\* significant at 10%

\*\* significant at 5%

\*\*\* significant at 1%

The results indicate that marketing expenditure growth has a negative impact on net profit growth both in the short term and in the long term. In addition, the ratio of marketing resource expenditures to total bank expenditures has a negative effect on net profit growth in the long run, while it does not have any significant effects in the short term. The results also indicate that the ratio of human resource expenditures to total bank expenditures affects net profit growth negatively in the short term and does not have any significant effects in the long run.

In terms of pricing activities, the results confirm that, as expected, pricing mark-up has a positive impact on net profit growth both in the short term and in the long term. As regards distribution intensity, which is an indicator of availability of services, the results show that a higher number of personnel has a negative effect on net profit growth both in the short term and in the long run. In contrast, the number of branches has a positive effect on net profit growth both in the short term and in the long run.

The last dimension of marketing activities is advertising intensity, which indicates how much the customer is exposed to each type of media. As seen in Table 2, each media type influences the net profit growth of the banks in different directions and along different time horizons. The results indicate that the impact of TV advertising on national channels and print advertising is negative on net profit growth both in the short term and in the long term. The results also demonstrate that local TV advertising has a positive effect on net profit growth in the short term but a negative effect in the long run. Cinema-based advertising, on the other hand, affects net profit growth positively both in the short term and in the long run. It was found that radio advertisements, the internet and outdoor advertisements do not produce a significant effect on net profit growth in the short run, while their positive impacts on net profit growth seem to be relevant in the long run.

The last variable, which is significant in terms of the impact on net profit growth, is customer-based brand equity. According to the results, the brand equity of banks has a positive impact on net profit growth both in the short term and in the long term.

## **7. CONCLUSION AND FUTURE RESEARCH DIRECTIONS**

The analysis indicates that increases in marketing expenditures have a negative impact on net profit growth both in the short term and in the long term, the ratio of marketing expenditures to total bank expenditures has a negative effect on the growth of net profit in the long run, and human resources expenditures have a negative effect on net profit growth in the short term. Clearly, the short-term period of three months is indeed quite short for an examination of improvements in profitability from an investment point of view. Even the long-term period, which was set at around two years, still cannot be deemed as satisfactorily long enough to observe the effects of marketing and human resources expenditures as investments through marketing activities on profit-based indicators. It seems clear that an increase in marketing budgets diminishes profits not only for a period of three months but for longer periods as well. Therefore, it would be expected that marketing expenditures would have a negative effect on net profit growth for a period of three months and even for a period of two years.

In terms of pricing mark-up, the results demonstrate that it has a positive effect on net profit growth both in the short term and in the long run. Any increase in pricing mark-up entails an increase in the prices of bank services in terms of customer loans and a decrease in prices paid for the deposits of customers. Hence, as prices get higher, the net profit of banks increases accordingly.

From a distribution perspective, the results show that the number of branches has a positive effect on net profit in both periods. The expectation would be that technological improvements would lead to negative impacts on net profit growth as regards the number of branches due to the increased level of technological applications in the banking sector. Seen in this way, if a bank increasingly directs its customers to online applications and ATMs, banks will be able to lower their branch costs. However, the results indicate that Turkish customers still value traditional ways of banking.

Another dimension which has a significant impact on net profit growth is the number of personnel. The results reveal that the number of personnel has a negative impact on net profit growth in both the short term and in the long run. The negative effect of the number of personnel on net profit growth indicates that their numbers do not contribute to an improvement in net profit.

TV advertising is, of course, one of the most effective and commonly used tools of advertising for banks. This study considers two types of TV advertising in the analyses: TV advertising on national channels and TV advertising on local channels. According to the results, TV advertising on national channels has a negative influence on net profit growth both in the short term and in the long run. The underlying reason for the negative effect of TV advertising on national channels might be the high costs involved. Therefore, a short-term period of three months, and even a long-term period of two years, are still not long enough to reveal whether or not such a large investment has a positive effect on net profit growth.

Based on the results, local TV advertising has a negative effect on net profit growth in the long term. As mentioned above, TV advertising is undoubtedly one of the most effective ways to reach out to customers who are geographically dispersed. However, because of the high costs of TV advertising, the profit impact of this type of advertising starts becoming positive only on the distant horizon. The same also holds true for local TV advertising.

Another form of media examined in this study is radio advertising. According to the results, radio advertising has a positive effect on net profit growth in the long run because it allows for greater access to bank customers. In addition, the cost of radio advertisements is far more reasonable. Therefore, the positive feedback of these advertisements for net profit growth pays off earlier, especially when compared with TV advertising. Furthermore, because radio advertising has wide coverage and makes it possible to reach out to a large number of customers, it is quite influential.

As for print media, the results indicate that it has a negative impact on net profit growth in the short term as well as in the long run. The reason for this might be the fact that customers have switched from print forms of media to digital versions. It would seem that there has been a regular decrease in print media in terms of circulation and numbers over the years. This has led to the decreased influence of print media and, when used for advertising, a negative impact on net profit growth.

Another media tool that is used is internet advertising. According to the results, internet advertising has a positive effect on net profit growth in the long run. The primary reason for this is that internet advertising is growing rapidly, and as a result, the effectiveness of such advertisements has increased accordingly.

Outdoor advertising was found to have a positive effect on net profit growth in the long term. The banking sector is a service sector and therefore intangible. But outdoor advertisements convert this intangible service into a tangible outlook through the visuals that are used, rendering the impact of this form of advertising on consumers rather effective.

Cinema, a commonly used venue for advertising by banks, is the last form of media included in this study. Some banks even make sponsorship agreements with cinemas by means of which customers of the bank in question enjoy a discounted rate for particular screenings of films. Cinema advertising positively affects net profit growth both in the short term and in the long run. The reason for this might be that increasing numbers of people are going to the cinema. As the number of cinema-goers increases, the exposure level of cinema advertising goes up as well. Consequently, cinema advertisements have a positive influence on business performance indicators.

The last variable included in this study is customer-based brand equity. According to the results, customer-based brand equity has a positive impact on net profit growth in the short term and in the long run. Hence, in line with the marketing literature, it can be concluded that brand equity is a very significant factor for the business performance of a company and contributes to its success. This study confirms that developing customer-based brand equity is crucial for acquiring positive results in business practices.

Because of the constructs it employs, this study opens up avenues for future research. It should be noted, however, that the resources and capabilities examined in this study are limited in scope, and there are others that could be used for further enquiries. For example, future research could include different marketing resources, which would help determine the impacts of other effective means of improving performance. In addition, a future study could be conducted with a focus on another industry; by taking up the same perspective, the existing resources, capabilities and business performance indicators could be defined and the same model could be applied to reveal the differing relationships between marketing resources, marketing activities and business performance, with the addition of customer-based brand equity. Yet another complementary study could include data for a longer period of time, which might bring to light other factors. Lastly, additional business performance metrics could be employed using this model. Extending the scope of business performance metrics in terms of financial and market-based metrics has the potential to provide a broader range of outputs for the model along with more comprehensive conclusions. In short, it can thus be seen that this model provides a broad perspective for the assessment of marketing performance. Adjusting and enriching the same perspective for a broad spectrum of industries would be possible with the determination of appropriate marketing resources, marketing metrics and the length of periods of time under consideration.

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## THE MONETARY TRANSMISSION MECHANISM: EVIDENCE FROM TURKEY

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Ahmet Incekara<sup>1</sup>, Akmyrat Amanov<sup>2</sup>

<sup>1</sup>Istanbul University, The Institute of Social Sciences. Istanbul, Turkey,  
[incekara@istanbul.edu.tr](mailto:incekara@istanbul.edu.tr), ORCID: 0000-0003-0224-2006.

<sup>2</sup>Istanbul University, The Institute of Social Sciences. Istanbul, Turkey,  
[akmyratamanov@gmail.com](mailto:akmyratamanov@gmail.com), ORCID: 0000-0002-4269-7809

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### ABSTRACT

**Purpose-** The CBRT announced in April 2010 that included financial stability in its target function, and in November 2010 started implementing modified monetary policy strategy with new monetary policy tools. In this study, the effectiveness of modified monetary policy was questioned. Thus, primarily the impacts of intermediate targets on price stability, then the impacts of policy instruments on intermediate targets have been investigated.

**Methodology-** The Johansen cointegration test and VECM are used to show long-run relationships and causality between variables. Then, Granger causality test is used to examine short-run causality between the variables.

**Findings-** In the long run, while credit supply and USD exchange rate affect price level, the average funding rate doesn't affect the price level. Credit supply, USD exchange rate and average funding rate affect TUF in the short run. In addition, in the long run, while the required reserve ratio and interest corridor affect credit supply, average funding rate and policy interest rate doesn't affect credit supply. Moreover, in the long run, policy instruments do not have an impact on the USD exchange rate. Reserve requirements cause changes in credit supply, and average funding rate causes changes in USD exchange rate in the short run.

**Conclusion-** The exchange rate channel and the credit channel is valid in Turkey. In addition, while required reserves and interest rate corridor have a predictable impact on the credit supply, no policy instrument has a predictable effect on the exchange rate.

**Keywords:** Monetary transmission mechanisms, Johansen cointegration test, monetary policy instrument

**JEL Codes:** C32, E52, E58

## 1. INTRODUCTION

Central banks implementing the inflation targeting strategy entered into new policy search after the global financial crisis. The fact that the old strategy targeted only price stability led to neglecting financial stability, which is important for macroeconomic stability. Especially in the developing countries with current account deficit problem, the single target-single instrument strategy caused to trade off on important macroeconomic indicators. Developing countries experienced short-term capital inflows during periods when global risk appetite is raised. This stimulated import demand by making the domestic currency more valuable. Moreover, short-term capital inflows increased the domestic credit supply, allowing the banking system to give more credits. Commodity prices increased sharply. Most importantly, the current account deficit, which is badly funded, started to increase. The main source of funding for current account deficits was short-term capital investments and portfolio investments. The occurrence of all these situations made the Turkish economy fragile (Başçı and Kara, 2011).

The CBRT could not respond to this situation only with one policy instrument. The low interest rate policy would discourage short-term capital inflows, but at the same time it would stimulate domestic demand. Such a situation led Central Bank, which was targeting price stability, to ignore financial stability. Therefore, the CBRT started searching new monetary policy strategy. During the years of 2001-2010, the CBRT applied the inflation targeting strategy. This New Keynesian Approach, which is easy to understand and communicate, covered the single target-single instrument (price stability-short term

interest rate) policy. The CBRT announced in April 2010 that included financial stability in its target function, and in November 2010 started implementing modified monetary policy strategy with new monetary policy tools.

In this study, the effectiveness of modified monetary policy was questioned. Thus, primarily the impacts of intermediate targets on price stability, then the impacts of policy instruments on intermediate targets have been investigated. Firstly, the new target function, instrument function and transmission mechanisms will be introduced to readers for a better understanding of the concept. Then, some empirical works on this subject will be shown. Finally, the relationship between the instruments and the targets will be examined by establishing the Johansen cointegrating model. Findings will be discussed both theoretically and statistically.

## **2. LITERATURE REVIEW**

### **2.1. Modified Monetary Policy Strategy**

The CBRT entered into new policy search after the global financial crisis; because the short-term interest rate was not sufficient to achieve both price stability and financial stability. In this chapter, the new target and instrument function of CBRT, and empirical studies will be briefly explained.

#### **2.1.1. Target Function**

The CBRT had only price stability goal before the global financial crisis. Modified monetary policy strategy consists two goals; price stability and financial stability.

The first objective of the Central Bank is price stability, which is defined as low and stable inflation. Price stability: avoids excessive investment in the financial sector, stabilizes the real tax revenue, and reduces the uncertainty of the future price level (Sheshinski and Weiss, 1977; Fischer and Modigliani, 1978). Although there is a trade-off between inflation (wage inflation) and unemployment due to the supply curve that is flat in the short run, the long-run expectation shifts the supply curve to an upright position and the exchange relationship between inflation and unemployment is lifted (Phillips, 1958; Mankiw, 2001; Friedman, 1977). Price stability is consistent with long-run objectives such as high employment, stability in financial markets and stability in foreign exchange markets.

Another objective of the Central Bank is financial stability, which is defined as the existence of a powerful and efficient financial system which is able to ensure an efficient allocation of savings into investments. The CBRT notes that some intermediate targets must be met in order to ensure financial stability. These intermediate targets are; control of credit supply growth and control of short-term capital inflows. Some empirical works show that increase in current account deficit and poorly financing of current account deficit trigger serious economic crises in the Turkish economy (Özcan, Özlale, Sarıkaya, 2007). When the crises of 1994, 2001 and 2008 were examined closely, it is clearly seen that the current account deficit of the Turkish economy started to increase, and financing of current account deficits switched from the long-term sources to the short-term sources.

#### **2.1.2. Instrument Function**

The central bank uses three criteria when choosing policy instruments (monetary base or interest rate): the instrument should be observable and measurable, controllable, and should have a predictable influence on the targets (Poole, 1970, Friedman, 1990). The policy instrument should be quickly observable and accurately measurable so that the central bank's political stance can be reflected quickly. In order for the policy instrument to be able to see useful functions, the central bank must have effective control over the instrument.

One of the policy instruments of the CBRT is the policy interest rate. It is expected that the policy interest rate will influence final target by expectation channel. The expected low policy interest rate, has a contractionary effect on short-term capital inflows, while has reviving effect on domestic demand.

The other policy instrument is an interest rate corridor, which is an area between the overnight lending rate and the overnight borrowing rate set by the CBRT. The CBRT can affect both targets by modifying corridor parameters. The Central Bank can increase volatility and inconsistency by expanding corridor range. Therefore, short-term capital inflows will be restricted because of lowered return/risk ratio. In addition, the uncertainty in the interest rate corridor causes banks to be more cautious about credit supply, thus causing domestic demand to contract (Başçı and Kara, 2011). In January 2017, the CBRT forced to a late liquidity window by stopping funding at the overnight lending rate. Thus, interest rate corridor became an area between LLW lending grate and the overnight borrowing rate.

Liquidity management is a new instrument of CBRT. The CBRT can diversify the official interest rates with actual interest rates. The CBRT is able to implement neutral liquidity management by providing the liquidity in the banking system as much as it needs; is able to implement contractionary liquidity management by providing liquidity under its need; and is able to implement expansionary liquidity management by providing liquidity over its needs. Diversifying of interest rates enables

the CBRT to implement the funding composition strategy (Binici, Kara, Özlü, 2016). Under normal conditions, it is expected that CBRT funds all liquidity needs through the weekly repo, which is the policy interest rate. Therefore, the actual interest rates will follow closely policy interest rates. However, the CBRT can deliberately diversify actual interest rates and policy interest rates. In contractionary liquidity management strategy, the CBRT enforces banking system to borrow from more expensive sources. In this way, it increases the cost of banks' short term liabilities. If the CBRT provides part of liquidity needs from weekly repo and part of it from marginal funding, then the actual interest rates will be higher than the official interest rates. Briefly, this strategy allows the CBRT to change its political stance without changing official interest rates.

The reserve requirements instrument is another policy instrument, which the CBRT started to use after a long time. Reserve requirements are requirements that banks must hold at the central bank in reserve. Reserve requirements are used for three reasons: (1) reserve, (2) liquidity management, (3) monetary control. The reserve role is to act as a guarantee against extraordinary withdrawals. Today, this role has lost its significance. Liquidity management role has also lost its significance due to the fact that open market operations are a more effective instrument to control liquidity. The importance of reserve requirements lies in the monetary central role (Alper and Tiryaki, 2011). The Central Bank started using reserve requirements because this instrument allowed the Central Bank to implement contractionary monetary policy without affecting short-term capital inflows.

### **2.1.3. Transmission Mechanism**

The power and interaction process of the effects of decisions on monetary policy on economic indicators remains uncertain. Bernanke and Gertler (1995) described this process of uncertainty as a black box. The mechanism that removes this uncertainty from the monetary policy and explains dynamic interactions of monetary policy is called the monetary transmission mechanism. This study covers traditional monetary transmission mechanisms.

#### **2.1.3.1. Interest Rate Transmission Mechanism**

There are two approaches in examining monetary actions. The first approach is an examination of the importance of money in economic activities (the reduced form) and the second is the examination of the total demand influencing channels of the monetary policy (structural form). One of the foremost of the structural form approach has been the traditional interest rate channel. According to the traditional interest rate channel, the central bank's expansionary monetary policy lowers nominal interest rates by increasing money supply. Since prices are assumed to be sticky, the change in nominal interest rates has the same effect on real interest rates. A decline in real interest rates lowers cost of capital, thus increasing investment expenditures. Residential and durable consumer expenditures are also included in investment expenditures. The final result of the increase in total investment expenditures and consumption expenditures is the increase in total demand and total production. However, when the interest rate flexibility of investments is zero and the interest rate flexibility of the money demand is infinite, this mechanism does not work (Hicks, 1937).

There are other transfer mechanisms besides the traditional interest rate channel. These can be divided into three groups: Asset price channel, credit channel, and expectations channel. The asset price channel shows the effects of changes in the relative prices of financial and real assets on total expenditure and production. The asset price channel is based on the assumption that the financial market is perfect, as is the traditional interest channel. The asset price channel can be examined in three categories. Wealth effect channel is the first asset price channel (Ando and Modigliani, 1963; Modigliani and Brumberg, 1954). According to this channel, stocks have an important role in the consumers' lifetime resources; therefore, changes in stock prices affect consumption expenditures. The second wealth effect channel is Tobin's q channel (Tobin, 1969). According to this channel, changes in stock prices have an impact on investment expenditures by affecting the market value of firms. Stock prices will not be included in this econometric study since stocks are relatively weak saving instruments in the Turkish economy.

The last wealth effect channel is an exchange rate channel. Nowadays, with the opening of economies to foreign markets, flexible exchange rates have started to be used more widely. Switching to flexible exchange rate systems has increased the interest in Mundell (1963) and Fleming (1962) models. The exchange rate channel is trying to explain the effect of the relationship between the monetary policy and the exchange rate on the total output and prices. The exchange rate channel works more efficiently in (1) economies using a flexible exchange rate system, (2) economies where capital flows have a high interest rate elasticity, (3) economies where the degree of openness is high (exports and imports have a higher share of GDP). When the monetary authority applies the expansionary monetary policy, domestic real interest rates fall. This situation lowers the demand of foreigners to domestic assets. With falling demand, the price of national assets goes down and the national currency depreciates. The depreciation of the national currency increases net exports and total demand.

In countries such as Turkey, where input goods are imported intensively, changes in the exchange rate can affect financial stability as well. The low interest policy causes a rise in the exchange rate. Therefore, costs of input import goods increase. Increased costs are reflected in prices, and general level of prices increases. The situation becomes more interesting in high

interest rate policy. High interest rates accelerate the entry of short-term capital movements, leading to the valuation of domestic currency. This leads to a decrease in net exports, in other words, an increase in current account deficit. Moreover, financing the current account with short-term sources can make the economy extremely fragile.

The credit channel may have an important role in consumption and investment decision since households in Turkey heavily get credit from banks. The first channel of credit view is the bank lending channel (Bernanke and Gertler, 1995), (Bernanke and Blinder, 1988) and (Friedman, 1968). The channel focuses on the role of banks in the economy and especially in the financial markets. Contrary to the previous channels, there are three distinct and completely non-substitute actives. These are money, securities and bank loans. In addition, importance is attached to the difference between borrowers. Especially small firms that are not able to export securities and which are not reliable enough to be funded from non-bank are affected by the contradictory monetary policy. This channel works more effectively in countries where the banking sector is the main funding source for companies. When the monetary authority applies the expansionary monetary policy, the bank reserves and deposits will increase and the amount of credit that can be used will increase. In this way, small and medium-sized firms will be able to get credits more easily. Therefore more easily and realize the investments they are planning. This will increase investment and consumption expenditures and eventually the total output will increase. On the contrary situation, bank reserves and deposits will decrease. In this situation, banks will either sell securities or shorten supply of credit. In the situation that the supply of credit is reduced, small and medium-sized firms will not be able to obtain credit and will not be able to make the investment expenditures they are planning. As a result, the total output will decrease.

The expectation channel is the final interest rate channel. The central bank has power over controlling short-term interest rates. Banks can meet their liquidity needs at the central bank if they do not prefer to borrow or lend at the interbank market. Interest rates on treasury bills and bonds are also can be controlled by the central bank through expectations. Long-term interest rates are not based on current short-term interest rates, but rather on the expectations of short-term interest rates. The central bank should have accountability for officials, transparency in the policy making process, and open communication for efficient results of this channel. A central bank can lead the market by pointing signals about future policy interest rates; and can adjust long-term interest rates (Woodford, 2001).

### **2.1.3.2. Reserve Requirements Transmission Mechanism**

The first transmission mechanism of reserve requirements is cost channel. Cost of reserve requirements can be found by multiplying deposit interest and reserve requirements. This cost affects banks' funding costs, and banks try to reflect this change in the credit interest and deposit interest. Cost channel works efficiently when central bank can affect the difference between credit interest and deposit interest by changing reserve requirements. When the required reserves change, the costs of the liabilities of the banks increase. Banks will try to compensate this cost by widening the difference between credit interest and deposit interest. In order for this channel to be effective, (1) the payment of interest on the required reserves should be terminated, and (2) the free deposits of the banks must be less than required reserves (Alper and Tiryaki, 2011).

The other reserve requirements channel is a liquidity risk channel. A central bank can change the banks' short-term needs and behavior by changing reserve requirements. When the liquidity withdrawn from banks by reserve requirements, banks can compensate it by borrowing again. This will make banks more dependent on central bank resources. Although the credit levels of the banks remain the same, maturity mismatch will arise. Banks will have to reflect this liquidity risk at credit interests, or they will have to shorten credits to reduce their dependence on short-term resources. In addition, the central bank is able to make this channel more efficient by increasing uncertainty and volatility in interest rates (Alper and Tiryaki, 2011).

## **2.2. Empirical Studies**

Many empirical studies have been carried out on the functioning of monetary transmission mechanisms. Smets and Wouters (1999), studied Germany for the period 1975-1997 by utilizing the VAR model. According to their study, the exchange rate channel is valid. After the monetary tightening, the exchange rate appreciated and as result import goods were replaced by domestic goods. Demand for export goods and domestic demand fell, and real GDP declined.

Camarero et al (2002), studied Spain for the period 1986-1998 by using the Cointegration Analysis. According to their study, traditional interest rate channel and exchange rate channel are valid. Monetary tightening increases short and long-term interest rates. Moreover, contractionary monetary policy appreciates exchange rate and causes a decrease in total output.

Nagayasu (2007), analyzed Japan for the period 1970-2006 by utilizing the VAR model. According to study, the exchange rate channel is valid. Monetary expansion has lowered the value of the Yen, but the finding that this change affects the total output is inadequate.



Zhang and Sun (2006), studied China using General Equilibrium model. According to study, the traditional interest rate channel is valid. Consumption goods are classified as durable and non-durable. The expansion of the consumer credit market has enabled the operation of the interest channel with the credit channel.

Mehrotra (2007), studied Japan, Hong Kong and China for the period 1991-2004 by using Structural VAR model. According to study, the exchange rate channel is valid in Japan and Hong Kong. The exchange rate channel does not work in China due to capital controls.

Ornek (2009), analyzed Turkey for the period 1990-2006 by utilizing VAR model. According to study, the traditional interest rate channel and the exchange rate channel are valid. The asset price channel and the bank lending channel are not valid.

Cengiz (2009), stated that empirical studies cannot be carried out because the countries have different institutional and economic structures and degree of openness.

Buyukakin, Cengiz and Turk (2009), studied Turkey for the period 1990-2007 by using VAR model. According to study, the exchange rate channel is important. Monetary policy shocks cause significant changes in prices.

Cambazoglu and Gunes (2011), studied Turkey and Argentina for the period 2003-2010 by setting VAR model. According to study, the monetary base channel is valid in Turkey and the bank lending channel is valid in Argentina.

Cambazoglu and Karaalp (2012), studied Turkey for the period 2003-2010 by using VAR model. According to study, the exchange rate channel is important.

Akbas, Zeren and Ozekicioglu (2013), studied Turkey for the period 2005-2013 by applying VAR model. According to study, traditional interest rate channel and the exchange rate channel affect the industrial production, thus the total output is affected in the short term.

Saracoglu and Kose (1999), studied Turkey for the period 1980-1996 by using VAR model. According to study, the exchange rate channel is valid.

Kasapoglu (2007), analyzed Turkey for the period 1990-2006 by setting VAR model. According to study, the traditional interest rate channel is working effectively. The exchange rate only affects the overall level of prices, not on real activity. The empirical findings that asset price channel and credit channels operate is insufficient.

Incekara, Demez and Ustaoglu (2012), studied Turkey for the period 1989-2011 by utilizing Cointegration and VECM model. According to study, in the long run, the Fischer effect is valid in Turkey.

Binici, Kara, Ozlu (2016), studied Turkey for the period 2010-2014 by applying Panel Data Analysis. According to study, the effects of policy instruments on credit and deposit interest rates examined. Actual interest rates are more determinative on credit and deposit interest rates, rather than policy interest rates.

Incekara and Amanov (2017), studied Turkey for the period 1990-2016 by setting Cointegration and VECM model. The effectiveness of the bank lending channel in the Turkish economy has been questioned. According to study, the money supply is endogenous in the sample period. Monetary aggregates may not be an optimal monetary policy instrument.

### **3. DATA AND METHODOLOGY**

In this study, the effectiveness of modified monetary policy was questioned. Thus, primarily the impacts of intermediate targets on price stability, then the impacts of policy instruments on intermediate targets have been investigated. TUF, KREDI, USD, OFF, REPO, GFARK and ZKO variables were used to set up the model. TUF represents the general price level; KREDI represents domestic credit supply provided by banks; USD represents the USD exchange rate; OFF represents the average funding rate of CBRT; REPO represents one week repo interest rate; GFARK represents interest rate corridor which defined as the difference between central bank lending and borrowing rates; and ZKO represents simple average of the domestic required reserve ratios. The study covers periods of 2010M11-2017M08, and the frequency of time series is monthly. The time series is taken from CBRT EVDS system, and the CBRT statistics. The logarithm of the variables is taken to establish the relation of flexibility among variables.

In order to find the appropriate model, it was first tested whether the variables contain a unit root. Since the economic model generally has higher autoregressive processes, the ADF unit root test is applied. When this test is applied, the appropriate number of lags included in the model is determined with the help of the Akaike and Schwarz information criteria. The results are shown in Table 1.

**Table 1: Unit Root Test Results for Series**

|                | ADF       |             |                  |                      |
|----------------|-----------|-------------|------------------|----------------------|
|                | Level     | Level Prob. | 1st Difference   | 1st Difference Prob. |
| <b>LNOFF</b>   | -1.478987 | 0.5392      | <b>-7.917444</b> | 0.0000               |
| <b>LNREPO</b>  | -1.922421 | 0.3206      | <b>-8.571575</b> | 0.0000               |
| <b>LNGFARK</b> | -1.413236 | 0.5718      | <b>-7.665608</b> | 0.0000               |
| <b>LNZKO</b>   | -1.891042 | 0.3347      | <b>-6.330430</b> | 0.0000               |
| <b>LNUSD</b>   | -0.483170 | 0.8882      | <b>-6.822440</b> | 0.0000               |
| <b>LNKREDİ</b> | -2.501080 | 0.3270      | <b>-8.532326</b> | 0.0000               |
| <b>LNTUFE</b>  | -3.452962 | 0.0516      | <b>-4.868728</b> | 0.0009               |

MacKinnon (1996) one sided p-values.

\* Significant at the 5 % level

According to the results of the unit root test, it is observed that when the first difference of the series is taken, they become stationary. Time series are integrated I (1) in the first degree. Although all series are not stationary at normal levels, there may be a long-run relationship between the variables due to being integrated at the first difference level. Thus the Johansen approach (1988, 1995) was applied as a method of cointegration analysis.

#### 4. FINDINGS AND DISCUSSIONS

##### 4.1. Model 1 – The Effects of Intermediate Targets on Price Stability

The Johansen cointegration test accepts all variables in the model as endogenous. For this reason, estimates should be made with the help of vector and matrix. The VAR model was estimated, and the values of the lag length criteria were found. Three of these criteria (AIC, FPE and LR) showed that 5 lags of variables should be taken. According to these three criteria, the appropriate model is VAR (5) and the appropriate error correction model is VECM (4). The results of the information criteria are shown in Table 2.

**Table 2: Appropriate Lag Selection for Var Model**

| Lag | LogL     | LR               | FPE              | AIC               | SC         | HQ         |
|-----|----------|------------------|------------------|-------------------|------------|------------|
| 0   | 299.2649 | NA               | 4.96e-09         | -7.770129         | -7.647459  | -7.721105  |
| 1   | 772.8614 | 884.8777         | 2.93e-14         | -19.81214         | -19.19879* | -19.56702* |
| 2   | 787.9566 | 26.61522         | 3.01e-14         | -19.78833         | -18.68430  | -19.34711  |
| 3   | 804.1820 | 26.89993         | 3.02e-14         | -19.79426         | -18.19955  | -19.15694  |
| 4   | 820.9973 | 26.10806         | 3.00e-14         | -19.81572         | -17.73033  | -18.98230  |
| 5   | 839.7644 | <b>27.16291*</b> | <b>2.87e-14*</b> | <b>-19.88854*</b> | -17.31246  | -18.85901  |
| 6   | 854.0000 | 19.10557         | 3.14e-14         | -19.84210         | -16.77535  | -18.61648  |

\* shows appropriate lag length

It is important that the short-term VAR model and the long-term cointegrating model contain intercept and trend. Five different models can be set considering the intercept and trend:

- 1- There are no intercept and trend in both long-term and short-term models. ( $\delta_1=\delta_2=\mu_1=\mu_2=0$ ) Model:  $\Delta Z_t = \Gamma_1 \Delta Z_{t-1} + \Gamma_2 \Delta Z_{t-2} + \dots + \Gamma_{p-1} \Delta Z_{t-p+1} + \alpha \beta Z_{t-1} + \varepsilon_t$ .
- 2- There is intercept only in long-term model. There is no trend in both models. ( $\delta_1=\delta_2=\mu_2=0$ ) Model:  $\Delta Z_t = \Gamma_1 \Delta Z_{t-1} + \Gamma_2 \Delta Z_{t-2} + \dots + \Gamma_{p-1} \Delta Z_{t-p+1} + \alpha (\beta \mu_1) (Z_{t-1} \mathbf{1}) + \varepsilon_t$ .
- 3- Both short-term and long-term models have intercept. Both short-term and long-term models don't have trend. ( $\delta_1=\delta_2=0$ ) Model:  $\Delta Z_t = \Gamma_1 \Delta Z_{t-1} + \Gamma_2 \Delta Z_{t-2} + \dots + \Gamma_{p-1} \Delta Z_{t-p+1} + \alpha (\beta \mu_1) (Z_{t-1} \mathbf{1}) + \mu_2 + \varepsilon_t$ .
- 4- The long-term model has both intercept and trend. The short-term model has only intercept. ( $\delta_2=0$ ) Model:  $\Delta Z_t = \Gamma_1 \Delta Z_{t-1} + \Gamma_2 \Delta Z_{t-2} + \dots + \Gamma_{p-1} \Delta Z_{t-p+1} + \alpha (\beta \mu_1 \delta_1) (Z_{t-1} \mathbf{1} \mathbf{t}) + \mu_2 + \varepsilon_t$ .
- 5- The long-term model has intercept and quadratic trend. The short-term model has intercept and trend.

**Table 3: Johansen (1988, 1995) Cointegration Test Results**

| $\lambda_{trace}$ statistics   |                               |                   |                       |
|--------------------------------|-------------------------------|-------------------|-----------------------|
| Hypotheses                     | Eigenvalue<br>( $\lambda_i$ ) | $\lambda_{trace}$ | Critical Value<br>% 5 |
| $H_0: r = 0, H_1: r = 1$       | 0.452943                      | <b>77.72558*</b>  | 54.07904              |
| $H_0: r \leq 1, H_1: r = 2$    | 0.183619                      | 30.07266          | 35.19275              |
| $H_0: r \leq 2, H_1: r = 3$    | 0.119721                      | 14.04560          | 20.26184              |
| $H_0: r \leq 3, H_1: r = 4$    | 0.049034                      | 3.971853          | 9.164546              |
| $\lambda_{max}$ statistics     |                               |                   |                       |
| Hypotheses                     | Eigenvalue<br>( $\lambda_i$ ) | $\lambda_{max}$   | Critical Value<br>% 5 |
| $H_0: r = 0, H_1: r \geq 1$    | 0.452943                      | <b>47.65292*</b>  | 28.58808              |
| $H_0: r \leq 1, H_1: r \geq 2$ | 0.183619                      | 16.02706          | 22.29962              |
| $H_0: r \leq 2, H_1: r \geq 3$ | 0.119721                      | 10.07375          | 15.89210              |
| $H_0: r \leq 3, H_1: r \geq 4$ | 0.049034                      | 3.971853          | 9.164546              |

\* Significant at the 5 % level.

While the generation of Model 1 is difficult in real life, interpretation of the Model 5 is very difficult. The use of Model 1 and Model 5 is unlikely and uncommon in economic studies (Sevuktekin and Cınar, 2014). It is determined that the appropriate model is Model 2 and the rank of the  $\Pi$  matrix is equal to one. In model 2, there is no trend in the long-run cointegration model; there are no intercept and trend in the short-run VECM model.

At the later stage, the appropriate rank for the model needs to be determined. The rank of the  $\Pi$  matrix is calculated by the  $\lambda_{max}$  and  $\lambda_{trace}$  statistics in the Model 2 frame and the results are given in Table 3.

Critical values are MacKinnon-Haug-Michelis (1999) p-values. When the above values are compared with these values, it is seen that the null hypotheses of the maximum eigenvalue and trace test statistics are rejected according to the level of 5% significance level. Variables in the model are cointegrated. Since the matrix of  $\Pi$  is equal to the rank one, there is one cointegrating relationship between variables.

The weak exogeneity test was applied. Weak exogeneity means that a variable is only affected by its lagged values. In order to make LNTUFE, LNKREDİ, LNUSD and LNOFF variables weakly exogenous: it is necessary that LNTUFE variable in the first equation, LNTUFE variable in the second equation, LNUSD variable in the third equation, and LNOFF variable in the fourth equation be a function of their own lagged values respectively. Thus, if the matrix  $\alpha$  is zero, then the variables are weakly exogenous because the effect of the parameters of the cointegration vector will be reduced from the corresponding equation. The results of the weak exogeneity test are given in Table 4. According to the results of the weak exogeneity test, LNTUFE and LNKREDİ variables are endogenous, while LNUSD and LNOFF variables are exogenous.

**Table 4: Weak Exogeneity Test Results**

| Variables      | Null Hypothesis                     | LR (rank=4)     | Prob.           |
|----------------|-------------------------------------|-----------------|-----------------|
| <b>LNTUFE</b>  | <b><math>H_0: a_{11} = 0</math></b> | 16.92329        | 0.000039        |
| <b>LNKREDİ</b> | <b><math>H_0: a_{21} = 0</math></b> | 5.189135        | 0.022729        |
| <b>LNUSD</b>   | <b><math>H_0: a_{31} = 0</math></b> | <b>3.721256</b> | <b>0.053724</b> |
| <b>LNOFF</b>   | <b><math>H_0: a_{41} = 0</math></b> | <b>0.012666</b> | <b>0.910391</b> |

\* Significant at the 5 % level.

LNTUFE model was established to find the effects of intermediate targets on price stability. The findings of the model are given in Table 5:

**Table 5: Normalized Cointegrating Coefficients (Long-Run Elasticity)**

|                         | TUFE        | KREDİ      | USD        | OFF       | C         |
|-------------------------|-------------|------------|------------|-----------|-----------|
|                         | TUFE MODELİ |            |            |           |           |
| Normalized Coefficients | 1.0000      | -0.340961* | -0.142446* | -0.010943 | 1.871182* |
| Standard Error          |             | (0.04437)  | (0.07074)  | (0.03524) | (0.88671) |

\* Significant at the 5 % level.

$$LNUFE = C + 0.34LNKREDİ + 0.14LNUSD$$

According to the findings, while credit supply and USD exchange rate affect the general level of prices, the average funding rate doesn't affect price level. Expansion of credit supply stimulates domestic demand by leading rise in consumption and investment expenditures. A 10% increase in KREDİ leads to a 3.4% increase in TUFE. Rise in USD exchange rate, increases the general level of prices by increasing the costs of imported goods. A 10% increase in USD leads to 1.4% increase in TUFE. Let's give an example to illustrate the situation better. In an economy where the increase in credit supply is 20%, and the increase in USD exchange rate is 20%; the expected inflation rate is 9.6%. KREDİ and USD variables are both statistically and theoretically significant. In addition, changes in the general level of prices cause credit supply. There is a mutual causality between the inflation rate and credit supply.

**Table 6: Vector Error-Correction Model Prediction Results: Vecm (4)**

|                   | TUFE      | KREDİ      | USD       | OFF       |
|-------------------|-----------|------------|-----------|-----------|
| VECM Coefficients | 0.040444* | -0.046057* | -0.068093 | -0.047530 |
| Standard Error    | (0.01602) | (0.00895)  | (0.03530) | (0.41642) |

\* Significant at the 5 % level.

In the vector error correction model, it is proved that shocks that can occur in the long-run equilibrium can be corrected. The coefficients in the error correction model were negative and statistically significant as expected. These coefficients indicate the rate at which the short-run deviations resulting from the non-stationary series are adjusted in the next period. The short-run imbalance that occurs in TUFE is adjusted approximately in twenty five months; the short-run imbalance that occurs in KREDİ is adjusted in twenty five months to the long-run equilibrium level.

**Table 7: Granger Causality Test Results:**

|                               | KREDİ     | USD       | OFF       |
|-------------------------------|-----------|-----------|-----------|
| Dependent variable: D(LNTUFE) |           |           |           |
| Chi-sq                        | 13.01693* | 25.49425* | 10.64606* |
| Prob.                         | 0.0112    | 0.0000    | 0.0308    |

\* Significant at the 5 % level.

Granger causality test was applied to find the short term causality relationship. According to the test, credit supply, USD exchange rate and average funding rate affect general level of prices in the short term.

#### 4.2. Model 2 – The Effects of Policy Instruments on Intermediate Targets

The VAR model was estimated, and the values of the lag length criteria were found. According to LR and FPE criteria, the appropriate model is VAR (3) and the appropriate error correction model is VECM (2). The results of the information criteria are shown in Table 8.

**Table 8: Appropriate Lag Selection for Var Model**

| Lag | LogL     | LR        | FPE       | AIC        | SC         | HQ         |
|-----|----------|-----------|-----------|------------|------------|------------|
| 0   | 238.5665 | NA        | 8.86e-11  | -6.120172  | -5.936167  | -6.046635  |
| 1   | 831.4110 | 1076.481  | 3.84e-17  | -20.77397  | -19.48594* | -20.25921* |
| 2   | 879.5707 | 79.84384  | 2.84e-17  | -21.09397  | -18.70190  | -20.13798  |
| 3   | 928.0595 | 72.73312* | 2.14e-17* | -21.42262  | -17.92652  | -20.02541  |
| 4   | 965.4443 | 50.17436  | 2.25e-17  | -21.45906* | -16.85893  | -19.62063  |
| 5   | 1001.234 | 42.38234  | 2.63e-17  | -21.45352  | -15.74936  | -19.17386  |
| 6   | 1028.490 | 27.97311  | 4.20e-17  | -21.22341  | -14.41522  | -18.50253  |

\* shows appropriate lag length

It is determined that the appropriate model is Model 2 and the rank of the  $\Pi$  matrix is equal to two. In model 2, there is no trend in the long-run cointegration model; there are no intercept and trend in the short-run VECM model. The rank of the  $\Pi$  matrix is calculated by the  $\lambda_{max}$  and  $\lambda_{trace}$  statistics in the Model 2 frame and the results are given in Table 9 below.

**Table 9: Johansen (1988, 1995) Cointegration Test Results**

| $\lambda_{trace}$ statistics   |                            |                   |                    |
|--------------------------------|----------------------------|-------------------|--------------------|
| Hypotheses                     | Eigenvalue ( $\lambda_i$ ) | $\lambda_{trace}$ | Critical Value % 5 |
| $H_0: r = 0, H_1: r = 1$       | 0.568479                   | <b>162.7678</b>   | 0.0000             |
| $H_0: r \leq 1, H_1: r = 2$    | 0.428306                   | <b>96.37317</b>   | 0.0008             |
| $H_0: r \leq 2, H_1: r = 3$    | 0.297820                   | 52.20024          | 0.0728             |
| $H_0: r \leq 3, H_1: r = 4$    | 0.153861                   | 24.26861          | 0.4456             |
| $\lambda_{max}$ statistics     |                            |                   |                    |
| Hypotheses                     | Eigenvalue ( $\lambda_i$ ) | $\lambda_{max}$   | Critical Value % 5 |
| $H_0: r = 0, H_1: r \geq 1$    | 0.568479                   | <b>66.39467</b>   | 40.95680           |
| $H_0: r \leq 1, H_1: r \geq 2$ | 0.428306                   | <b>44.17294</b>   | 34.80587           |
| $H_0: r \leq 2, H_1: r \geq 3$ | 0.297820                   | 27.93162          | 28.58808           |
| $H_0: r \leq 3, H_1: r \geq 4$ | 0.153861                   | 13.19863          | 22.29962           |

\* Significant at the 5 % level.

The weak exogeneity test was applied. The results of the weak exogeneity test are given in Table 10. According to the test, LNKREDİ and LNZKO variables are endogenous; LNUSD, LNOFF, LNREPO and LNGFARK variables are exogenous. For this reason, only the KREDİ model will be set up.

**Table 10: Weak Exogeneity Test Results**

| Variables | Null Hypothesis                    | LR (rank=2)     | Prob.           |
|-----------|------------------------------------|-----------------|-----------------|
| LNKREDİ   | $H_0: a_{11} = 0, H_0: a_{12} = 0$ | 24.46891        | 0.000005        |
| LNUSD     | $H_0: a_{21} = 0, H_0: a_{22} = 0$ | <b>5.405076</b> | <b>0.067035</b> |
| LNOFF     | $H_0: a_{31} = 0, H_0: a_{32} = 0$ | <b>1.413746</b> | <b>0.493184</b> |
| LNREPO    | $H_0: a_{41} = 0, H_0: a_{42} = 0$ | <b>0.504597</b> | <b>0.777013</b> |
| LNGFARK   | $H_0: a_{51} = 0, H_0: a_{52} = 0$ | <b>3.208764</b> | <b>0.201014</b> |
| LNZKO     | $H_0: a_{61} = 0, H_0: a_{62} = 0$ | 23.91185        | 0.000006        |

\* Significant at the 5 % level.

The findings of KREDİ model are given in Table 11.

**Table 11: Normalized Cointegrating Coefficients (Long-Run Elasticity)**

|                         | KREDİ       | USD    | OFF       | REPO      | GFARK     | ZKO       |
|-------------------------|-------------|--------|-----------|-----------|-----------|-----------|
|                         | KREDİ MODEL |        |           |           |           |           |
| Normalized Coefficients | 1.0000      | 0.0000 | -0.470163 | 0.454388  | 0.294745* | 2.454170  |
| Standard Error          |             |        | (0.32777) | (0.33970) | (0.11205) | (0.55094) |

\* Significant at the 5 % level.

LNKREDİ = C - 0.29LNGFARK - 2.45LNZKO

According to the findings, while the required reserve ratio and interest corridor affect credit supply; average funding rate and policy interest rate doesn't affect credit supply. Rise in a reserve required ratio, contract amount of credits that can be given. A 10% rise in ZKO leads to a 25% contraction in KREDI. In addition, broadening interest corridor increases volatility and uncertainty in interest rates, leading to a contraction in credit supply. A 10% increase in GFARK leads to a 3% contraction in KREDI. Let's give an example to illustrate the situation better. In an economy where the rise in the reserve required ratio is from 5% to 5.5%, contracts credit supply by 25%. Modifying of range of corridor from 6-8% to 4-8%, contracts credit supply by 29%. ZKO and GFARK variables are both statistically and theoretically significant. In addition the USD model is not established, due to this variable is exogenous. In the long run, policy instruments do not have an impact on the USD exchange rate.

**Table 12: Vector Error-Correction Model Prediction Results: Vecm (2)**

|                | KREDI     | USD       | OFF       | REPO      | GFARK     | ZKO        |
|----------------|-----------|-----------|-----------|-----------|-----------|------------|
| VECM           |           |           |           |           |           |            |
| Coefficients   | 0.041216* | -0.029659 | -0.029486 | -0.058673 | -0.089767 | -0.167059* |
| Standard Error | (0.00917) | (0.02160) | (0.08001) | (0.07081) | (0.11619) | (0.02481)  |

\* Significant at the 5 % level.

The coefficients in the error correction model were negative and statistically significant as expected. These coefficients indicate the rate at which the short-run deviations resulting from the non-stationary series are adjusted in the next period. The short-run imbalance that occurs in KREDI is adjusted approximately in twenty four months; the short-run imbalance that occurs in ZKO is adjusted in six months to the long-run equilibrium level.

Granger causality test was applied to find the short term causality relationship. According to test, reserve required ratio causes changes in credit supply, and average funding rate causes changes in USD exchange rate in the short term. The findings are given in Table 13.

**Table 13: Granger Causality Test Results:**

|                                | KREDI    | USD      | OFF       | REPO     | GFARK     | ZKO       |
|--------------------------------|----------|----------|-----------|----------|-----------|-----------|
| Dependent variable: D(LNKREDI) |          |          |           |          |           |           |
| Chi-sq                         |          | 2.231547 | 4.701622  | 3.193872 | 5.942132* | 19.00958* |
| Prob.                          |          | 0.3277   | 0.0953    | 0.2025   | 0.0512    | 0.0001    |
| Dependent variable: D(LNUSD)   |          |          |           |          |           |           |
| Chi-sq                         | 2.111280 |          | 9.178997* | 2.223339 | 1.872301  | 5.336628  |
| Prob.                          | 0.3480   |          | 0.0102    | 0.3290   | 0.3921    | 0.0694    |

\* Significant at the 5 % level.

## 5. CONCLUSION

The CBRT announced in April 2010 that included financial stability in its target function; and in November 2010 started implementing modified monetary policy strategy with new monetary policy tools. In this study, the effectiveness of modified monetary policy was questioned. Thus, primarily the impacts of intermediate targets on price stability, then the impacts of policy instruments on intermediate targets have been investigated. . As a research method, the Johansen cointegration test and VECM are used to show long-run relationships and causality between variables and Granger causality test is used to examine short-run causality between the variables. According to findings, in the long run, while credit supply and USD exchange rate affect price level, the average funding rate does not affect the general level of prices. Expansion of credit supply, stimulates domestic demand by leading rise in consumption and investment expenditures. Rise in USD exchange rate, increases the general level of prices by increasing the costs of imported goods. A 10% increase in KREDI leads to a 3.4% increase in TUF. A 10% increase in USD exchange rate leads to 1.4% increase in TUF. Moreover, credit supply, USD exchange rate and average funding rate affect TUF in the short run.

According to findings, in the long run, the required reserve ratio and interest corridor affect credit supply; while the average funding rate and policy interest rate does not affect credit supply. Rise in a reserve required ratio, contracts amount credits that can be given by cost and liquidity risk channel. A 10% rise in ZKO leads to a 25% contraction in KREDI. In addition, broadening interest corridor increases volatility and uncertainty in interest rates, leading to a contraction in credit supply. A 10% increase in GFARK leads to a 3% contraction in KREDI. Moreover, in the long run, policy instruments do not

have an impact on the USD exchange rate. Reserve required ratio causes changes in credit supply, and average funding rate causes changes in USD exchange rate in the short term.

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## NONLINEAR EQUILIBRIUM RELATIONSHIP BETWEEN INFLATION AND EMPLOYMENT: EVIDENCE FROM CÔTE D'IVOIRE

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**Coffie Francis José N'Guessan**

Felix Houphouët-Boigny University, CIRES , 08 BP 1295 Abidjan 08, Côte d'Ivoire.

[coffiejose@cires-ci.com](mailto:coffiejose@cires-ci.com), ORCID: 0000-0002-4484-6484

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### ABSTRACT

**Purpose-** The main objective of this paper is to test the existence of a stable long-run relationship between price level and employment for an African country.

**Methodology-** This paper employs two types of co-integration and error correction methodologies: the Engel-Granger cointegration model which assumes symmetric adjustment toward equilibrium and a Threshold co-integration approach that considers asymmetric adjustment toward equilibrium. Before making cointegration analysis we apply unit root test to check for the stationarity of the series.

**Findings-** We found evidence of a stable long-run relationship between price level and employment in Côte d'Ivoire and a positive relationship between the two variables. However, the adjustment towards the equilibrium is asymmetric since positive shocks are absorbed more rapidly than negative ones. Moreover, there was no causality between the two variables in the short run.

**Conclusion-** The results indicate that in Côte d'Ivoire, inflation stability may be incompatible with employment maximization. So to reduce unemployment rate, it is necessary to accept a certain level of inflation rate.

**Keywords:** Phillips curve, inflation, employment, symmetric co-integration, threshold co-integration

**JEL Codes:** C32, C51, E31

### 1. INTRODUCTION

Since the seminal paper of Phillips (1958), many studies have been undertaken to investigate the relationship between unemployment and inflation. Phillips found a negative relationship between the rate of change in nominal wages and the rate of unemployment. However, this relationship was popularized by Samuelson and Solow (1960) in regards to inflation rate and unemployment. The Phillips relationship has led in considering a trade-off between unemployment and inflation.

This relationship has been used to forecast inflation rate. The Phillips Curve has been studied by many authors for developed countries. Due to lack of data, there are not enough studies for African countries. Yet, investigating this relationship for African countries where employment is majorly informal may give additional information for a better understanding of the link between the market of goods and services and that of labor. We are interested in Côte d'Ivoire; the economic leader of the West African Economic Monetary Union (WAEMU) countries. In this country, the WAEMU criteria convergence among which the inflation rate which should be lower than 3% is a main objective of the Government. But, for the Government, youth unemployment reduction is also a very important goal. So it is necessary to inform whether employment is to be lost if we want to stabilize or reduce inflation?

The contribution of this paper is in twofold. First, we document the studies about the relationship between inflation and labor market indicators in African countries by studying the relationship between inflation proxied by the Consumer Price Index and employment. Then, we try to evaluate the stability of the relationship by taking into account the possibility of frictions relating to inflation and employment. Also, we compare a Threshold co-integration model and a Symmetric co-

integration one. Our results indicate that the Symmetric approach fails to detect co-integration relationship, while the Threshold technique shows a stable equilibrium relationship between Consumer Price Index and employment.

The rest of the paper is as follows: Section 2 gives a brief literature review of the relationship between labor market indicators and inflation, Section 3 describes the methodology. Section 4 presents the data, Section 5 discusses the results, and Section 6 concludes the paper.

## **2. LITERATURE REVIEW**

The studies about the relationship between unemployment (or employment) and inflation gave mixed conclusions. Some validated the Phillips's relationship while others disputed it.

Islam et al. (2011) using data from North Cyprus over the period 1978-2007 conclude that there is a stable relationship between unemployment and inflation in the long-run. Also, there is a trade-off between unemployment and inflation in the short and long-run. Tang and Lean (2007) investigate the Phillips curve in Malaysia for the period 1971-2004. They used an ARDL model and found a trade-off between inflation and unemployment both in the short and long-run.

Hasanov et al. (2010) for Turkey, over the period 1980-2008, found that the Phillips relationship is unstable over time. Ormerod et al. (2013) also showed that the Phillips curve is unstable over time. Thus, many papers have discussed the linearity of this relationship. Gordon (1997) and Aguiar and Martins (2005) found linearity in the Phillips curve. Eliason (2001) studied the Phillips curve for three countries: Australia, Sweden, and the United States. This was done using a smooth transition regression model. She suggested non-linearity in the Phillips curve for Australia and Sweden, but linearity for the United States. Kumar and Orrenius (2015) showed evidence of non-linearity in the Phillips Curve. Hasanov et al. (2010) used a time varying smooth transition regression model. Also, they found that the Phillips relationship is nonlinear. Ormerod et al. (2013) also showed non linearity. It was also corroborated by Barnes and Olivei (2003) and Peach et al. (2011). Barnes and Olivei (2013) found an unemployment threshold interval within which unemployment has no influence on inflation, and outside which there is a significant relationship between unemployment and inflation. Peach et al. (2011) opines that when the unemployment rate is higher than 1.56%, it points to the natural rate of unemployment. The inverse relationship between the unemployment rate and the inflation rate was confirmed.

Many studies about this relationship have been undertaken in developed countries. For African countries, they are not enough. Among the rare studies in Africa, we can cite that of Umaru and Zubairu (2012) and Taiwo and Folorunso (2013) for Nigeria; Vermeulen (2017), Hodge (2002) and Burger and Marinkov (2006) for South Africa. Umaru and Zubairu, over the period 1977-2009, found no relationship between inflation and unemployment in the short- run, but a relationship in the long-run. For the same country over the period 1970-2010, Taiwo and Folorunso found a negative relationship between inflation rate and unemployment rate in the short run and a positive relationship in the long run. Burger and Marinkov (2006) in South Africa showed evidence of a negative relationship between inflation and employment in the long run, and there was no significant relationship in the short run. Hodge (2002), over the period 1983-1998, found no relationship between inflation and employment or unemployment. Vermeulen (2017) found a positive short-run relationship between inflation and employment growth, while there was a significant negative relationship in the long-run.

These mixed results may be due to the model used. Umaru and Zubairu (2012) used Johansen Co-integration analysis to test for a stable long-run relationship, while Taiwo and Folorunso's approach was an ARDL model. Vermeulen used Engel-Granger and ARDL approaches. These models are symmetric co-integration methods. The use of a symmetric co-integration approach means that making the assumption of no asymmetries in the long run adjustment mechanism. If this assumption does not hold in the reality, it can give a misleading conclusion. It is thus necessary to use a more general approach which can take into account the problem of asymmetries.

## **3. DATA AND METHODOLOGY**

The data used in the study are the consumer price index, a measure of the price level and number of people employed over the period 1960-2014. This time span is due to data availability. The data on consumer price index are taken from the World Bank data base (World Development Indicator 2016) and the employment level was obtained from the Penn world table 9.0 (Feenstra et al., 2015). Table 1 gives the descriptive statistics of these variables in their logarithm form.

**Table 1: Descriptive Statistics**

| Data | Definition                                  | Source  | Mean  | Standard Deviation |
|------|---|---|-------|--------------------|
| InPt | Logarithm of Consumer Price Index           | World Development Indicator 2016 (World Bank) | 3.396 | 1.034              |
| InLt | Logarithm of the number of persons employed | Penn World Table 9.0 (Feenstra et al., 2015)  | 1.286 | 0.555              |
| N    | 55  |   |       |                    |

The Phillips relationship is a link between an indicator of inflation and that of aggregate demand which can be output gap and unemployment rate or employment growth. Following Tang and Lean (2007), we choose log of Consumer Price Index as proxy for inflation. Also, due to lack of long time series on unemployment rate, we use the level of employment as an aggregate demand indicator.

Our purpose is to estimate the following relationship:

$$\ln P_t = \alpha + \beta \ln L_t + \gamma T + \mu_t \quad (1)$$

where  $\ln P_t$  is the natural logarithm of Consumer Price Index (CPI) and  $\ln L_t$  is the logarithm of the level of employment,  $T$  is a time trend,  $\alpha$ ,  $\beta$  and  $\gamma$  are the parameters to estimate, and  $\mu_t$  is the error term.

Furthermore, we hypothesize that an increase in labor demand induces an increase in the wage level that is transmitted by firms to the prices of goods.

The first step of our estimation methodology is to use the traditional Engel and Granger (1987) procedure by first estimating via Ordinary Least Squares the long-run equilibrium equation (1). The second step involves using the residuals in (1) to estimate  $\rho$  in the following equation:

$$\Delta \hat{\mu}_t = \rho \hat{\mu}_{t-1} + \varepsilon_t \quad (2)$$

Where  $\varepsilon_t$  is a white-noise disturbance. The co-integration implies that  $\mu_t$  is stationary.

However, this standard co-integration test is unstipulated if the adjustment process is asymmetric. Therefore, Enders and Granger (1998) and Enders and Siklos (2001) suggested the Threshold Autoregressive (TAR) model and the Momentum Threshold Autoregressive model (MTAR). We opt for the MTAR model because we are interested in how the disequilibrium is resorbed when the inflation rate (the growth of price) deviates from its long-run term. So, the second step involves using the residuals in (1) to estimate the following Momentum Threshold Autoregressive model (MTAR):

$$\Delta \hat{\mu}_t = I_t \rho_1 \hat{\mu}_{t-1} + (1 - I_t) \rho_2 \hat{\mu}_{t-1} + \varepsilon_t \quad (3)$$

Where  $I_t$  is the indicator function such that:

$$I_t = \begin{cases} 1 & \text{if } \Delta \hat{\mu}_{t-1} \geq \tau \\ 0 & \text{if } \Delta \hat{\mu}_{t-1} < \tau \end{cases} \quad (4)$$

Where  $\tau$  is the threshold parameter.

If the errors  $\mu_t$  in equation 3 are serially correlated, it is possible to use an augmented threshold model for the residuals. In this circumstance, equation 3 is replaced by:

$$\Delta \hat{\mu}_t = I_t \rho_1 \hat{\mu}_{t-1} + (1 - I_t) \rho_2 \hat{\mu}_{t-1} + \sum_{i=1}^p \gamma_i \Delta \hat{\mu}_{t-i} + \varepsilon_t \quad (5)$$

Some studies may use a threshold value of zero. However, since there is no reason to expect the threshold to be zero, it is necessary to estimate the value of  $\tau$ . This is done by applying the procedure proposed by Chan (1993) which is to search over the potential threshold values such as to find the one which minimizes the sum of squared errors from the fitted model. Specifically, the estimated residuals from 1 are sorted in ascending order. This was done with the largest and

smallest 15% of the values discarded. For each of the remaining values, equation (3) is estimated, and the threshold value is selected as the one which minimizes the sum of squared residuals.

The adjustment is modeled by  $\rho_1 \hat{\mu}_{t-1}$  if  $\Delta \hat{\mu}_{t-1}$  is above the threshold, and by  $\rho_2 \hat{\mu}_{t-1}$  if  $\Delta \hat{\mu}_{t-1}$  is below the threshold. Petrucelli and Wooldford (1984) show that the necessary and sufficient conditions for stationarity of  $\mu_t$  is:  $-2 < \rho_1, \rho_2 < 0$  and  $(1 + \rho_1) \cdot (1 + \rho_2) < 1$ .

To check for asymmetric co-integration, we use the Enders and Siklos (2001) test called the  $\Phi$  statistics. The  $\Phi$  statistic is testing a joint procedure with the null hypothesis of no co-integration  $H_0: \rho_1 = \rho_2 = 0$ . If the null hypothesis of no co-integration is rejected, we test for the null hypothesis of symmetric adjustment,  $H_0: \rho_1 = \rho_2$ , by a standard F-statistic.

The error correction models are estimated as follows:

$$\Delta \ln P_t = \alpha + \sum_{i=1}^p \beta_i \Delta \ln P_{t-i} + \sum_{j=1}^q \delta_j \Delta \ln L_{t-j} + \rho_{11} I_t \mu_{t-1} + \rho_{12} (1 - I_t) \mu_{t-1} + v_t \tag{6}$$

$$\Delta \ln L_t = \lambda + \sum_{i=1}^p \Gamma_i \Delta \ln P_{t-i} + \sum_{j=1}^q \Omega_j \Delta \ln L_{t-j} + \rho_{21} I_t \mu_{t-1} + \rho_{22} (1 - I_t) \mu_{t-1} + w_t \tag{7}$$

#### 4. FINDINGS AND DISCUSSIONS

Since it is important to check for the stochastic properties of the series before implementing co-integration analysis, we apply the Elliot-Rosenberg-Stock (1996) unit-root test which modifies the Dickey-Fuller test by using generalized least squares. This test has good performances with small samples. The results are shown in Table 2. We can see that the level of employment and the price level are not stationary, but I (1). Thus, this conclusion allows us to now investigate the co-integration analysis.

**Table 2: Dickey-Fuller GLS Unit-Root Test**

|                 | lnPt     |        | ΔlnPt    |        | lnLt     |        | ΔlnLt    |        |
|-----------------|----------|--------|----------|--------|----------|--------|----------|--------|
|                 | No Trend | Trend  | No Trend | Trend  | No Trend | Trend  | No Trend | Trend  |
| $\tau_{DF-GLS}$ | -0.314   | -1.203 | -3.708   | -2.903 | -0.076   | -1.764 | -1.562   | -3.227 |
| $p$             | 3        | 1      | 0        | 9      | 7        | 2      | 2        | 5      |
| Critical values |          |        |          |        |          |        |          |        |
| 1%              | -2.611   | -3.759 | -2.609   | -3.770 | -2.615   | -3.762 | -2.611   | -3.770 |
| 5%              | -1.947   | -3.180 | -1.947   | -3.190 | -1.948   | -3.184 | -1.947   | -3.190 |
| 10%             | -1.613   | -2.881 | -1.613   | -2.890 | -1.612   | -2.884 | -1.613   | -2.890 |

Note: Lag length obtained by Ng-perron t-sequential method.  $\Delta$  stands for the first difference of the variable

Table 3 shows the estimation of the coefficients of the long-run relationship. The long run employment coefficient is positive and significant at 1%. A growth in employment leads to an increase in the price level determined by the Consumer Price Index. The long run coefficient is 3.336. When employment increases by 1%, the price level grows by 3.336%.

Table 3 also shows the results of the co-integrations analyses. To eliminate serial correlation in the residuals, we used the sequential t-test procedure which consists of selecting the lagged error that is significant. We also refer to the Ljung-Box autocorrelation statistics. These statistics indicate that the augmented residual lag of order one is to be used. The co-integration results show that the Engel-Granger test fails to reject the hypothesis of no co-integration between the price level and employment. This is because the mac-kinnon p-value is higher than 10%. So, following the symmetric co-integration approach, there is no stable relationship between inflation and employment in the long-run. Consequently, we turn to the M-TAR model to investigate whether there is an asymmetry in the equilibrium adjustment mechanism. The estimated consistent threshold value following the Chan's method is found to be 0.01949. Implying that:

$$I_t = \begin{cases} 1 & \text{if } \Delta \hat{\mu}_{t-1} \geq 0.01949 \\ 0 & \text{if } \Delta \hat{\mu}_{t-1} < 0.01949 \end{cases}$$

Since the Enders and Siklos table does not provide critical values for a long run equation with a trend, the critical values of the  $\Phi$  statistic have been generated for a long run equation with a trend and a sample size of 55. The simulation was performed 30,000 times using  $N(0,1)$  serially uncorrelated pseudo random-numbers for thresholds values equal to 0.000 and 0.01949 respectively.

The co-integration analysis is thus implemented with these critical values. The results indicate the M-TAR model with a threshold value of zero, fails to reject the null hypothesis of no co-integration relationship between CPI and employment. The  $\Phi$  statistic is 6,747 and lower than the critical values. However, with the consistent threshold value of 0.01949, the  $\Phi$  statistic is 7.861 which is higher than the critical value at 10% significance level. In addition, the standard F-statistic is also significant at 10%. With the consistent Threshold value, the null hypothesis of no co-integration is thus rejected in favor of an asymmetric co-integration relationship between the price level and the level of employment. In addition, we can notice that the estimate of  $\rho_1$  is -0.291 and that of  $\rho_2$  is -0.096. This indicates faster adjustment when the disequilibrium is due to increase in consumer price or decrease in employment (so that  $\Delta\hat{\mu}_{t-1} \geq 0.01949$ ).

**Table 3: Symmetric and Asymmetric Co-integration Results**

| Variables   | Engel-Granger       | M-TAR               |                     |
|---|---------------------|---------------------|---------------------|
|   |                     | $\tau = 0$          | $\tau = 0.01949$    |
| $I_t\mu_{t-1}$  | -0.175<br>(-3.390)  | -0.241<br>(-3.390)  | -0.291<br>(-3.687)  |
| $(1 - I_t)\mu_{t-1}$  | -                   | -0.104<br>(-1.413)  | -0.096<br>(-1.45)   |
| $\Delta u_{t-1}$  | 0.412<br>(3.480)*** | 0.410<br>(3.490)*** | 0.410<br>(3.554)*** |
| Ljung-Box Q Statistics  | Prob.               | Prob.               | Prob.               |
| Q(1)  | 0.781               | 0.733               | 0.733               |
| Q(4)  | 0.803               | 0.946               | 0.946               |
| Q(8)  | 0.912               | 0.878               | 0.878               |
| Mc Kinnon P-value   | 0.158               | -                   | -                   |
| $F(\rho_1 = \rho_2 = 0)$  | -                   | 6.740               | 7.861*              |
| Generated $\Phi$ Critical values  |                     |                     |                     |
| 1%  |                     | 10.983              | 10.940              |
| 5%  |                     | 8.212               | 8.183               |
| 10%   |                     | 6.980               | 6.983               |
| Standard F test : $F(\rho_1 = \rho_2)$  | -                   | 1.806               | 3.635*              |
| Long – run equation : $\ln P_t = 0.559 + 3.336\ln L_t - 0.052T$<br>(5.108)*** (10.269)*** (-4.609)*** |                     |                     |                     |

N.B : t-statistics in parenthesis ; \*\*\*,indicates significant at 1% ; \*,indicates significant at 10%.

The error correction model developed thereafter is presented below. The results confirm the co-integration relationship. In the price level equation, the positive discrepancy error correction term is -0.302 and that of negative discrepancy is -0.099. However the positive error correction term is significant at 1 percent level, while that of negative is not significant. This indicates that the price level adjusts to deviations from long-run equilibrium only when  $\Delta\hat{\mu}_{t-1} \geq 0.01949$ . Moreover, in the employment equation, all the error correction terms are insignificant. So, employment is weakly exogenous with respect to the long-run equilibrium. Besides, employment does not granger-cause the price level in the short run and vice versa. But the price level and the employment level are determined by their past values. So there exists a long-run causality between employment and Consumer Price index but no short-run causality.

$$\Delta \ln P_t = -0.015 + 0.436 \Delta \ln p_{t-1} + 1.336 \Delta \ln L_{t-1} - 0.302 I_t \hat{u}_{t-1} - 0.099 (1 - I_t) \hat{u}_{t-1}$$

(-0.585) (3.843)\*\*\* (1.650) (-3.903)\*\*\* (-1.545)

$$\Delta \ln L_t = 0.004 + 0.011 \Delta \ln p_{t-1} + 0.860 \Delta \ln L_{t-1} - 0.004 I_t \hat{u}_{t-1} - 0.0007 (1 - I_t) \hat{u}_{t-1}$$

(1.710)\* (1.107) (12.167)\*\*\* (-0.586) (-0.126)

Note: Lag length selected by AIC criterion, t-statistics in parenthesis. \*\*\*, indicates coefficient significant at 1%.

These findings contradict the results of Vermeulen (2017), Hodge (2002) and Burger and Marinkov (2006). But support that of Umaru and Zubairu who found a long-run relationship between inflation and unemployment but no short-run relationship.

## 5. CONCLUSION

The main objective of this paper was to test for the existence of a stable relationship between inflation as measured by Consumer Price Index and the level of employment. We found that with co-integration symmetric approach, the hypothesis of no stable relationship cannot be rejected. Conversely, with the asymmetric co-integration approach, this hypothesis is rejected. In conclusion, there exists a stable long-run relationship between inflation and employment in Côte d'Ivoire, and the relationship is positive. Employment growth induces increasing price level in the long-run. However, there is no causality between the two variables in the short run.

The results indicate that in Côte d'Ivoire, inflation stability may be incompatible with employment maximization. So to reduce unemployment rate, it is necessary to accept a certain level of inflation rate. Our findings confirm the conclusions of Umaru and Zubairu (2012) but suggest that analysis on estimating the stability of the Phillips Curve should take into account asymmetries in the long-run adjustments mechanisms.

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## BUDGET DEFICIT AND INFLATION IN TANZANIA: ARDL BOUND TEST APPROACH

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Godwin Aloyce Myovella<sup>1</sup>, Zakayo Samson Kisava<sup>2</sup>

<sup>1</sup>University of Dodoma , Department of Economics and Statistics , Dodoma, Tanzania.

[godwin.myovella@udom.ac.tz](mailto:godwin.myovella@udom.ac.tz), ORCID: 0000-0002-0999-3585

<sup>2</sup>Dokuz Eylul University, Graduate School of Social Science, Izmir, Turkey.

[zakayo.kisava@ogr.deu.edu.tr](mailto:zakayo.kisava@ogr.deu.edu.tr), ORCID: 0000-0002-5355-9743

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### ABSTRACT

**Purpose** - The study aimed at analyzing the existence of the long run relationship between the government budget deficits and inflation in Tanzania.

**Methodology** - We used annual time series data for the budget deficit and inflation from 1970 to 2015 sourced from International Monetary Fund (IMF) database. Autoregressive Distributed Lag (ARDL) bound test approach Pesaran and Shin (2001) was used.

**Findings**- Our results revealed the positive relationship and existence of the long-run relationship between budget deficits and inflation. The coefficient of the speed of adjustment is significant at 5 percent; the whole system can get back to the equilibrium at the speed of adjustment of 72% towards a long run.

**Conclusion**- We suggest the government to adopt measures that would reduce the large budget deficit that has been growing over time. This would be one of the necessary conditions in reducing inflation over time and thereby the high economic growth witnessed can be sustainable.

**Keywords:** ARDL model, budget deficit, Inflation, long run, Tanzania

**JEL Codes:** M41, L10

### 1. INTRODUCTION

Budget deficits have been cited in literature to be a problem facing many developed as well as least developed countries over time. It is mentioned that in developing countries it is common to comprehend both high budget deficits as well as high inflation; however, the link between the two is not obvious. High budget deficits may results in high inflation if monetized (Hamburger and Zwick 1981: viera, 2000). According to monetarist, inflation is purely a monetary phenomenon. Sometimes it has worried economists that budget deficits may also lead to inflation too. Policymakers give greater attention in controlling inflation through applying appropriate policies due to its distortive nature to the economy that does not need to be overemphasized here. On the other hand, deficits are not preferred because they are purported to cause a crowding out in investments and exports (Rose and Hakes 1995). That was also supported by Akcay et al (1996) who commented on the two possible channels through which deficits lead to higher inflation. In the first place, he asserted that the government borrowing requirement increases the net credit demand and drive up interest rates eventually it results in crowding out private investment. Secondly, is when the private sector purchases the securities and then the central bank attempts to limit any interest rate increase. Under both or any of these circumstances, deficits lead to greater money base growth that can ultimately create inflationary pressure. Many studies have been conducted in different countries on the relationship between budget deficits and inflation but the results are inconclusive. Therefore we see a need to specifically study the relationship between the two variables in the context of Tanzanian economy.



Tanzania is one of the least developed countries, despite its recent high growth rates of 7 percent has at times faced high rates of inflation especially in the early 1990's as well as high budget deficits (Sumaila and Larya, 2001; also Solomon and Wet, 2004). Moreover, the high budget deficits have been a problem of Tanzania just like many other least developed countries for a long time. According to the bank of Tanzania (BoT, 2017) and IMF, the external debt stock comprising of both public and private sectors amounted to USD 19,239.9 million at the end of September 2017 from a USD 18,651.1 million compared with the same month one year before. It has been mentioned that in the past ten years from 2007 there has been a bit by bit accretion from about 20 percent of GDP to 34.2 percent of GDP in 2017. Albeit high rates of the debts due to deficits, it has been argued that the debt burden, as well as the country's risk of distress, is low. This study aims at investigating whether the proposition of positive effect of budget deficits on inflation can be verified in the particular case of Tanzania. The study implores to differ with an earlier study that was done in Tanzania by Solomon and de wet in 2004, in two aspects; first the methodology used is more modern ARDL method developed by Shin and Pesaran, secondly, the study used data set which are up to the recent period. The rest of the paper is organized as follows; the first part of the work addresses the introduction of the topic, objective and the background, the second part covers the literature review of the work, third part analyzes the data sources and econometrics methodology, while the final part covers the conclusion of the work.

## **2. LITERATURE REVIEW**

According to Snowdon and vane, (2005) argued that budget deficits very much matter in the growth theories of countries in the sense that they reduce national savings. The impact of savings reduction is ultimately lowering the growth of the country. They further assert that due to deficits, which leads to large debts results into a burden by diverting private wealth that otherwise would be used in productive investments in capital that would raise wages of the future generations. So, for that matter, budget deficits have been drawing the attention of the economists and policy makers due to the striking impacts that may arise as a result. Classical, Keynesian, and monetarist tried to explain the relationship between budget deficits and inflation. The perspective of the classical school of thought on inflation was based on the quantity theory of money. They believed money supply was the sole reason for the general price levels and it has no impact on the real side of the economy. The monetarists, on the other hand, perceived inflation to be a result of the money supply. It is further argued that if monetary policy is complaisant to the budget deficit, the money supply will for a long period of time be on the rise. Due to this deficit financing will cause aggregate demand to rise and resulting in output rising above the natural level of output (Serban, 2002).

According to Keynes when there is the high stock of debts the society does not perceive an increase in tax to be the way to reduce the accumulated debt stock, so inflation may be used to close that gap through debt repayment with higher interest rates. When the monetized way is used in financing the budget deficit it results in an increase in aggregate demand, however, doesn't increase the supply of goods (Keynes, 1971). Empirically, many researchers and economists have worked on the relationship between these two macroeconomic variables we intend to revise briefly some of their works here. According to Solomon and de Wet (2004), who studied the coexistence of a relatively high inflation rate and high fiscal deficits for a prolonged period from 1967 to 2001 for the economy of Tanzania they established a causal link that runs from the budget deficit to the inflation rate. They used cointegration analysis over the period of study. In their study they concluded, "due to monetization of the budget deficit, significant inflationary effects are found due to increases in the budget deficit". Similar to the methodology used by Solomon and de Wet, Agha and Khan (2006) investigate the long-run association between fiscal indicators and inflation in Pakistan economy using data from 1973 to 2003. Their findings were different from those obtained by the former, so it was not in favor of the relationship between deficit and inflation. Viera, (2000) post-war annual data investigates the inflationary effect of central government deficits in a sample of six European Union members, namely Belgium, France, Germany, Italy, Netherlands and the UK. He employed bounds testing ARDL approach, to examine the existence of a long-run relationship, and the LA-VAR causality analysis, to confirm the direction of causality. The results were not supportive of the aforementioned hypothesis that deficits in the EU countries were inflationary. The results of Viera conformed the results of Burdekin and Wohar (1990) who conducted a similar analysis earlier on the relationship between budget deficits and money growth in eight developed countries including Canada, France, Italy, Japan, Switzerland, United Kingdom, United States and West Germany, in the period 1960-1985 using quarterly data. All these studies had a similar conclusion that the independence of the central banks from governments in these countries would be a reason for the weak relationship between budget deficit and inflation. Many more papers have had similar conclusions in the developed countries especially. To mention a few, for example, Barnhart and Darrat (1988) who did their study for OECD countries. Similar results of no support were found in the study using data from 32 countries by Abizadeh and Yousefi (1998). There has been an argument that, this phenomenon is observed much in the developing countries and poor countries possibly because there is no or very little autonomy in the central banks and the relative governments.

Muhammad et al (2016) used ARDL bound test approach to find out the link between budget deficit (fiscal imbalances) and price inflation using annual time series data from 1973 to 2014 in Pakistan. In their findings, they discovered that there is an association between budget deficit and inflation. On the other hand, Lin and Chu (2013) used the dynamic panel quintile regression (DPQR) model under the autoregressive distributional lag (ARDL) specification, and after tested the causality between budget deficits and inflation for 91 countries between 1960 and 2006. Their results show that the fiscal deficit had a strong impact on inflation particularly in high-inflation periods, whereas during periods of low inflation weak impact was observed.

**3. DATA AND METHODOLOGY**

This study used annual time series data for the budget deficit and inflation that were both sourced from International Monetary Fund (IMF). These datasets covered the period from 1970 to 2015 making a series of 45 years; this period was selected because of data series accessibility to the country as least developed. Autoregressive Distributed Lag (ARDL) bound test approach of Pesaran and Shin (1999) and Pesaran et al (2001) was applied to analyze the long run relationship between budget deficit and inflation in Tanzania for the period under study. This methodology is appropriate for testing long-run relationship because, firstly, it can be used with a mixture of I(0) and I(1) data series. Secondly, it involves just a single equation set up, making it simple to apply and interpret. Thirdly, it is possible to assign a different lag length to different variables as they enter the model. Equation can be specified as;

$$\Delta Y_t = \beta_0 + C_0t + \sum_{i=1}^q \zeta_i \Delta Y_{t-i} + \sum_{j=0}^p w_j \Delta x_{t-j} + \gamma_1 Y_{t-1} + \gamma_2 x_{t-1} + \epsilon_t \dots\dots\dots(1)$$

Whereby  $\beta_0$ ,  $C_0$  is the coefficient that represents the drift and trend respectively,  $\epsilon_t$  is the error term of the model.  $\zeta_i$  And  $w_j$  corresponds to short run while,  $\gamma_j, j = 1,2$  corresponds to a long run relationship between the variables.  $Y_t$  is the dependent variable (budget deficit) and  $x_t$  represents the independent variable in the model (inflation), moreover,  $p$  and  $q$  represent lags.

**4. FINDINGS AND DISCUSSIONS**

**4.1 Unit Root Test**

We used Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests below in order to check and make sure that none of our series is I (2). The table below shows the results of ADF and PP tests.

**Table 1: Unit Roots Test at Level and First Difference**

| Test     | ADF    |        |                  |        | PP     |        |                  |        |
|----------|--------|--------|------------------|--------|--------|--------|------------------|--------|
|          | Level  |        | First difference |        | Level  |        | First difference |        |
| Degree   | t-stat | Prob   | t-stat           | Prob   | t-stat | Prob   | t-stat           | Prob   |
| Variable |        |        |                  |        |        |        |                  |        |
| bd       | 2.0937 | 0.2481 | -9.9794          | 0.0000 | 2.2146 | 0.2041 | -9.7338          | 0.0000 |
| ifl      | 2.9618 | 1.0000 | -4.8058          | 0.0021 | 6.8734 | 1.0000 | -7.2875          | 0.0000 |

Note: Intercept and trend model with 5% significance level.

As the tests are presented, it shows that series was not stationary at level and we cannot reject the null hypothesis in favor of an alternative, hence integrated to first order.

**4.2. Lag Selection**

The ARDL approach lag selection is important because it determines the general picture of the model and results. To obtain the accurate optimal lag for the model, SIC and AIC criteria are suggested, however, SIC over AIC criteria provides a slightly better estimation to choose the model for small sample size Pesaran and Shin (1998). The optimal lag length can be determined through the common method of AIC (Akaike 1974) and the SIC Schwarz-Bayesian (Schwarz et al 1978). The equations below defines the criteria;

$$AIC = - 2\ln(LH) + 2k\dots\dots\dots(2)$$

$$SIC = - 2\ln(LH) + k\ln(n)\dots\dots\dots(3)$$

The variable n is the number of observations and k is the number of regression Parameters to be estimated. LH is the maximum likelihood of the model. It is believed that AIC criteria tend to overestimate the size of the lag to be included in

the model which is totally insignificant for small sample size, the larger the number of the lags it lowers the sample size included in the model. The idea does not guarantee the direct use of SIC criteria. But, for the purpose of obtaining accurate lags we use both AIC and SIC criteria to determine the number of lags to be used in the model, as the lowest AIC or SIC criteria the best the model. The table below shows the values of AIC and SIC criteria, and finally, AIC criteria were selected as a determinant of the model because it has the lower values.

**Table 2: Lag Selection Criterion**

| Criterion | Akaike info criterion (AIC) | Schwarz criterion (SIC) |
|-----------|-----------------------------|-------------------------|
| Lag 4     | 4.2689                      | 4.7286                  |
| Lag 6     | 3.9881                      | 4.6280                  |

#### 4.3. F-Bounds Test and Error Correction Modelling

To examine if a long-run relationship exists, an F-test is performed which included budget deficit as the dependent variable while inflation applied as the independent variable. Hence to analyze if the coefficients for the two periods lagged variables (inflation and budget deficit) are jointly zero. As seen in the table below F-Bounds Test hypothesis involves both upper and lower bounds critical values. The computed F-statistic is 7.7118 is significant at 5%, and the lower and upper bounds for the F-test statistic at 10%, 5%, and 1% significance levels are [4.04, 4.78], [4.94, 5.73], and [6.84, 7.84] respectively, so, exceed the critical value tabulated in Pesaran et al. (2001). Hence we reject the null hypothesis that concludes there is an existence of a long run relationship between two variables. (Duasa 2007). (Budget deficit and Inflation in Tanzania), the coefficient of the speed of adjustment is significant by -0.729 and the probability value is 0.042 significant at 5%. This means that the whole system can get back to the equilibrium at the speed of adjustment of 72% towards a long run.

**Table 3: F-Bounds Test Hypothesis**

| Test Statistic                  | Value     | df       | Probability |
|---------------------------------|-----------|----------|-------------|
| F-statistic                     | 7.711.860 | (2, 24)  | 0.0026      |
| Chi-square                      | 1.542.372 | 2        | 0.0004      |
| Null Hypothesis: C (14)=C(15)=0 |           |          |             |
| Null Hypothesis Summary:        |           |          |             |
| Normalized Restriction (= 0)    |           | Value    | Std. Err.   |
| C(14)                           |           | 0.137012 | 0.034931    |
| C(15)                           |           | 0.053607 | 0.019068    |

#### 4.4. Serial Correlation Tests

Breusch-Godfrey test (Godfrey 1978) was used to test the serial correlation of the series if different lags of the residuals are correlated. The hypothesis of this test is set as follows;

H0:  $\rho = 0$ , No serial correlation in the model

H1:  $\rho \neq 0$ , There is serial correlation in the model

Here we reject the null hypothesis in favor of alternative hypothesis; hence series are stationary from the serial correlation as seen in the table below.

**Table 4: Breusch-Godfrey Serial Correlation LM Test**

|               |          |                     |        |
|---------------|----------|---------------------|--------|
| F-statistic   | 0.681398 | Prob. F(2,22)       | 0.5163 |
| Obs*R-squared | 2.274944 | Prob. Chi-Square(2) | 0.3206 |

#### Q-statistic test

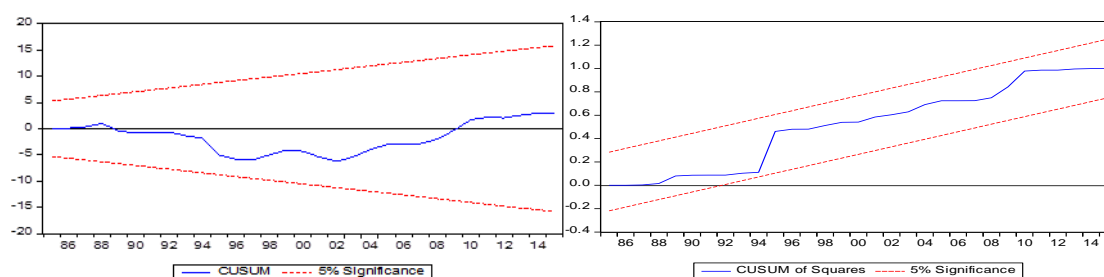
To verify the stationarity of the series, the Q-statistic test was applied to analyze the serial correction by observing the Probability values. All the P-value are greater and significant at 5%, this is evident that series are free from serial correlation.

**Table 5: Q-Statistic Probabilities Adjusted for 14 Dynamic Regressors**

| Autocorrelation | Partial Correlation | AC | PAC    | Q-Stat | Prob*  |       |
|-----------------|---------------------|----|--------|--------|--------|-------|
| . *   .         | . *   .             | 1  | -0.119 | -0.119 | 0.5953 | 0.440 |
| . *   .         | . *   .             | 2  | -0.088 | -0.104 | 0.9302 | 0.628 |
| . *   .         | . **   .            | 3  | -0.181 | -0.210 | 2.3863 | 0.496 |
| .   .           | . *   .             | 4  | -0.060 | -0.133 | 2.5488 | 0.636 |
| . **   .        | . **   .            | 5  | -0.223 | -0.324 | 4.8783 | 0.431 |
| .   .           | . **   .            | 6  | -0.031 | -0.244 | 4.9251 | 0.553 |
| .   *   .       | . *   .             | 7  | 0.077  | -0.156 | 5.2189 | 0.633 |
| .   **   .      | .   .               | 8  | 0.249  | 0.055  | 8.4201 | 0.394 |
| .   .           | .   .               | 9  | 0.022  | -0.033 | 8.4450 | 0.490 |

#### 4.5. Test for Stability

To analyze the long run and the short run relationship between budget deficit and inflation it is quite important to test for stability of the series. To assess the stability of the coefficients CUSUM and CUSUM of Squares tests are proposed by Brown et al. (1975) can be applied. The blue lines of both tests do not go beyond the limits of significance line at 5% that suggest that coefficients of the series are stable.



#### 5. CONCLUSION

The relationship between government budget deficits and inflation has been an issue of debate among economic policymakers in academic literature. Many kinds of literature as we have pointed out remain inconclusive and the empirical evidence has been different from one country to another depending on the regimes that the central banks are subordinated. This study aimed at studying if there exist a positive effect of the budget deficit to inflation in Tanzanian economy's context. The annual time series data from 1970 to 2015 were employed, also ARDL bound test approach was used. It was found that the computed F-statistic is 7.7118, so the study confirmed the existence of the long-run relationship between the government deficit and inflation. So we could not refute the positive impact of the budget deficit on inflation. Our results conformed to the results of Muhammad et al (2016) who did their study in Pakistan, also Lin and Chu (2013) who tested the association between the two variables in 91 developing countries. Contrary to similar studies conducted in the developed countries it can be said that in developing and least developed countries including Tanzania the central banks are not independent. The two variables inflation and budget deficit are significant that policy makers should pay attention for the country to realize sustainable growth. On the one hand if inflation is made stable it may lead to the overall increase of welfare of the community, lead to the decline in unemployment level that has been believed to be a tremendous problem, and finally accelerate the industrialization process. This goal of industrialization in the Tanzanian context has been given much weight with the current regime. On the other hand, budget deficit has a significant impact on inflation, so we think that even though authorities seem not to worry about the level of the budget deficit in the country, but reducing the large budget deficit would be one of the necessary conditions in reducing inflation overtime and thereby the high economic growth witnessed can be sustainable.

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## UNDERSTANDING THE DRIVERS OF GENERATION Y CONSUMERS' GREEN PURCHASE INTENTION: PRICE SENSITIVITY AS A MODERATING VARIABLE

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**Melek Erdil**

Nisantasi University, Faculty of Economics, Administrative and Social Sciences, Istanbul, Turkey.

[melekerdil@gmail.com](mailto:melekerdil@gmail.com) , ORCID: 0000-0002-2291-5602

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### ABSTRACT

**Purpose** – The purpose of this study is to test the moderating effect of price sensitivity on the relationship between environmental knowledge, environmental concern, environmental attitude and Generation Y consumers' green purchase intention.

**Methodology** – A quantitative approach was used for data gathering. Data collection was conducted through online questionnaires filled out by 260 Generation Y consumers who were born between 1977 and 1994. Multiple regression analysis and hierarchical regression analysis were applied to test the hypotheses.

**Findings-** The results revealed that environmental concern and environmental attitude have a significant effect on the green purchase intention of Generation Y consumers. Price sensitivity of Generation Y consumers moderates the relationship between environmental concern, environmental attitude and green purchase intention.

**Conclusion-** The results created an understanding of the factors that influence green purchase intention within the scope of consumer behavior and serve as the information for marketers to drive sales and increase market share through appropriate marketing strategies.

**Keywords:** Environmental attitude, environmental concern, green marketing, green purchase intentions, price sensitivity.

**JEL Codes:** M30, M31, M39

### 1. INTRODUCTION

In recent years, preventing the environmental deterioration caused by over consumption and judicious utilization of natural resources without depleting them have been a great concern for the public. These facts have driven people to act responsible and purchase harmless goods to the environment (Elahi and Yaghoubi, 2012). Besides, both behaviors of consumers and market itself have also been changed while environmental awareness increases (Barber, Kuo, Bishop and Goodman, 2012). As environmental consciousness gains strength, the consumers started to feel themselves eager to pay extra for environmental-friendly products (Chang and Chen, 2013).

Green marketing is a management process which is supposed to provide the beneficial towards the society and customers in order to satisfy their requirements in a sustainable way (Chen and Chai, 2010). Green marketing is also termed environmental marketing which consists of producing, pricing and delivering products that are harmless or less harmful to the environment (Grant, 2008; Jain and Kaur, 2004; Kangis, 1992; Pride and Ferrell, 2008). A green consumer can be identified to be the one who avoids using products which may harm living organisms, generate environmental degradation all along manufacturing process and test on animals (Elkington and Hailes, 1994).

Since the matter of preserving environment has led consumers to think over their preference of products; many consumers are willing to pay higher prices for the items in accordance with environmental standards (Newton, Tsarenko, Ferraro and Sands, 2015). This study adopts a different perspective by focusing on Generation Y consumers' price sensitivity not on product's price itself or entire generations. The results of this research will be useful for producers of various green consumer products and marketing professionals who can use them as a source of competitive advantage in their marketing

plans. Additionally, the researchers will be interested in the results to gain a better understanding of consumer behavior to conduct further studies.

Therefore, the objectives of this paper are to determine whether environmental knowledge, environmental attitude, environmental concern affect green purchase intention and examine the moderating effect of price sensitivity on the relationship between the independent variables (environmental knowledge, environmental concern, environmental attitude) and green purchase intention.

## **2. LITERATURE REVIEW**

### **2.1. Environmental Knowledge**

Conraud-Koellner and Rivas-Tovar (2009) describe environmental knowledge as the complement of ecological knowledge that people have of environmental issues. According to D'Souza, Taghian and Lamb (2006), environmental knowledge expands in two ways; firstly, consumers have to be tutored to grasp the effect of a product to environment and secondly, consumers have to be sure that the product is gone through an environmental-friendly manufacturing process.

Environmental awareness is considered as knowledge about the facts and general concepts related to the environment and ecosystems (Mostafa, 2007). This awareness is compatible with the opinion that the world's natural resources are limited and the ecological balance may be at an urgently important deterioration grade (Hayes, 1990). If the consumers are informed about the environmental problems, their awareness level will rise and so they will build positive attitudes towards green products.

Environmental knowledge is linked to positive environmental behavior (Tanner and Kast, 2003). According to Jang, Kim, and Bonn (2011), the awareness of green product consumption is essential to create an environmental ethic and it subsequently changes the consumption behavior. The more knowledge people have about green behavior practices, the more they will act positively (Roberts, 1996). Antil (1984) discovered a positive relationship between environmental knowledge and pro-environmental attitudes. However, although 40% of consumers tell that they will purchase green products, these products' market share is not big enough; because only 4% of consumers are willing pay for green products (Bartels and Hoogendam, 2011; Young, Hwang, McDonald and Oates, 2010).

### **2.2. Environmental Concern**

Environmental concern is rooted in an individual's self-concept and the extent to which he or she believes to be an essential part of Mother Nature (Schultz and Zelezny, 2000). Kalafatis, Pollard, East and Tsogas (1999) define environmental concern as the consumers realize that the environment is in danger and the natural resources are finite. Environmental concern represents individuals' getting aware of environmental problems and becoming eager to be a part of the solution (Dunlap and Johns 2002).

During the last 20 years especially, there has been a dramatic rise in environmental concern that leads consumers to perceive nature's preservation as a crucial factor in making their daily purchasing decisions. Concern for environment refers to the extent to which consumers are conscious of environmental issues and supporting exertions made to fight these problems. It also includes willingness of consumers to get involved in the efforts of preventing environmental deterioration (Alibeli and Johnson, 2009) together with strong preference to buy a green product (Rashid, 2009). Former research presented that 84% of consumers stated concern on environmental issues and many consumers altered their consumptive practices (Schlossberg, 1990). In the study of Lee (2009), it was shown that environmental concern is a driver of green purchase intention of consumers and female adolescents conceive ecological issues more seriously than male adolescents. Contrarily, there are researches pointing out that while consumers state their concern towards the environment, it does not precisely result in green buying behavior (Young et al., 2010; Roberts, 1996)

### **2.3. Environmental Attitude**

Attitude is a state of willingness which influences an individual to respond to various situations and objects with which it is associated (Allport, 1935). According to Amstrong and Kotler (2009), "attitude is a person's consistently favorable or unfavorable evaluations, feelings, and tendencies towards an object or idea".

Attitude characterizes consumer likes and dislikes (Blackwell, Miniard and Engel, 2006) and therefore affects purchase decisions. Attitudes are well predictors of pro-environmental behavior (Padel and Foster, 2005; Tanner and Kast, 2003). Balderjahn (1988) and Kotchen & Reiling (2000) found that the people having a positive attitude towards the environment tend to purchase environmental-friendly products. Similarly, Florenthal and Arling (2011) revealed a significant relationship between green purchase attitudes and buying intentions. In a study conducted in Egypt, consumers' attitude towards green products influenced green purchase intentions and behavior (Mostafa, 2007). Kalafatis et al. (1999) showed that environmental attitudes led to green purchase intentions, especially in developed markets. This statement was reversed by

Hughner, McDonagh, Prothero, Shultz and Stanton (2007) who indicated that although consumers had a favorable attitude towards green products; it did not ensure the buying of green products. In many other studies, a gap between attitude and behavior was discovered, although it was anticipated that there would be a positive relationship between environmental attitude and green purchase intention (Akehurst, Afonso and Goncalves, 2012; Laroche, Bergeron, Tomiul and Barbaro-Forleo, 2002; Papista and Krystallis 2012).

#### **2.4. Price Sensitivity**

Generally, green products are priced higher than conventional products due to higher costs borne in the process. Consumers differ in how much they are willing to pay for a given product. Price elasticity does not ascertain how individual consumers or groups of consumers respond to price (Ramirez and Goldsmith, 2009). Therefore, the notion of price sensitivity is highly beneficial to marketing managers as long as it can be measured reliably and validly (Goldsmith and Newell, 1997).

D'Souza et al. (2006) asserted that green consumers who perceived price as an insignificant element in their buying decision were eager to pay a relatively high price for green products. These findings were verified by many researches where environmentally concerned consumers stated themselves to be willing to pay extra for products with minimum harm to the environment (Laroche, Bergeron, Barbaro-Forleo, 2001; Rowlands, Scott and Parker 2003; Michaud, Llerena and Joly 2013). According to Aman, Harun and Hussein (2012), green consumers are usually less price sensitive to purchase eco-friendly goods, because they are determined to pay for safe items, and simultaneously improve animal welfare. The study carried out by Shrum, McCarty and Lowrey (1995) revealed that green consumers were price conscious and careful when shopping.

However, not all green consumers are willing to pay a higher price for green products. They are generally price sensitive as for green products and the price characteristics affect their purchasing decision (Anderson and Hansen, 2004). No matter how concerned they are, consumers can still be reluctant to pay price premiums for green products. D'Souza et al. (2006) also brings forward that purchase possibility for green products decreases as the price increases.

#### **2.5. Green Purchase Intention**

People are getting much aware of the environmental problems, many customers have environmental concerns and they are conscious enough to buy less destructive and environmental-friendly products (Peattie, 1995). Rashid (2009) described green purchase intention as the possibility and eagerness of consumers to give priority to green products over traditional products in their purchase decisions. It can also be described as an inner desire and willingness of consumers to purchase a less environmentally detrimental product.

Intention is a significant predictor of individuals' actual behavior in the future. Green purchase behavior is highly strung on green purchase intention; which can be explained by reasoned action and planned behavior theories (Kalafatis et al., 1999). Chan and Lau (2000) tested a model consisting of environmental concern, green purchase intention, environmental knowledge, man nature orientation and actual purchase behavior. Their results suggested that actual green purchase behavior was dependent on a person's green purchase intention. Gotschi, Vogel, Lindenthal and Larcher (2010) state that behavior is an inevitable outcome of intention, and behavioral intention results from both attitudes and subjective norms that are specified by beliefs. The green purchase intention of consumers is like a representative for their real purchase behavior (Ramayah, Lee and Mohamad, 2010). The purchase intention of the consumer positively affects the probability of a consumer's actual purchase decision to buy green products (Chen, 2013; Han, Hsu and Lee 2009).

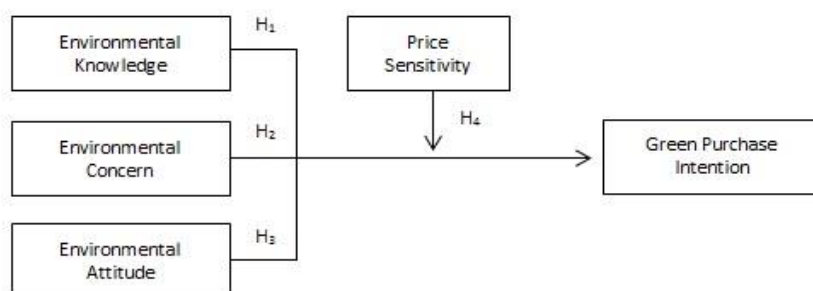
#### **2.6. Conceptual Framework and Hypotheses Development**

The conceptual framework of this study strives to make a connection between Generation Y consumers' environmental knowledge, environmental concern, environmental attitude and green purchase intention. Particularly for developing markets, the issue of price sensitivity is an important criterion for making a choice between green and conventional products. Since the environmental-friendly products are generally priced higher; this situation may induce unwillingness to buy them. Therefore, the framework examines the moderating effect of price sensitivity to understand the process leading to possible purchase intention. There is still much to be investigated in the field of green marketing. The studies carried out in established markets paved the way for discovering the underlying drivers of green consumption. The researches that have been mentioned above prepared the ground for developing a conceptual framework with variables related to consumers.

After reviewing the relative literature, conceptual framework and formulated hypotheses are presented in Figure 1.



**Figure 1: Conceptual Framework of the Drivers of Green Purchase Intention and the Role of Price Sensitivity as a Moderator**



H<sub>1</sub>: There is a significant relationship between environmental knowledge and green purchase intention.

H<sub>2</sub>: There is a significant relationship between environmental concern and green purchase intention.

H<sub>3</sub>: There is a significant relationship between environmental attitude and green purchase intention.

H<sub>4</sub>: Price sensitivity moderates the relationship between environmental knowledge, environmental concern, environmental attitude and green purchase intention.

### 3. DATA AND METHODOLOGY

Convenience sampling as a type of non-probability sampling was used for the objectives of this study for the reason that convenience sampling allows researchers to gather basic information rapidly and efficiently (Sekaran, 2000).

Since, Generation Y is considered to be a large group of future consumers and supposed to have greater spending power than any other consumer groups (Noble, Haytko and Phillips, 2009), the sample size of the present study consisted of Generation Y consumers born between 1977 and 1994.

A self-administered online questionnaire was distributed through e-mail based groups, forums and social media. A total of 260 completed questionnaires were obtained. Since, all the questions in the survey were compulsory to answer; no questionnaire was excluded. All the data was stored in excel spreadsheets so that it could be imported on to SPSS 22 for testing and analysis. The measurement of the survey items in this study is by means of five-point Likert scale from 1 to 5 ranging from strongly disagree to strongly agree. The questionnaire consisted of 34 questions in total and was divided into three parts. In part 1, the items about independent variables (environmental knowledge, environmental concern, and environmental attitude) were placed. In part 2, the items about moderator variable (price sensitivity) and dependent variable (green purchase intention) were presented and in part 3, respondents were asked about their socio-demographic characteristics. Table 1 represents the study variables, item numbers and sources of adapted scales.

**Table 1: Scales Used in Research**

| No | Variable                 | Number of Items | Reference  |
|----|--------------------------|-----------------|--|
| 1  | Environmental Knowledge  | 8               | Mostafa (2007)                                   |
| 2  | Environmental Concern    | 6               | Stern and Dietz (1994) ; Singh and Bansal (2012) |
| 3  | Environmental Attitude   | 5               | Akbar, Hassan, Khurshid, Niaz and Rizwan(2014)   |
| 4  | Price Sensitivity        | 6               | Goldsmith (1996)                                 |
| 5  | Green Purchase Intention | 3               | Chen and Chang (2012)                            |

### 4. FINDINGS AND DISCUSSIONS

#### 4.1 Sample Profile

The majority of the respondents were male (55%), aged between 29-34 (55.4%), single (68%), undergraduate (69.6%), employed for wages (65%) and have a monthly income between 2001-3000 TRY (23.5%).

**Table 2: Socio-Demographic Characteristics of Respondents**

| No | Socio-Demographic Variable |                                | Frequency | Percentage |
|----|----------------------------|--------------------------------|-----------|------------|
| 1  | Gender                     | Female                         | 117       | 45         |
|    |                            | Male                           | 143       | 55         |
|    |                            |                                | 260       | 100        |
| 2  | Age                        | 23-28                          | 76        | 29.2       |
|    |                            | 29-34                          | 144       | 55.4       |
|    |                            | 35-40                          | 40        | 15.4       |
|    |                            |                                | 260       | 100        |
| 3  | Marital Status             | Single                         | 177       | 68         |
|    |                            | Married                        | 83        | 32         |
|    |                            |                                | 260       | 100        |
| 4  | Education Level            | Less than high school graduate | 3         | 1.1        |
|    |                            | High school graduate           | 12        | 4.6        |
|    |                            | Undergraduate                  | 181       | 69.6       |
|    |                            | Graduate                       | 46        | 17.7       |
|    |                            | Post-graduate                  | 18        | 7          |
|    |                            |                                |           | 260        |
| 5  | Employment Status          | Employed for wages             | 169       | 65         |
|    |                            | Self-employed                  | 28        | 10.7       |
|    |                            | Out of work                    | 27        | 10.3       |
|    |                            | Student                        | 36        | 14         |
|    |                            |                                |           | 260        |
| 6  | Monthly Income             | 1000 TRY or less               | 52        | 20         |
|    |                            | 1001-2000 TRY                  | 40        | 15.3       |
|    |                            | 2001-3000 TRY                  | 61        | 23.5       |
|    |                            | 3001-4000 TRY                  | 48        | 18.5       |
|    |                            | 4001-5000 TRY                  | 37        | 14.2       |
|    |                            | 5001 TRY and above             | 22        | 8.5        |
|    |                            | 260                            | 100       |            |

#### 4.2. Descriptive Analysis

As shown in Table 3, the means of all variables are above the average level (3 out of 5). This indicates that Generation Y consumers have high levels of environmental knowledge, environmental concern and environmental attitude. The highest mean (4.35 out of 5) and the lowest standard deviation (0.51) are related to the variable of price sensitivity; the lowest mean (2.98 out of 5) and the highest standard deviation (0.62) are related to the variable of green purchase intention.

**Table 3: Descriptive Statistics**

| No | Variable                 | Number of Items | Mean | Standard Deviation |
|----|--------------------------|-----------------|------|--------------------|
| 1  | Environmental Knowledge  | 8               | 3.65 | 0.53               |
| 2  | Environmental Concern    | 6               | 3.59 | 0.54               |
| 3  | Environmental Attitude   | 5               | 3.63 | 0.56               |
| 4  | Price Sensitivity        | 6               | 4.35 | 0.51               |
| 5  | Green Purchase Intention | 3               | 2.98 | 0.62               |

### 4.3. Factor Analysis

The results of factor analysis reveal that the variables shown in Table 4 are adequate for minimum required value of Kaiser-Meyer-Olkin (0.6) and value of Bartlett's Test of Sphericity (sig. at 0.005) (Kaiser, 1970). For that matter, the sample size is widely accepted and there are enough correlations among variables.

**Table 4: Results of Factor Analysis**

| No | Variable                 | KMO Value | Bartlett's Test of Sphericity, significant |
|----|--------------------------|-----------|--|
| 1  | Environmental Knowledge  | 0.769     | 0.000                                      |
| 2  | Environmental Concern    | 0.738     | 0.000                                      |
| 3  | Environmental Attitude   | 0.743     | 0.000                                      |
| 4  | Price Sensitivity        | 0.825     | 0.000                                      |
| 5  | Green Purchase Intention | 0.811     | 0.000                                      |

### 4.4. Reliability Analysis

According to Sekaran and Bougie (2010), Cronbach's Alpha value; less than 0.60 is poor, between 0.60 and 0.80 is acceptable, and above 0.80 is good for reliability. As seen in Table 5, Chronbach's Alpha values calculated for research variables in Table 5 are above 0.8 and this indicates that the survey instrument is highly reliable to measure five variables.

**Table 5: Reliability of Research Variables**

| No | Variable                 | Number of Items | Cronbach's Alpha |
|----|--------------------------|-----------------|------------------|
| 1  | Environmental Knowledge  | 8               | 0.843            |
| 2  | Environmental Concern    | 6               | 0.852            |
| 3  | Environmental Attitude   | 5               | 0.803            |
| 4  | Price Sensitivity        | 6               | 0.888            |
| 5  | Green Purchase Intention | 3               | 0.879            |

### 4.5. Multiple Regression Analysis

According to multiple regression analysis results shown in Table 6, the variables of environmental concern and environmental attitude explain 72% ( $R^2=0.72$ ) of green purchase intention with the significance level of 0.000 ( $p=0.000$ ). As seen in Table 7, the standardized beta coefficients for environmental concern and environmental attitude are 0.506 and 0.488 respectively, with the significant level of 0.000 ( $p<0.05$ ). This reveals that environmental concern and environmental attitude have significant influence on the green purchase intention of Generation Y consumers. On the other hand, the standardized beta coefficient for environmental knowledge is 0.092, with the significance level of 0.321 ( $p<0.05$ ). The results indicate that, environmental knowledge has no significant influence on the green purchase decision of Generation Y consumers. In another saying, it is possible to predict green purchase intention with environmental concern and environmental attitude of consumers but not with environmental knowledge. Based on these results, while  $H_1$  is rejected, both  $H_2$  and  $H_3$  are accepted.

**Table 6: Model Summary of Green Purchase Intention**

| Model | R     | R Square | Adjusted R Square | F      | Sig (F) |
|-------|-------|----------|-------------------|--------|---------|
| 1     | 0.865 | 0.721    | 0.718             | 33.891 | 0.000   |

Predictors: (Constant): Independent variables (Environmental Knowledge, Environmental Concern, Environmental Attitude)

Dependent Variable: Green Purchase Intention

**Table 7: Regression between Environmental Knowledge, Environmental Concern, Environmental Attitude and Green Purchase Intention**

| Variables               | Std. Beta | t value | Sig.  |
|-------------------------|-----------|---------|-------|
| Environmental Knowledge | 0.092     | 1.966   | 0.321 |
| Environmental Concern   | 0.506     | 5.609   | 0.003 |
| Environmental Attitude  | 0.488     | 4.651   | 0.002 |

#### 4.6. Hierarchical Regression Analysis

Table 8 demonstrated the results of three-step hierarchical regression analysis of price sensitivity as the moderating variable affecting the relationship between independent variables (environmental knowledge, environmental concern and environmental attitude) and dependent variable (green purchase intention).

Hierarchical regression is a framework for model comparison. According to the research questions, several regression models are built by adding variables to a previous model at each step meanwhile including smaller models in previous steps. The aim is to test whether newly added variable would cause a significant increase in  $R^2$ .

In this study, Model 1, with environmental knowledge, environmental concern and environmental attitude as predictors of green purchase intention indicated an  $R^2$  value of 0.641 accounting for 64% of the variance, which was showing a significantly positive relationship ( $F_{(3,174)}=22.861$ ,  $p<0.05$ ) between predictor variables and dependent variable.

Next, Model 2, including one moderator variable (price sensitivity), gave a better value with an  $R^2$  of 0.622, explaining 62% of variance. The change in  $R^2$  was significant  $F_{(1,156)}=20.989$ ,  $p<0.05$ , thus price sensitivity proved to be a predictor of green purchase behavior and accounted above the variability contributed by the previous predictor variables in Model 1. This result served the aim of applying hierarchical regression analysis in this study.

In order to confirm price sensitivity making a moderation effect on the relationship between dependent and independent variable, it must be shown that the nature of this relationship changes as the values of the moderating variable change. This can be proven by including interaction effect in Model 3 to check whether such an interaction is statistically significant and a significant  $R^2$  change has occurred as a result of this test or not. If both results prove to be significant, it is determined that moderation has occurred.

The third and final model of this study comprised of interaction between independent variables and moderator variable. It gave an  $R^2$  of 0.607, meaning 60.7% of the variance was explained. The  $R^2$  change was found significant  $F_{(3,253)}=18.347$ ,  $p<0.05$ .

The results indicate that price sensitivity significantly moderates independent variables on green purchase intention, but for the interaction between environmental knowledge and price sensitivity is not significant with 0.642 ( $p>0.05$ ). The negative correlation was displayed between these variables and dependent variable, showing that when environmental knowledge and price sensitivity acted together, a decrease in the willingness to buy green products was expected to happen. However, since the interaction was found to be insignificant, it can be said that it is not possible to predict green purchase intention by the interaction of environmental knowledge and price sensitivity.

On the other hand, the interaction of environmental concern and price sensitivity was found statistically significant with 0.001 ( $p<0.01$ ). The negative correlation between these variables and dependent variable assert that when Generation Y consumers' environmental concern and price sensitivity tend to be high together, this situation will inevitably lead to a decrease in green purchase intention. The prediction of this decrease proved to be significantly possible as a result of applied analysis.

Similar to these results, the interaction between environmental attitude and price sensitivity was found statistically significant with 0.001 ( $p<0.01$ ). Once again, as a negative correlation suggests, Generation Y consumers' higher environmental attitude and price sensitivity will result in a diminishing of their eagerness to buy green products. It is possible to predict this decrease effect by relying on the results of hierarchical regression analysis. Consequently,  $H_4$  is partially accepted.

The terms of environmental knowledge, environmental concern and environmental attitude sound positive and they are expected to affect green purchase intention positively as can be seen in Model 1. However, predicting green purchase intention by only these variables would not be sufficient to handle the issue comprehensively. Particularly, in emerging

economies where environmental issues are raised gradually and the reaction of consumers vary enormously, other possible criteria related to purchase decisions must be calculated. One of the most important factors which could affect green buying behavior is price itself. The remarkable side of the negative correlations in this study lies in the meaning of the term 'price sensitivity'. It means that the Generation Y consumers whose price sensitivity is above average tend to choose not-buying relatively high priced green products independently of their environmental concern and environmental attitude. So, when it is scored high, it eventually hinders the involvement of consumers in green purchase intention.

Table 8 demonstrated the results of hierarchical regression analysis of price sensitivity as the moderating variable affecting the relationship between independent variables (environmental knowledge, environmental concern and environmental attitude) and green purchase intention. The F change is stated as significant with 0.001 ( $p < 0.05$ ) in all models. The  $R^2$  of the model is 0.60 which explaining 60% of the total variance in the model. The results indicate that price sensitivity significantly moderates independent variables on green purchase intention, but for the interaction between environmental knowledge and price sensitivity is not significant with 0.642 ( $p > 0.05$ ). On the other hand, both environmental concern and environmental attitude were discovered as significant predictors of green purchase intention with 0.001 ( $p < 0.01$ ). The interaction between environmental concern and price sensitivity was found statistically significant with 0.001 ( $p < 0.01$ ) similar to the interaction between environmental attitude and price sensitivity with 0.001 ( $p < 0.01$ ). So,  $H_4$  is partially accepted.

In addition, these interactions were found in negative correlation with dependent variable, green purchase intention. These results reveal that the interaction of environmental concern and price sensitivity will reduce the green purchase intention of Generation Y consumers. Likewise, the interaction between environmental attitude and price sensitivity will diminish the green purchase intention. While price sensitivity increases, the green purchase intention decreases. In short, although participants' environmental concern and environmental attitude levels are above average, price sensitivity hinders their involvement in green purchase intention.

**Table 8: Hierarchical Regression Results Using Price Sensitivity as Moderator in the Relationship between Environmental Knowledge, Environmental Concern, Environmental Attitude and Green Purchase Intention**

| Independent Variables                     | Model 1 |       | Model 2 |       | Model 3 |         |
|---|---------|-------|---------|-------|---------|---------|
|   | Std B   | Sig   | Std B   | Sig   | Std B   | Sig     |
| <b>Model Variables</b>                    |         |       |         |       |         |         |
| Environmental Knowledge                   | 0.092   | 0.321 | 0.090   | 0.146 | -0.089  | 0.476   |
| Environmental Concern                     | 0.506   | 0.003 | 0.509   | 0.002 | 0.499   | 0.001** |
| Environmental Attitude                    | 0.488   | 0.002 | 0.544   | 0.002 | 0.586   | 0.001** |
| <b>Moderating Variable</b>                |         |       |         |       |         |         |
| Price Sensitivity                         |         |       | 0.072   | 0.003 | 0.127   | 0.003*  |
| <b>Interaction Terms</b>                  |         |       |         |       |         |         |
| Environmental Knowledge*Price Sensitivity |         |       |         |       | -0.053  | 0.642   |
| Environmental Concern*Price Sensitivity   |         |       |         |       | -0.670  | 0.001** |
| Environmental Attitude*Price Sensitivity  |         |       |         |       | -0.713  | 0.001** |
| <b>R<sup>2</sup></b>                      | 0.641   |       | 0.622   |       | 0.607   |         |
| <b>R<sup>2</sup> Change</b>               | 0.575   |       | 0.585   |       | 0.528   |         |
| <b>F</b>                                  | 22.861  |       | 20.989  |       | 18.347  |         |
| <b>Sig. F Change</b>                      | 0.001   |       | 0.001   |       | 0.001   |         |

Note: Significant at \*\* $p < 0.01$ ; \* $p < 0.05$

Dependent Variable: Green Purchase Intention

These results highlighted that there is a significant relationship between environmental concern, environmental attitude and green purchase intention of Generation Y consumers with moderating effect of price sensitivity.

Environmental knowledge is said to be a good predictor of green purchase intention of consumers (Makesh and Ganapathi, 2012). Kim and Cheung (2011) and Wu and Teng (2011) assert that knowing the environmental issues produces a significant effect on green purchase intention. However, the findings in this study does not support these results and many other

researches (Chen and Chang, 2012; Rizwan, Ahmad and Mehboob, 2013; Tan, 2013). According the observed results, environmental knowledge has insignificant relationship with the purchase intention of Generation Y consumers. This can be attributed to the fact that participants' level of environmental knowledge is not high enough to result in green purchase intention or the phenomenon has not taken seriously yet.

Newton et al. (2015) searched the effects of environmental concern on green purchase intention. The results showed that environmental concern affected the intention to purchase directly as many other researchers proved so (Biswas and Mousumi, 2015; Bertrandias and Gambier, 2014; Brécard, Hlaimi, Lucas, Perraudeau and Salladarré, 2009). The findings of this study support these previous researches by revealing a significant relationship between environmental concern and green purchase intention.

Cleveland, Kalamas and Laroche (2005) found that environmental attitude is a factor influencing environmental-friendly purchasing behavior. Hartmann and Apaolaza-Ibáñez (2012) conducted a research and stated the impact of psychological interests and environmental concerns on consumers' attitudes and intention of buying green products. The findings of this study are in compliance with former studies by revealing a significant relationship between environmental attitude and green purchase intention.

High price can impede actual purchase where consumers are price sensitive. As might be expected, people's level of environmental concern has a connection with their interest and willingness to purchase green products (Kim and Choi, 2005; Cornelissen, Pandelaere, Warlop and Dewitte, 2008). In Biswas and Mousumi (2015)'s study, it was presented that price sensitivity was a priority in consumers' product choice. Supporting their findings, the results of this study reveal that price sensitivity has a moderating role on the relationship between environmental concern, environmental attitude and green purchase behavior. It can be inferred that, high price is still a determinant for participants whether to make a final decision of buying a green product regardless of their high level of environmental concern and environmental attitude.

## **5. CONCLUSION**

In this study, two out of four hypotheses have been accepted, it can be concluded that environmental concern and environmental attitude play an important role in affecting Generation Y consumers' purchase decision of green products. One of the hypotheses asserting that it is possible to predict green purchase behavior by environmental knowledge variable is rejected. It is revealed that although mean of Generation Y consumers' environmental knowledge is not low, it may not result in purchase intention. The last hypothesis suggesting that price sensitivity moderates the relationship environmental concern, environmental attitude and green purchase intention is partially accepted because it does not have a moderating effect with environmental knowledge variable. Participants show great sensitivity towards relatively high prices of green products and they are not willing enough to pay extra even though their environmental concern and environmental attitude are positive.

Theoretically, this study contributes to the literature of consumer behavior by exploring predictors and motivators of green purchase intention of Generation Y consumers. Practically, it provides insights into buying intention patterns of consumers for marketers to help them formulate strategies to boost green product sales. Specifically, these strategies should be made to benefit from environmental attitude to overcome price sensitivity in order to drive sales. Running promotional campaigns for green products can be an effective tool which might help to encourage the purchase intention of price sensitive consumers.

As with any research, there were a number of limitations in this study. The research findings cannot be generalized to the entire Turkish Generation Y consumers, since only 260 people were reached. For this study, only four variables related to consumers have been investigated, it can be improved by variables concerning products and brands. This study did not target a specific product, which might also have influenced the findings. Several other external and also internal factors can be tested for various product categories in further studies. Generation Y consumers in other countries can be included to broaden the scope of the study by referring cultural differences and buying patterns.

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## THEORETICAL STRUCTURE FOR THE APPLICATION OF STOCK-FLOW MATRIX

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**Mustafa Turhan**

Okan University, Faculty of Business and Management, Department of International Trade, Istanbul Turkey.

[mustafa.turhan@okan.edu.tr](mailto:mustafa.turhan@okan.edu.tr) ORCID: 0000-0002-7420-1652

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### ABSTRACT

**Purpose** - In this study, we tried to determine the investment goods requirements of the sectors. Stock-flow structure of the Turkish Industry analyzed with the help of realized investment projects.

**Methodology** – The sectoral investment crisis periods are determined based on the CMAX methodology and the regression analysis is applied to investigate has been used to find out how much goods and services need to build a unit capital. By this way sector by origin has been determined, this capital structure matrix was multiplied with sectoral capital-output ratios to reach stock-flow coefficients of the models.

**Findings**- From the results of this study it is observed that by using the the stok-flow coefficients of the sectors we come to the concisions that is required to invest in industry.

**Conclusion**- Capital coefficients are an important means to find the future location of the industries and the interrelationships of the industries as they show the relation between stock capital and current production. The capital structure matrix is associated with the SUO. This relationship is obtained by multiplying the matrix K, which is the SUO, with the matrix S, the stock-flow coefficient.

**Keywords:** Stock-flow ratio, capital stoku, investment, production, financing and finance movements.

**JEL Codes:** O11, O16, D24, E22, H54

## 1. INTRODUCTION

The parameters or indicators used to determine the direction and impact of macroeconomic mobility, future status, or target status are also calculated for the real sector. The change in economic structure at macro level is used as a tool to increase profits in the sector and enterprise level and to increase production in order to increase income level in growth. For this reason, the indicators related to investments become important for both macro and micro explanations. Creating real capital in the economy occurs by converting the savings into capital goods. So investment is the essence of creating capital stock. In short, capital stock is expressed as investment in real production means added in a certain period (Barna, 1954: 254). It is a fact that capital and investment are intertwined.

Capital is a physical asset created to produce goods and services outside of it. Investment is to add capital goods (building, machinery equipment, facilities) to the capital stock, bringing the natural resources and labor. Another investment concept is the adoption of securities (stocks, treasuries and bank assumptions) as addenda (Okka, 2013: 9), but it is also not possible to accept investment in the economic sense. Labor and natural resources are used as inputs in the production of capital goods (Samuelson: 1967: 49). As macroeconomic consumption expenditures are indicative and determinative of social welfare, investment expenditures are also indicators of prosperity.

It is also the cause of the positive and negative formation of Gayrı Safi Domestic Reaction. The less or excess of investments means the growth of the macroeconomic level and the capital stock. In addition, efficiency is measured in the sector as well as in performance management. Investment in economic manpower constitutes the flow value of an country due to the capital stock, the amount of goods and services produced, and the mobility over time. The capital represents the value of the stock due to the realization of production with additional values and the stagnation. For this reason, stock and current values or coefficients show the production structure and technological development of the economy.

At the same time, stock-flow values change depending on the production structure and technology. Stock-flow coefficients are defined as capital coefficients (**Leontief, 1953: 56**). The capital stock yield is obtained by dividing the capital stock by the monetary value of goods and services obtained within one year. The balance between saving and investment (Bocutoğlu, 2015: 288) and the capital-based macroeconomy is also important in the general equilibrium of the economy.

It is considered normal for developing countries to have low inventory-flow coefficients when they come to the development stage. It is observed that the stock-to-current ratios are increasing due to the decline in the capacity utilization rates that arise when the crisis starts in the economies and idle capacity is generated in the industries.

This ratio reaches normal levels with the increase in income level and the added value of technological developments. Definitions and expressions belonging to macro planning require a matrix of stock-to-current ratios. For this reason, it should be emphasized.

## 2. GENERAL FRAMEWORK OF ECONOMIC GROWTH

The increase in the value (and / or volume) of labor, capital and natural resources, which is the main element of economic development and growth, is called growth. Growth is also an expression of revenue-per-capita income. In other words, the total monetary value of goods and services produced within a year means an increase in the current production opportunities in the economy as a whole (Çetinkaya-Turk, 2014: 46).

While economic growth and economic development are sometimes used together, it is mainly meant to mean an increase in development and level of life. Development shows structural elements and socio-economic change and development. Because the expansion of the physical structure, that is to say the increase in production, brings about the expansion of the economic structure. With the increase in production, life standards and standards are improved. Personal income will increase. For this reason, growth and development, especially in some calculations, are analyzed in terms of definition and expression.

Growth is represented by symbols and is explained by mathematical equations. The first study on economic growth was initiated in 1939 by an article by Roy F. Harrod (Harrod, RF, 1939: 14), developed by Domar (Domar, 1975: 1004) and then by V. Hicks, N. Kalaldor, L. Pasinetti has been carried forward by economists dealing with growth models such as J. Robinson, RMSolow, WWRostow, R. Nurkse, HBChenery, AOHirscham.

Economic growth is difficult to analyze with mathematical models and to be in general explanations. Because variables outside the variables that are required to be used in the model are also effective on growth. The variables in the models used and their assumptions are not always the same, nor do they change or change over time. For example, the processions that are strictly tied to the pleasures and preferences (Ülgener, 1976: 456), and the changes in the targets affect the quantity and value of the production. In addition, social and political movements are also influential in economic growth (Rostow, 1966: 4).

Economic growth is difficult to analyze with mathematical models and to be in general explanations. Because variables outside the variables that are required to be used in the model are also effective on growth.

In the model studies it is possible to describe the capital and labor force with which production is related by a functional relationship. This production function determines the power, direction and technique of the relationship between inputs and outputs.

We can simply show the production function  $U = f(C, L)$ . It is also possible to make a mathematical definition by assuming that  $U = \text{Production}$ ,  $C = \text{Capital}$ ,  $L = \text{Labor}$  produces a single commodity, and that the relationship between them is homogeneous.

In the economic literature, the relationship between production and production factors is given. The production model of Charles Cobb and Paul Douglas, which testified the period of 1899-1922 for the American economy and formulated it, was formed as follows.

$P(L,K) = b L^\alpha K^\beta$  in this model,  $L = \text{Labor}$  (Annual hours worked),  $K = \text{Capital}$  (production machinery, equipment, equipment, monetary value),  $L = b = \text{total factor productivity}$ ,  $\alpha = \text{output elasticity of the work}$ , and  $\beta = \text{output elasticity of the capital}$ . output elasticity of labor and capital, respectively.

These constants are determined by the current technology. Here,  $\alpha$  and  $\beta$  constants represent the technology used in production. Briefly, a unit of labor shows that the increase will lead to an increase in  $\alpha$  in production. A unit increase in capital means that it will bring about an increase of  $\beta$  on production.

$\alpha + \beta = 1$ , increases in production as well as amounts of capital and labor in the production function. This is called "constant return of the production function according to the scale" (Bulutay, 1972: 29). With a 10 percent increase in labor and capital, there will be a 10 percent increase in production.

If  $\alpha + \beta > 1$ , "increasing return by scale" means  $\alpha + \beta < 1$  "decreasing return by scale". The increase or decrease in production is reflected in the increases and decreases in the coefficients of labor and capital. Capital is used both by labor and by entrepreneurs. It is a tool both in production and in the creation of added value. In other words, it is wealth. It is desired to see demand from consumers as it creates added value at the end of production. This is also a factor that can be reproduced (Gold, 1957: 19). The return of the capital is the interest. In order to see the increase caused by the capital, it is necessary to know the value of the capital and the profit.

$C_0$  = Capital stock,  $C_1$  = Real capital stock,  $F_0$  = When capital gain is taken as a gain.

$$C_1 * F_0$$

----- = The capital will increase real service.

$$C_0 * F_0$$

It is possible to find the present value of the capital in terms of labor or its own derivative. For example, if labor is capitalized by dividing labor by hour (Robinson, 1956: 121), there is no weight in working hours, so it does not end very well. There are also differences in labor quality. Fixing the capital with any index, for example the average price, is not preferable because it will give an index error. For this reason capital investments are evaluated. Periodic, usually annual, fixed capital investments are added to investments that accumulate from previous periods.

In order to increase the production capacity, the capital stock is formed by the investments added to the capital. Such capital formation is defined and assessed as "gross capital" (OECD Manual, 2009: 129). These assets also cause a rise in value. For this reason, capital stock is calculated in the form of permanent inventory with the investments added annually to the capital.

## 2. CALCULATION OF CHANGE RATE FOR GROWTH

Country managers aim to improve the standards of society and increase their prosperity while making economic decisions. Increasing the welfare and the development of the standards necessitates not to value individual labor, but to accept the supremacy of law as indispensable.

On the axis of globalization, the forms of production and the conditions of competition are neither the same nor constantly changing. The stages of production in developed and developing countries affect every aspect of the macro economy. In terms of investment, saving, income, foreign trade, production styles and stages are in interaction. Technological developments and changes in the form of production force countries to determine their growth preferences and their associated dynamics.

Individuals' total potential, skilled and educated labor force, labor productivity, dynamic population structure and the tendency of this work to use technology are at the center of economic growth. These are positive variables for growth. Plan program builders make fairly stable assumptions about variables. For this reason, the past and current situation is determined and the future is tried to be formed. Care is taken to ensure that the build for the future is reasonable and feasible.

This is the opposite of strategy and policy. The strategy and model of economic growth are established by allowing for "import substitution" for the industrial sectors, for "free market economy and openness", for "tax reform and fiscal discipline", for advancing stability and for "privatization and institutional reform".

Economic growth can not be said to have played a very good role in institutional innovations, although institutional practices have to do with a range of policy reforms (Rodrik, 2009: 46). More rapid reforms are needed to accelerate growth. For growth, it is important to establish an investment strategy, expand production volume and make it productive, make new products for market dominance, use new technologies and encourage the state to encourage entrepreneurs. The state should encourage entrepreneurs-entrepreneurs and lift the production barriers in the markets. Increasing the growth rates will increase social prosperity and standards will develop. When it comes to increasing social welfare and improving standards, the determinants of the improvements in the factors, namely the supply front of the macroeconomics (Kibritcioglu, 1998: 207), have emerged.

Decreases in the prices of labor, capital and natural resources on the supply front affect this. For example, the increase in wages and interest of these factors brings with it a cost increase. Thus, the production factors, the inputs of the producers, and the variants of the developing technologies are differentiated.

GDP also shows rational expectations with the behavioral equations of the demand-supply departments (DPTMAKROM, 2000: 2) taken as a real block in the model studies of increase or growth expression that may occur in a certain period. Increasing the income of the low-income individuals, savings and consumption habits need to be solved in a model by establishing functional and wealth relations. The resolutions also show how rational expectations (Muth, 1961: 315) will be created.

The assumption that economic growth is influential on capital stocks is revealed by mathematical studies. The periodic increase in investments is due to saving and it also influences the growth of the efficiency economy of the labor force. For example, the increase in saving rate increases labor income and transforms into investments.

The decline in investments also brings with it the decline in capital stocks. In addition, the pace of growth is volatile in relation to the increase in public spending and the tax to be applied to the private sector. Increases in public spending and increases in new supplementary taxes, which are applied on a net basis, slow economic growth.

When any economic growth rate is decided, policies are set to ensure that this speed is achieved. The amount of investment together with the policies will be calculated. Of course, what is the rate of population growth and what is important here. What is the amount of saving in response to the population increase, the answer to the questions such as the amount of savings and what the standard of living will be and how it will develop is revealed. The need for outsourcing is determined. How to increase domestic and foreign savings to reach a predicted growth rate.

It is calculated on the basis of the investments of public and private sector savings. In the face of the inadequacy of the necessary external financing resources, it is decided how the open financing policies will be implemented, the domestic borrowing or the central bank's policy of printing money. The open financing policy is brought to the agenda with the request to stimulate the economy. But it will keep the agenda on how to avoid it because it will increase public spending and trigger inflation. Because these policies have a negative impact on economic growth in real terms.

If the amount of savings can not meet the targeted amount of investment, it is necessary to reduce the growth rate. As a result of this, the amount of investment is reduced. An alternative to not reducing the amount of investment is to find external sources, to provide external assistance and to provide foreign capital entry.

17 February to 4 March 1923 Gathering of Izmir Economics Congress Mustafa Kemal Atatürk and his comrades in arms young republicans who took a very important decision for Turkey.

Mustafa Kemal, in his opening speech, "We have a new Turkey to our strong economy for us to reach the level that we are worthy of our emphasis in the first degree. Political victories no matter how big they may be victories coming crowned unless they are challenged with economic victory is not continuous. Economy means is everything, people to be happy to live that all of them are what they need for their existence" (Ökçün, 1997:209), it is possible that the state can survive not only by military victories but by applying an independent economy. According to the targets of 1923 İzmir Economy Congress, "1st Industrial Development Plan" covering 1933-1938 period and "2nd Industrial Development Plan" covering 1933-1944 period were prepared.

The Democratic Party (1950-1960) period began with a search for a Democratic party plan when unplanned public spending, increasing budget deficits, uncertainties in investments, and difficulties in finding both internal and external sources came in 1959. Professor of Econometrics on world famous. Jan Tinbergen were invited to Turkey. (Turhan, 2014: 49) But this issue is kept secret. The removal of the Democratic Party Government from power by a military coup accelerated its planning efforts without further disruption.

During the military government period, the State Planning Organization (SPO) was established and the directive of economic and social life was included in the 1961 Constitution. 1960-1980 Period Turkey with political turmoil, social unrest, economic difficulties Although it had been planned and programmed with application in economics.

The "First Five-Year Development Plan", which entered into force on November 21, 1962, was published in the Official Gazette dated December 3, 1962 and accepted in the Turkish Grand National Assembly and in the Senate. Since that date, annual programs have started to be implemented. The First Five-Year Development Plan is a single sector model. This model is to determine the growth rate with Harrod-Domar.

Model;

$$g = k*s_1(1 - t_d) + k*s_2(t_v - t_d) + k*b$$

Here,  $g$  = Growth Rate,  $k$  = Marginal Capital / Output Ratio,  $s_1$  = Private Sector Saving Rate,  $s_2$  = Public Sector Saving Rate,  $b$  = Foreign Trade Deficit / National Income Rate,  $t_d$  = Taxable Taxes / National Income Rate.

In this model, the balance is like the back of a knife and its continuity is also very difficult. Homogeneity of manufactured goods and services is accepted. Economic growth depends on the amount of investment and it provides internal and external savings. Sometimes the savings goes to the consumption rather than the deposit. The production and importation of investment goods reveals how much to invest and how to allocate resources. This relationship has a positive value (Levine-Renelt, 1992: 943).

The Harrod-Domar model was used to ensure continuity of growth and to measure growth with income shots. Increases related to income are derived from the derivation of investment and saving functions. It is added to the capital stocks of the investments to be made with the portion to be provided in accordance with the investment level being equal to the savings.

If we think of investment = saving as saving, then increasing value is converted into investment, saving marginal saving tendency. The marginal saving rate and revenue will give the value of the multiplication savings. In other words, equity equality for capital stock will appear as an investment. Investment = Additional Value to Capital Stock is the Capital / Supply ratio statement.

With the Harrod-Domar model, growth is generated by capital yield ratio and saving ratio. Simply, the rate of economic growth is identified by the ratio of saving rate to capital efficiency. In other words, saving increases in the economy are proportional to economic growth.

The efficiency of capital investments will be determined by the rate of capital input efficiency of capital increase qualifications. For this reason, the relations of the productions of the sectors in the macro level are not established in the 1st Five Year Development Plan and there is no distribution of investments according to the sectors.

### 3. USE IN THE PLAN MODELS OF CAPITAL / DEBT RATIO

One of the rates used to determine the preparation of mathematical expressions of relations between variables in the models that are desired to be established in relation to economic growth is the Capital / Product Ratio (SHO). It is an evaluation unit of capital stocks and investment relations in calculating how much the national income will increase or what value should be.

Calculates the amount of investment needed to increase revenues in plan models as a unit of assessment. The investment ratio will be multiplied by the increase in the share of capital / liquidity and income. For example, if a plan model requires a \$ 100 billion increase in income for a given period and SHO = 4 for this period, then an investment of  $4 * 100 = 400$  billion dollars should be made. In other words, if SHO = 4.5 for the same amount (\$ 100 billion) of income increase, the investment amount will be 450 billion USD.

There are some difficulties in calculating and using SHO. The technological changes in external sources for capital are very fast. Technology is changing and developing very rapidly. Rapid changes in the level of technical knowledge and labor factors influence the impact on production (Alkin, 1970: 466), and it also affects these calculations.

It is assumed that the SHO used for production associations in development plans will not change during the planning period. A difficulty in SHO calculations is that the Capital / Proportion Rates calculated from previous periods are used for the plan periods after 4-5 years. The fact that stock production values are not included in the calculation is also a challenge for SHO uses. Since capital is a scarce factor, it is a matter of particular concern for developing countries. There are differences in consumption, savings and investment values among regions, annual delays, raw materials and technologies used (Çınar, 1963: 5).

Changes in spending and savings, according to changes in individual standards of living, also increase the SHO's fall. The development of infrastructure investments also changes the way they live. Investment commodities become important as this will affect the demand structure. New production techniques become necessary. The capital requirement increases as SHO grows. It should not be forgotten that capital is not the only factor in increasing production. Qualitative labor, natural resources are also important factors for production.

The difference between the outcome of investment expenditures and the start time of the production event affects the SHO. For example, the SHO will grow because it will cause the long-term production of the investment to take place. If low capacity utilization arises after the investment is realized, SHO is also low. SHO is small if the capacity utilization is increased and the production increase is achieved before the new deposit is started.

What is to be taken as a basis for the pricing of capital and production is a distressing issue. While it is possible to bring fixed prices by using the investment index, foreign exchange control and restrictions such as reasons and bring the current price together with errors. Current prices will not be balanced. The low exchange rate makes SHOs of exports high. The change in interest rates means that the mobility in foreign exchange will change for SHO.

**4. USE OF INPUT-OUTPUT MODEL CAPACITY / DEFINITION RATIO**

It is necessary to know the relation between plan models and sectoral structures and the effects of developments. For this, input-output technique is applied in planning and directing such as investment, production, demand. In particular, it is easier to put forward this model of the relationship between the goods and services exchanges of the sectors and the final demand in the industry. This model is also used to determine the relationship between each sector and other sectors as well as the macroeconomic effect. The details of the inter-sectoral structure of the classical Input-Output Model and the instability of the parameters over time (El-Sheikh, 2011: 380). For this reason, the Input-Output Tables are used in plan models as detailed documents (Maraşlıoğlu-Bahçeci, 1995: 1) that reveal the sectoral production and demand structure of an economy and also show the currents of goods and services.

**4.1. Static Input-Output Technique**

Analysis of goods and services produced and purchased is done with this table. It is possible to provide supply-demand identity in the economy. In the static model, it is assumed that each goods and service is produced by a sector.

Aggregations are made in the sectors. It is considered to be a single production technique. It is based on the assumption that relations are constant.

**Table 1: Static Input-Output Table**

| sectors<br>User           | Demand of<br>Intermediate goods<br>1 2 3 .. j ... n | Total<br>demand<br>of<br>Intermediate<br>goods | Final Demand |             |        |          |       | Total<br>Final<br>Demand | Total<br>Supply=<br>Demand | Supply |       |
|---------------------------|---|--|--------------|-------------|--------|----------|-------|--------------------------|----------------------------|--------|-------|
|                           |   |  | Investment   | Consumption | Export | Expenses | Stock | Import                   | Production                 |        |       |
| 1                         | $X_{11} X_{12} X_{13} \dots X_{1n}$                 | $W_1$  | $I_1$        | $C_1$       | $E_1$  | $G_1$    | $S_1$ | $Y_1$                    | $Z_1$                      | $M_1$  | $X_1$ |
| 2                         | $X_{21} X_{22} X_{23} \dots X_{2n}$                 | $W_2$  | $I_2$        | $C_2$       | $E_2$  | $G_2$    | $S_2$ | $Y_2$                    | $Z_2$                      | $M_2$  | $X_2$ |
| 3                         | $X_{31} X_{32} X_{33} \dots X_{3n}$                 | $W_3$  | $I_3$        | $C_3$       | $E_3$  | $G_3$    | $S_3$ | $Y_3$                    | $Z_3$                      | $M_3$  | $X_3$ |
| ...                       | .....   | ...  | ...          | ...         | ...    | ...      | ...   | ...                      | ...                        | ...    | ...   |
| ...                       | .....   | ...  | ...          | ...         | ...    | ...      | ...   | ...                      | ...                        | ...    | ...   |
| ...                       | .....   | $W_j$  | ...          | ...         | ...    | $G_j$    | $S_j$ | $Y_j$                    | $Z_j$                      | ...    | ...   |
| n                         | $X_{n1} X_{n2} X_{n3} \dots X_{nn}$                 | $W_n$  | $I_n$        | $C_n$       | $E_n$  | $G_n$    | $S_n$ | $Y_n$                    | $Z_n$                      | $M_n$  | $X_n$ |
| Sum of Intermediate input | $U_1 U_2 U_3 \dots U_n$                             | $U=W$  |              |             |        |          |       |                          |                            |        |       |
| Value Added               | $V_1 V_2 V_3 \dots V_n$                             |  | $V_i$        | $V_c$       | $V_e$  | $V_s$    | $V$   |                          |                            |        |       |
| Total Production          | $X_1 X_2 X_3 \dots X_n$                             |  | $I$          | $C$         | $E$    | $G$      | $S$   | $Y$                      | $Z$                        | $M$    | $X$   |

There are invariant parameters between modelin input and output. Tabloda Part 1 forms the basis of the relationship between sectors. Rows are input from one sector to another, and columns are the input (goods and services) that a sector receives from other sectors to maintain production. For example,  $X_{ij}$  is the goods and services belonging to sector i requested by sector j, column i, i. If the aggregate intermediate demand for any sector i is denoted as  $W_i$ ,

$$W_i = X_{i1} + X_{i2} + X_{i3} + \dots + X_{ij} + X_{in} = \sum X_{ij}$$

For the total value of  $j$ , it is necessary to sum the elements of  $y$ . The sum of inputs received by one sector from other sectors is denoted by  $U$ .

$$U_j = X_{1j} + X_{2j} + X_{3j} + \dots + X_{jj} + X_{nj} = \sum X_{jj}$$

The final demand elements in Table 2 are Investment, Consumption, Expenditure, Export and Stock values. In Chapter 3, labor, capital and labor payments are seen. These payments are equal to the value added to the product as a result of the production. Fees, salaries, interest payments, profits, dividends, indirect taxes and depreciation add up to value.

When calculated according to production market prices, indirect taxes are excluded from the value added value when calculated according to factor prices. In section 4, payments made to the final demand elements are included. The supply of goods or services produced by any industry is equal to the sum of imports and exports of that sector.

In the input-output current model, the representations are expressed as follows.

$X_{ij}$  =  $i$  sector item used by  $j$  sector

$X_i$  =  $i$  sector property

$Y_i$  =  $i$  sector final request

$W_i$  = part of the  $i$  sector used in other sectors ( $\sum_j X_{ij}$ )

$U_j$  = the total intermediate input (sector) received by sector  $j$  from other sectors ( $\sum_i X_{ij}$ )

$V_j$  =  $j$  sector value added

It is important to establish two basic equilibrium equations.

1. Each sector is equal to the aggregate demand of total demand.

$$M_i + X_i = \sum x_{ij} + Y_i$$

$$X_i = \sum x_{ij} + Y_i - M_i$$

( $i = 1, 2, 3, \dots, n$ )

2. The value of any sector is equal to the sum of inputs from the other sectors of production value plus the sum of value added.

$$X_j = \sum_i X_{ij} + V_j$$

( $i = 1, 2, 3, \dots, n$ )

All industry production is;

$$\sum_i X_i = \sum_i \sum_i X_{ij} + \sum_i Y_i - \sum_i M_i \text{ occurs.}$$

If the total production value of the sectors is;

$$\sum_j X_j = \sum_j \sum_i X_{ij} + \sum_j V_j \text{ It happens.}$$

From here,



$$\sum_i X_i - \sum_i M_i = \sum_j V_j \text{ Calculated.}$$

Y will show GNP with  $-M = V$  expression. If  $GDP = I + C + G + S + E$ , then  $V$  is calculated as income. If there is no import in the system,

$$X_i = \sum X_{ij} + Y_i \text{ Calculated.}$$

Assuming that there are  $n$  sectors in the system and  $n$  final demands for them,

$$X_1 = x_{11} + x_{12} + x_{13} + \dots + x_{1n} + Y_1$$

$$X_2 = x_{21} + x_{22} + x_{23} + \dots + x_{2n} + Y_2$$

$$X_3 = x_{31} + x_{32} + x_{33} + \dots + x_{3n} + Y_3$$

.....

.....

$$X_i = x_{i1} + x_{i2} + x_{i3} + \dots + x_{in} + Y_i$$

$$X_n = x_{n1} + x_{n2} + x_{n3} + \dots + x_{nn} + Y_n$$

Following situation will occur.

$$X_1 - x_{11} - x_{12} - \dots - x_{1j} - \dots - x_{1n} = Y_1$$

$$X_2 - x_{21} - x_{22} - \dots - x_{2j} - \dots - x_{2n} = Y_2$$

$$X_3 - x_{31} - x_{32} - \dots - x_{3j} - \dots - x_{3n} = Y_3$$

.....

.....

$$X_i - x_{i1} - x_{i2} - \dots - x_{ij} - \dots - x_{in} = Y_i$$

$$X_n - x_{n1} - x_{n2} - \dots - x_{nj} - \dots - x_{nn} = Y_n$$

In the system, it is found that there are  $n$  intermediate production ( $X_i$ ) and  $n \times n$  intermediate demand. Since this equation is not a system but a demand for production from any sector, it is a linear function of the production level of that sector,

$X_{ij} = a_{ij}$  When  $X_j$  is written, the equation  $a_{ij} = X_{ij} / X_j$  is defined as the input coefficient. The input coefficient ( $a_{ij}$ ) indicates that any sector  $j$  must receive from the business sector for a unit output output.

According to this,

$$(1 - a_{11}) X_1 - a_{12} X_2 - \dots - a_{1j} X_j - \dots - a_{1n} X_n = Y_1$$

$$- a_{21} X_1 + (1 - a_{22}) X_2 - \dots - a_{2j} X_j - \dots - a_{2n} X_n = Y_2$$

.....

.....

$$- a_{i1} X_1 - a_{i2} X_2 - \dots + (1 - a_{ij}) X_j - \dots - a_{in} X_n = Y_i$$

$$- a_{n1} X_1 - a_{n2} X_2 - \dots - a_{nj} X_j + (1 - a_{nn}) X_n = Y_n$$

It will be. If we show this with a matrix notation,  $A =$  Input Coefficients will take the form of a matrix. Let's show the production sector matrix by  $X$ ,

$$A = \begin{pmatrix} a_{11} & a_{12} & \dots & a_{1j} & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2j} & a_{2n} \\ \dots & \dots & \dots & \dots & \dots \\ a_{i1} & a_{i2} & \dots & a_{ij} & a_{in} \\ a_{n1} & a_{n2} & \dots & a_{nj} & a_{nn} \end{pmatrix} \quad X = \begin{pmatrix} x_1 \\ x_2 \\ \dots \\ x_i \\ x_n \end{pmatrix}$$

It is also possible to find the intermediate demand sector W from the analysis of the following matrix

$$AX = \begin{pmatrix} a_{11} x_1 + a_{12} x_2 + \dots & a_{1j} x_j & a_{1n} x_n \\ a_{21} x_1 + a_{22} x_2 + \dots & a_{2j} x_j & a_{2n} x_n \\ \dots & \dots & \dots \\ a_{i1} x_1 + a_{i2} x_2 + \dots & a_{ij} x_j & a_{in} x_n \\ a_{n1} x_1 + a_{n2} x_2 + \dots & a_{nj} x_j & a_{nn} x_n \end{pmatrix} = \begin{pmatrix} W_1 \\ W_2 \\ \dots \\ W_i \\ W_n \end{pmatrix} = W$$

$$\begin{pmatrix} x_1 \\ x_2 \\ \dots \\ x_i \\ x_n \end{pmatrix} - \begin{pmatrix} a_{11} x_1 + a_{12} x_2 + \dots & a_{1j} x_j & a_{1n} x_n \\ a_{21} x_1 + a_{22} x_2 + \dots & a_{2j} x_j & a_{2n} x_n \\ \dots & \dots & \dots \\ a_{i1} x_1 + a_{i2} x_2 + \dots & a_{ij} x_j & a_{in} x_n \\ a_{n1} x_1 + a_{n2} x_2 + \dots & a_{nj} x_j & a_{nn} x_n \end{pmatrix} = \begin{pmatrix} Y_1 \\ Y_2 \\ \dots \\ Y_i \\ Y_n \end{pmatrix}$$

we can write the following expression.

$$X - AX = Y$$

If X is multiplied by the unit matrix,  $(1 - A) X = Y$ .

$(1-A) X = (1-A)^{-1} Y$  if each side of the equation is multiplied by the inverse of  $(1-A)$   $(1-A)^{-1} (1-A) = 1$ , then  $X = (1-A)^{-1} Y$  occurs.

This is also called the structural matrix of the economy (Leontief, 1973: 570). With this model, the relations between the economies of the economy and each other and the final demand are analyzed (Bocutoğlu, 1987: 223) and the structural features of the economy are tested and sectoral evaluations are made for the future.

#### 4.2. Dynamic Input-Output Technique

Sectors use both input and investment goods to produce goods and services. That is, the sectoral relationship is not only in the form of input purchase, but also in the form of investment goods use. For example, if a sector has increased its final demand, this sector not only uses input-inputs but also uses investment goods. With the inclusion of the investment

property exchange, the system becomes dynamic. In the dynamic input-output technique, there is an investment matrix showing the exchange of capital goods other than the cross-sectoral transaction matrix.

Another model of capital accumulation in this model is the stock of capital. (Chenery, 1956: 71). In a dynamic input-output model, stocks are treated as capital stock, while fixed capital and intermediate inputs are symmetrically contributed to production as compared to the previous year (Aulin-Ahmavaara, 2000: 4).

In Static Input-Output Model, it is possible to follow the changing of the parameters by observing the functions belonging to the production structure (Leontief, 1953: 53). Each sector gives a part of the goods it manufactures to the other sectors in terms of investment, in order to use it in production.

**Table 2: Dynamic Input-Output Table**

| Sectors     | Flow Table  | Capital Matrix   | Investment     | Consumption    | Export         | Import          | Production     |
|-------------|---|--|----------------|----------------|----------------|-----------------|----------------|
| 1           | X <sub>11</sub> X <sub>12</sub> X <sub>13</sub> ..... X <sub>1n</sub> | S <sub>11</sub> S <sub>12</sub> S <sub>13</sub> .....S <sub>1n</sub> | I <sub>1</sub> | G <sub>1</sub> | E <sub>1</sub> | -M <sub>1</sub> | X <sub>1</sub> |
| 2           | X <sub>21</sub> X <sub>22</sub> X <sub>23</sub> ..... X <sub>2n</sub> | S <sub>21</sub> S <sub>22</sub> S <sub>23</sub> .....S <sub>2n</sub> | I <sub>2</sub> | G <sub>2</sub> | E <sub>2</sub> | -M <sub>2</sub> | X <sub>2</sub> |
| 3           | X <sub>31</sub> X <sub>32</sub> X <sub>33</sub> ..... X <sub>3n</sub> | S <sub>31</sub> S <sub>32</sub> S <sub>33</sub> .....S <sub>3n</sub> | I <sub>3</sub> | G <sub>3</sub> | E <sub>3</sub> | -M <sub>3</sub> | X <sub>3</sub> |
| .           | .....   | .....  | .              | .              | .              | .               | .              |
| .           | .....   | .....  | .              | .              | .              | .               | .              |
| n           | X <sub>n1</sub> X <sub>n2</sub> X <sub>n3</sub> .....X <sub>nm</sub>  | S <sub>n1</sub> S <sub>n2</sub> S <sub>n3</sub> .....S <sub>nm</sub> | I <sub>n</sub> | G <sub>n</sub> | E <sub>n</sub> | -M <sub>n</sub> | X <sub>n</sub> |
| Added Value | V <sub>1</sub> V <sub>2</sub> V <sub>3</sub> .....V <sub>n</sub>      |  |                |                |                |                 |                |
| Production  | X <sub>1</sub> X <sub>2</sub> X <sub>3</sub> .....X <sub>n</sub>      | I <sub>1</sub> I <sub>2</sub> I <sub>3</sub> .....I <sub>n</sub>     | I              | G              | E              | -M              | X              |

For example, i industry's products are demanded for investment purposes in other sectors.

$$S_i = S_{i1} + S_{i2} + S_{i3} + \dots + S_{ij} + S_{in}$$

$$S_i = \sum S_{ij} \quad (j = 1,2,3,\dots,n)$$

S<sub>i</sub> = total investment by i

s<sub>ij</sub> = i from sector j for investment i

In the capital matrix, the sum of the order elements represents the amount of capital given by one sector to the other for investment purposes, and the capital goods that the columns receive from other sectors for investment purposes.

$$S_j = S_{1j} + S_{2j} + S_{3j} + \dots + S_{ij} + S_{nj}$$

$$S_j = \sum S_{ij} \quad (i = 1,2,3,\dots,n)$$

$$s_{ij} = S_j / \delta K_j$$

K<sub>j</sub> = Marginal capital value of the sector

s<sub>ij</sub> = the rate at which the unit of capital in j comes from which i sector.

$$\sum S_{ij} = 1$$

The matrix that comes from the s<sub>ij</sub> is S "Capital Matrix". As the capital structure is associated with production (Polat, 1979: 27), the sectoral Capital / Production Ratios (SHO) are set. There is a need for SHO to account for stock-flow coefficients. SHOs are derived from the projects of the sectors.

$$k_j = (\delta K_j / \delta X_j) \quad (\delta K_j = k_j \delta X_j)$$

k<sub>j</sub> = Marginal SHO of j sector j

δ K<sub>j</sub> = Marginal investment in sector j (increase in capital stock)

$\delta X_j$  = Marginal production growth of sector j

The SHO is referred to as the technology coefficient here (Korum, 1963: 47). SHO refers to the relationship required for the production of a sector or industry.

$k_j X_j < K_j$  = production of sector j,  $k_j$  = sector SHO,  $J_j$  = capital stock of sector J.

The product of the sector and the product of the SHO is smaller than or equal to the capital stock of the sector (Derviş-Melo-Robinson: 1982: 66).

$$Y^t = \delta K_j^t$$

$$\delta K_j^t = K_j^{t+1} = k_j^t \delta X_j^t$$

$Y^t$  = capital stock of the period j in sector t during period t.

$$Z_i^t = \sum_j^n s_{ij} \delta K_j^t$$

$Z_i^t$  = t goods and services produced in the business sector

$$Z_i^t = \sum_j^n s_{ij} k_j (X_j^{t+1} - X_j^t) \text{ occur.}$$

$$\sum_j^n s_{ij} k_j = \sum_j^n b_{ij} \text{ if,}$$

$$Z_i^t = \sum_j^n b_{ij} (X_j^{t+1} - X_j^t) \text{ when,}$$

$$Z = S * k (X^{t+1} - X^t) = B (X^{t+1} - X^t) \text{ calculated.}$$

If the final demand is  $C_i^t$  sector supply and demand balance is as follows,

$$M_i^t + X_i^T = \sum_j^n a_{ij} X_j^t + \sum_j^n b_{ij} (X_j^{t+1} - X_j^t) + C_i^t \text{ occur.}$$

The equilibrium equation of the production level of the sector, if the input coefficients are denoted by A, the capital coefficients are denoted by B,

$$X^t = AX^t + B (X^{t+1} - X^t) + C^t \text{ will be as it.}$$

The dynamic technique should be done when the structure of the sector or economy in question is to be changed. When economic planning is needed, technological developments are associated. For this reason, it is an effective usage tool. The matrix B in the dynamic model also describes the technological development (Ozaki-Shimizu, 1984: 256). This model describes both the structure of the industry and its production as well as its development. Capital accumulation and balanced growth are handled in detail (Kepenek, 1977: 56).

## 5.CONCLUSION

The SHO of industries or sectors is needed to obtain the matrix of stock-flow coefficients (capital structure matrix).

$$s_{ij} = S_j / \partial K_j \quad k_j = \partial K_j / \delta X_j$$

Capital coefficients are an important means to find the future location of the industries and the interrelationships of the industries as they show the relation between stock capital and current production.

The capital structure matrix is associated with the SHO. This relationship is obtained by multiplying the matrix K, which is the SHO, with the matrix S, the stock-flow coefficient.

$$s_{ij} k_j = (S_j / \delta K_j) * (\delta K_j / \delta X_j) = b_{ij}$$

$$s_{ij} k_j = b_{ij}$$

The coefficients of  $b_{ij}$  indicate how much capital is required from the industry in order to increase unit production.

$$\left( \sum_i^n s_{ij} \right) / \delta X_j = k_j \quad \sum_i^n b_{ij} = k_j$$

the sum of the columns of the j columns gives the industry's SHO ( $k_j$ ). Percent distribution of investments according to origin sectors will be obtained by dividing total bids by SHO (Yayın-Uras, 1971: 19), which is equal to 1.

$$\left( \sum b_{ij} \right) / k_j = 1$$

By expressing the matrix of stock-flow coefficients with matrix notation

$$\begin{pmatrix} s_{ij} \\ \vdots \\ s_{n*n} \end{pmatrix} * \begin{pmatrix} k_{ij} \\ \vdots \\ k_{n*n} \end{pmatrix} = \begin{pmatrix} b_{ij} \\ \vdots \\ b_{n*n} \end{pmatrix}$$

S = Capital structure matrix of sectors, K = Matrix with SHO in diagonal, B = Stock-flow coefficient matrix. With this matrix, dynamic relations of sectors are revealed. Each sector uses capital goods to both manufacture and invest. In addition to the use of capital goods for production and investment, there is also the use of service sectors. Measuring capital coefficients at certain times for industry or industry is important to reveal the direction of development. It is easier to realize the desired development structure by determining the direction in which the sectors or industries are developing. Economic growth will also facilitate the establishment of the stock-flow coefficient matrix for growth and the preparation of plans and programs to achieve the targets.

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## ADDRESSING POVERTY THROUGH MICROFINANCE: DOES IT WORK?

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Ishtiaq Ahmad<sup>1</sup>, Rizwan Ahmed Satti<sup>2</sup>

<sup>1</sup> Public Schools and Colleges, Jutial Gilgit, Pakistan.

[seraph.ishtiaq@gmail.com](mailto:seraph.ishtiaq@gmail.com), ORCID: 0000-0002-5733-9334

<sup>2</sup> Allama Iqbal Open University, Islamabad, Pakistan.

[rizwan.ahmed@aiou.edu.pk](mailto:rizwan.ahmed@aiou.edu.pk), ORCID: 0000-0003-2168-9399

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### ABSTRACT

**Purpose-** For the couple of decades microfinance has remained nucleus of developing nations to combat poverty. This paper aims to examine whether microfinance succeeded to reduce poverty? In this study poverty has been taken as analogous to 'extreme poverty'.

**Methodology-** Influence of microfinance in poverty eradication is investigated by comparing clients in first loan cycle with the clients of higher loan cycles. The data was analyzed in two ways; firstly, simple and straight forward descriptive analysis with simple univariate technique and secondly, empirical analysis is made by using binary logit model.

**Findings-** It is found that intermediation of microfinance did not only raise the income of borrowers but also lifted their spending over the loan cycles. The study also explores that over the successive loan cycles, possession of household durable item, spending on education, respond to the shocks and health status also improved. Clients in higher loan cycles managed to improve their social status.

**Conclusion-** Almost every examined poverty indicator indicates positive impact of microfinance on poverty eradication. However, various colors of poverty in the society do not allow us to culminate the effectiveness of microfinance in poverty eradication.

**Keywords:** Business, gilgit, microfinance, poverty eradication, saving and consumption

**JEL Codes:** G21, I32, O16

### 1. INTRODUCTION

Poverty has remained a perpetual apprehension of various nations and is often coined with the developing countries. Every possible effort is being exercised across the globe to combat poverty, as a result, the number of people living below poverty line has declined from 2 billion in 1990 to 705 million in 2015. This means that during these years 137,000 people exited the extreme poverty on daily basis (Roser and Ospina, 2017). Among various issues of the poor, lack of finance is the core issue, which resists them to participate in income generating activities; as a result situation becomes chronic with each passing day. In developing nations, microfinance is being used widely as a poverty reduction tool. By using microfinance, an economically handicapped member of a society is transformed into entrepreneurially active member who generates some income for his / her family (Samer et al., 2015; Mosley, 2010).

Use of microfinance and its impact studies have got more importance during the last decade (Kessy, 2009). These studies are conducted to measure the degree of success or failure of the program. Albeit most of the studies show positive impact of microfinance on poverty but its consistency is often questioned. Banerjee et al., (2013) pointed that by using microfinance, individuals with pre-existed business got expansion in it, whereas those without any business showed low propensity to start a new venture rather they increased non durable consumption. By exposing a poor person to microfinance, his /her condition is improved in short run, but when the given money is exhausted, condition of the poor becomes even more critical as he/she found him/her under additional burden of debt (Chowdhury et al, 2002; Yusuf et al, 2013). Maïtrot and Zarazúa (2017) nullifies the effectiveness of microfinance program, yet suggests it to be an important

tool for the global efforts in the quest of poverty free world. Various hanging results of microfinance's impact on poverty, need further clarification. Present study is an effort in this regard.

World Bank has declared Pakistan as a poverty risk zone, where 60 percent of its population lives below poverty line (Basu, 2013). Poor people in Pakistan like other developing nations are also exposed to microfinance considering it a better way of combating poverty, but outreach of microfinance in the country is still limited. According to Pakistan microfinance Network (PMN) review (2010), in Pakistan microfinance outreach is approximately 2.4 million which is less than 10 percent of the probable market.

Present study is conducted in district Gilgit, located at the extreme north of Pakistan from where microfinance activities were initiated by Aga Khan Rural Support Program (AKRSP) in 1982 in the history of the country under AKRSP Model (Riaz et al., 2012; Hussein, 2009). The Model was initially designed to form village and local social organizations with a group of 5 to 10 members for each organization. Members were brought under compulsory saving, against which small loans were provided to the members. Main aim of AKRSP model was to create saving behavior in poor people, particularly in women and to create for them a small business (AKF, 2012; Spoelberch and Shaw, 1987). The model was first applied to extreme poor of Gilgit, Pakistan because of its vulnerable poverty condition, where annual per capita income (Rs. 10, 312) of the inhabitant was slightly higher than half of the national average (Rs. 18,414) (AKRSP, 2001). The model was gradually modernized and given the modern microfinance shape by originating the First Microfinance Bank Limited in 2002 (AKRSP, 2001). Evidences from an early microfinance fed area will certainly help us to decide the success or failure of the program.

## **2. LITERATURE REVIEW**

Handing some finance to the poor enables them to come out of the poverty, with this notion Shil (2009) intensifies the need of institutional modality of microfinance. Microfinance has the potential in renovating the poor and uplifting their status. It helped poor, particularly poor women to increase income (Swamy, 2015; Cheston and Khun, 2002). With his empirical analysis, Sivachithappa (2013) found that intervention of microfinance by self help groups (SHGs) has resulted increase in the level of income and assets of rural women of SHG. Ahmad and Satti (2017) came with the conclusion that women borrower managed to raise their income by indulging themselves in new ventures. Intermediation of microfinance to the poor women as studied by Samer et al., (2015) provided a way to earn some money for them. By examining general effects of microfinance institutions Imai and Azam (2011) concluded uplifting trend in food consumption and other poverty reducing indicators. Bauwin and Jbili (2017) investigated the growth rate of granted money over the loan cycle of Tunisian microfinance institutions and concluded a credulous relationship between the borrowers and microfinance institutions. They noticed heterogeneous increase in growth rate for women and men. The growth rate for women was much lower than for me. Using panel data from Bangladesh, Khandker (2015) examined the effect of microfinance on individuals and aggregate level. He found that as a result of microfinance, not only the life of borrowers improved but also the local economy boosted. Having access to the chunks of money, households managed to protect them against the risk and became able to deal with the shocks. The socio-financial intermediation also helped women to reduce vulnerability and to secure social assets and relationship of trust within the family and society (Wright et al., 1999).

Economic outcome of microfinance in the society reported to be marginal (Shirazi, 2012); only 3 percent poor managed to cross the poverty line. Poor borrowers made hardly 2 percent increase in their income to that of the 6 percent rise in non borrowers' income. According to Crepon et al., (2011), observed a very nominal push in normal consumption and very little effect on education, health and other indicators. They saw that individuals engaged in pre-economic activity showed decreasing trend not only in the consumption of non durable items but thr overall consumption also decreased, which shows expansion of economic activity and savings. Quite opposite results to that of Crepon et al., 2011 were seen by Banerjee et al., (2015) who nullified the notion 'miracle of microfinance' by carrying out the first randomized evaluation to see the impact of microfinance in a new market and concluded that households who already having any business got expansion in it, whereas those without any business remained failed to start a business. Overall impact of microfinance on poverty eradication is positive, but ultra poor borrowers remained failed to improve their status (Shirazi and Khan, 2009; Macissac, 1997). Through an in depth analysis of impact of microfinance in Sub-Saharan Africa, Rooyen et al., (2012) concluded that microfinance has a modest but not the consistent positive impact. They clarified that in some cases, microfinance increased poverty, disempowered the women and reduced children education as most of the borrowers failed to repay the loan due to diversion toward millennium development goals that led them to acute debt. Augsburg et al., (2012) conducted a study in Bosnia and Herzegovina and evaluated the impact of microcredit on poverty by using randomized controlled trial and found that access to microfinance helped individuals to start and expand small scale business. They observed a decline trend in saving of those who already had a business and more education, whereas the individuals with less education decreased their consumption. They also found increase in labour supply of young adults followed by the decrease in school enrollment.

Coleman (2006) investigated outreach and impact of microfinance programs in North East Thailand. He came to conclude that rich inhabitants significantly participate in the programs than the poor. Positive effects on household welfare had been



reported for committee members; however, effects were insignificant in case of rank and file members. Due to various hurdles, the poor avoid to participate in the programs. Micro enterprise loan has a positive impact on poverty but failed to help the poor to exit poverty (Shaw, 2004). Small objective based funds via poverty targeted programs made AKRSP enabled to reduce severe poverty from 33 percent in 1991 to 5 percent in 2010 (AKRSP, 2012); conversely societies' marginalized segments failed in deriving optimal benefit from these projects. By conducting a specific survey of 2,274 households and 28 microfinance institutions in Philippine, Asian Development Bank (2007) reported that micro loaning did not help poor to escape from poverty, moreover poorest households who were finance with these loans did not show any sort of increase in household income. Nader (2007) did not see any significant effect of microfinance on health related issues. According to him, the borrowers after receiving microfinance depended upon free medical health insurance. Perception of harmony in the family was also found to have no significant association with microfinance. Hytopoulos (2011), concluded the failure of microfinance in human capital formation and strongly condemned the position of microfinance as working solution of global poverty. Maïtrot and Zarazúa (2017) scrutinized various impact studies of microfinance and termed it as an ineffective tool for poverty alleviation. According to him microfinance helped the poor to change their financial life positively in short run but remained failed to change their income, capital and assets on permanent and long term basis.

### **3. DATA AND METHODOLOGY**

#### **3.1. Population and Sample Size**

The study is based on the primary data collected from the borrowers of First Microfinance Bank. Data was collected with a suitable sample size and random sampling technique from six rural areas of district Gilgit. Out of 156 Village/Local social organizations working in pre selected rural areas of the district (AKF, 2012), 49 were selected randomly from which 245 borrowers were selected in a specially designed random technique.

#### **3.2. Data Collection**

As per the nature of study, a detailed questionnaire was generated as a mechanism of data collection. All the questions were systematically set in order to cover every aspect that can be directly or indirectly affected by change in finance both in short run and in long run. Special care was taken to get demographical information in the beginning followed by the questions of borrowing and loan utilization, income, saving and consumption pattern, health, education and possession of durable items. Fixed set of responses were set in order to make process easy and time saving. Extensive interviews were conducted from selected clients from the pre selected village/local social organization in order to get their experience and activities as a part of the program.

#### **3.3. Data Analysis Techniques**

The data was analyzed in two ways. Firstly simple and straight forward descriptive analysis is made by using frequency distributions, mean, percentages and standard deviations for certain variables. Secondly, empirical analysis is carried by comparing control group (participant in first loan cycle) with sample clients (participant in two or more cycles). Loan cycle refers loan period which is one year for selected organization. If loan is paid back during the period, then the organization offers more loans to her clients for the next year and so on. We used Binary Logit Model to see the impact, because we had a primary data with fixed set of choices. We compared control group (first loan cycle = 0) with treatment group (two or more loan cycles =1). Logit Regression is a quite strong technique with comparatively least constraints and analyzes a set of mix predictors.

#### **3.4. Poverty Line**

Setting a poverty line and to count the people under it (head count ratio) is a straightforward strategy to measure poverty (Roser and Ospina, 2017). Poverty line was set on the basis of monthly income of household. Households whose monthly income was less than Rs. 5,500 (roughly US\$ 53) based on World Bank's latest poverty line of US\$ 1.90 per day were considered as extreme poor. Focusing on 'extreme poverty line' means capturing the most adverse and needy people of the society. The living conditions of those living just above the poverty line can also be hard and critical (Roser and Ospina, 2017).

**Table 1: Variables Used in Model**

| Variable               | Nature of Variable | Detail of Variable  |
|------------------------|--------------------|---|
| <b>Demographic</b>     |                    |   |
| Age                    | Continuous         | Age of respondent in years  |
| Gender                 | Binary             | =1 if female, 0 otherwise   |
| EDN                    | Binary             | Education level of respondents =1 if have some education, 0 otherwise |
| MS                     | Binary             | =1 if married, 0 otherwise  |
| NHH                    | Continuous         | Family Size in numbers  |
| THHI                   | Continuous         | Total Households Annual Income in rupees                              |
| <b>Other Variables</b> |                    |   |
| Loan Cycle             | Binary             | =1 if two or more loan cycles, 0 if first loan cycle                  |
| Income                 | Binary             | =1 if increased, 0 otherwise  |
| Saving                 | Binary             | =1 if increased, 0 otherwise  |
| Spending               | Binary             | 1 if increased, 0 otherwise   |
| Schooling              | Binary             | =1 if improved, 0 otherwise   |
| Health Status          | Binary             | =1 if improved, 0 otherwise   |
| Establishing Venture   | Binary             | =1 if established, 0 otherwise  |

#### 4. FINDINGS AND DISCUSSIONS

The following section discusses the elucidation, discussion and analysis of the data obtained from clients of First Microfinance Bank. Data is interpreted both with descriptive and empirical analysis. To get the clear picture, poverty indicators like income, savings, expenditure, schooling, health status and establishing a venture are analyzed using logistic regression.

##### 4.1. Descriptive Analysis

The population of 245 clients were divided into control group (N = 42, members of first loan cycle) and treatment group (N = 203, members of two or more loan cycles) following Johnson and Rogaly (1997). 44.2 percent clients in control group and 47.5 percent in treatment group managed to have their own house. Only 13.9% participants in first loan cycle have monthly income more than Rs. 5,500 (roughly US\$ 53) to that of 30.7% members in successive loan cycles. Average age for control group remained 32.9 years (SD = 6.62) and 36.2 years (SD = 8.07) for treatment group (Table 2).

**Table 2: Descriptive Analysis of Demography of Clients**

| Variables              | Control Group (N = 43) | Treatment Group (N= 202) |
|------------------------|------------------------|--------------------------|
| Average Age            | 32.9 (sd= 6.62)        | 36.2 (sd= 8.07)          |
| Family Size            | 7.7                    | 7.9                      |
| Own Houses             | 19 (44.2%)             | 96 (47.5%)               |
| Intermediate and Above | 20 (46.4%)             | 88 (43.5%)               |
| Secondary              | 6 (13.9%)              | 39 (19.3%)               |
| Primary and Madarsa    | 8 (18.6%)              | 27 (13.4%)               |
| Illiterate             | 6 (13.9%)              | 40 (19.8%)               |

|                              |            |            |
|------------------------------|------------|------------|
| Monthly Income: Y < Rs.2,000 | 2 (4.7%)   | 10 (4.9%)  |
| Rs. 2,001 ≤ Y ≤ Rs.3,500     | 17 (39.5%) | 59 (29.2%) |
| Rs. 3501 ≤ Y ≤ Rs.5,500      | 18 (41.9%) | 71 (35.1%) |
| Y > Rs.5,500                 | 6 (13.9%)  | 62 (30.7%) |

Source: Generated by author based on survey data

#### 4.1.1. Ownership of Household Durable Items

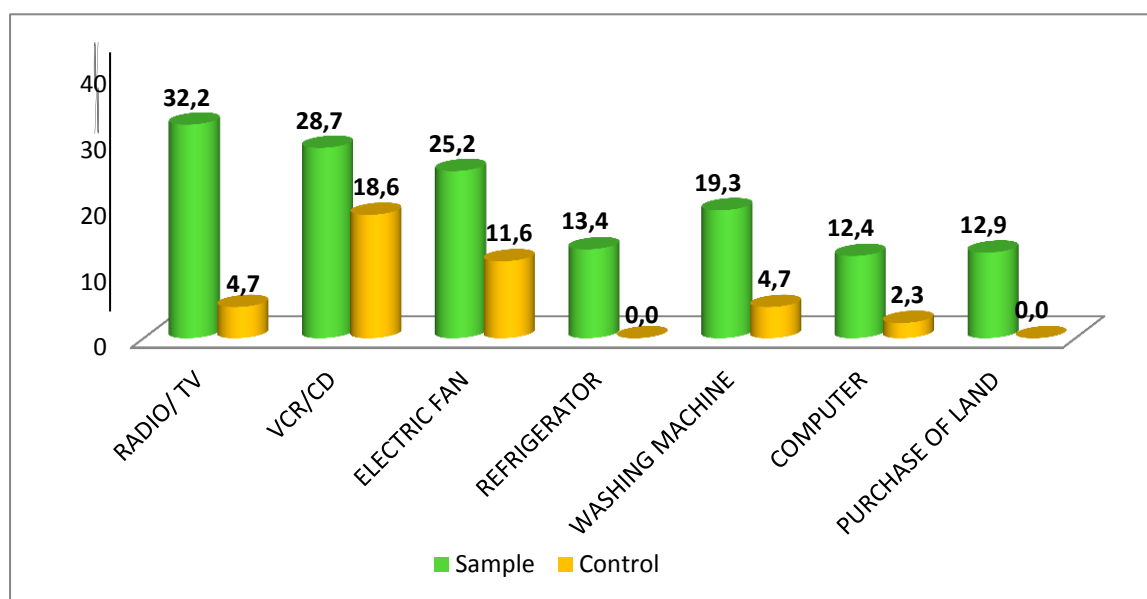
The accumulation or purchase of household durable items is directly affected with household income flux; therefore any change in income may likely to change household possession which can prove to be the impact gauge of microfinance mediation at the poor household. It is hypothesized that with microfinance interference household income raised which enhanced purchasing of durable items. Table 3 illustrates that 62.8% and 35.6% households of control and treatment groups respectively failed to buy any durable item, 32.6% and 35.2% from control and treatment group in the sequence did manage to purchase only single item; whereas 4.6% of control group and 29.25 of treatment group became able to add up their assets with two or more items. Interference of microfinance at household level came with a stronger positive effect on asset accumulation of treatment group to that of control group. Fig. 1 shows proclivity of households towards the purchase of various durable items after acquisition of microfinance. Microfinance mediation enabled almost 13% households in treatment group to buy a piece but land possession after the loan for control group was nil (Fig. 1)

**Table 3: Change in Consumers Durable Items after Loan Mediation**

| Change in durable items     | Control Group (% age) | Sample (%age) |
|-----------------------------|-----------------------|---------------|
| Did not purchase any item   | 62.8                  | 35.6          |
| Purchased only one item     | 32.6                  | 35.2          |
| Purchased two or more items | 4.6                   | 29.2          |
| Total                       | 100.0                 | 100.0         |

Source: Generated by the author from household survey

**Figure 1: Household Trend in Possession of Durable Items**



#### 4.1.2 Living with Shocks

Natural shocks move parallel with life. Sudden shocks sometimes lead a huge financial disaster which often pushes those household back to poverty that have just made a step ahead and are in a transition line. Most often financial disaster come with such strength that a poor household cannot come out of its ferocious shock. In order to have the client's response towards shocks they were asked a few questions regarding nature of shock and respondent's response.

**Table 4: Household Respond to Come out from Financial Shock**

| Query  | Control Group (N = 43) |                | Sample Group (N = 202) |
|--|------------------------|----------------|------------------------|
|  | Responses              | Percentage (%) | Percent Points (%)     |
| Any major unexpected event in a few months that led financial burden | Yes                    | 11.6           | 23.3                   |
|  | No                     | 88.4           | 76.7                   |
|  | Used Savings           | 20.0           | 31.9                   |
| How did you respond to come out from the shock?                      | Borrowed               | 60.0           | 48.9                   |
|  | Sold Assets            | 20.0           | 19.1                   |

Source: Developed by the author from household survey

Table 4 notifies that 11.6% and 23.3% clients of control and sample groups respectively said that they had faced some shocks which lead greater financial burden. In responding to shock 20.0% (respondents who had faced financial burden) control group and about 32% of sample group said that they had used their savings to come out of the shock, 60% and about 49% respondents from control group and sample group respectively borrowed either from bank or from friends and relatives, exactly half (50%) of shock faced clients made borrowings either from bank or from relatives, whereas 20% control group households and more than 19% sample group sold household assets to address the shock.

#### 4.1.3. Health and Medical Services

Food, education, clothing and clean water are not the only issues faced by the poor, but an adverse effect of poverty is poor health condition. In order to explore the effect on health and access to medical services after microfinance mediation, respondents were interrogated regarding sick family members, way of treatment and affordability of medical expenses with a check query about status of health after loan.

**Table 5: Status of Household Health and Medical Expenses**

| Query  | Control Group (N = 43) |              | Sample Group (N = 202) |
|--|------------------------|--------------|------------------------|
|  | Responses              | Percentage % | Percentage %           |
| Any Seriously sick person in house during last 12 months | Yes                    | 41.9         | 33.2                   |
|  | No                     | 58.1         | 66.8                   |
| Affordability of medical expenses                        | Yes                    | 44.2         | 70.8                   |
|  | No                     | 55.8         | 29.2                   |
| Status of household health improved after loan           | Yes                    | 32.6         | 72.8                   |
|  | No                     | 67.4         | 24.7                   |
|  | Don't Know             | Nil          | 2.5                    |

Source: Developed by the author from household survey

Table 5 unveils that 41.9% and 33.2% respondents of control and sample group respectively responded to have seriously sick person (s) in the family during the last twelve months (from the time of interview). On inquiring about affordability of medical treatment, more than 44% of control group and about 71% of sample group were in a position to afford their medical expenses. 32.6% households in control group and 72.8% in sample group responded that their health status has been improved after getting microfinance. Thus microfinance impacted positively on household health; however, impact was very strong for sample group than control group.

**Figure 2: Various Medical Units where Household got Treatment**

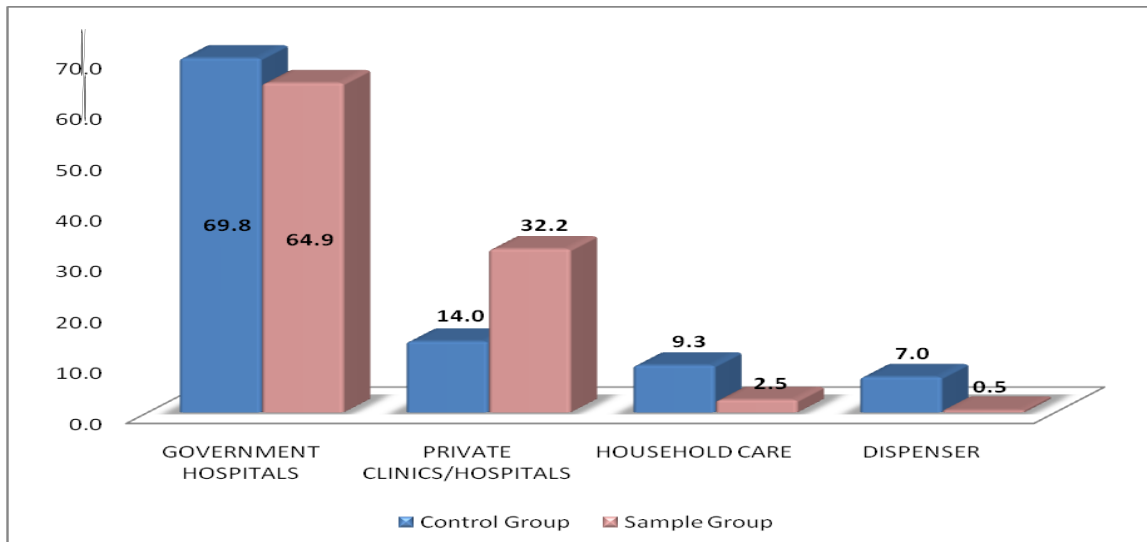


Figure 2 discloses health units from where household generally consult for medical examination whenever any member in the family becomes ill. It shows that 69.8% control group and 64.9% of sample group had access to government hospitals for medical checkup, 14% of control group and 32.2% of sample group moved to private clinics or private hospitals for their medical treatment, 9.3% control group clients and 2.5% sample group got treatment at household lever and 7% clients from control group and a fractional number (0.5%) households of sample group consulted with dispenser for their medical treatment.

**4.1.4. Enhancement in Social Life**

Enhancement in social life can be determined by the expenditures made on different social activities. Microfinance clients were inquired about change in their spending behavior after joining the program.

**Figure 3: Household Spending Pattern in Different Social Activities after Joining Microfinance**

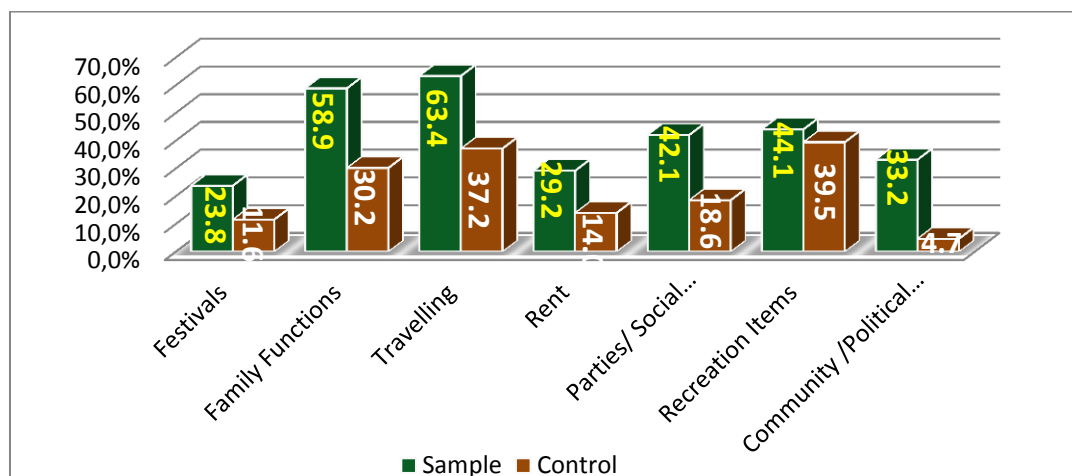


Figure-3 shows that spending on festivals had raised for 23.8% and 11.6% of sample and control groups respectively, almost 59% respondents from sample group and more than 30% respondents from control group increased spending on family functions, travelling expenditure had raised for 63.4% sample group clients and 37.2% for control group; Spending trend for 29.2%, 42.1%, 44.1% and 33.2% sample group clients had been risen on rent, social gathering/parties, recreation items and community/political affairs respectively, in sequence spending pattern for these items moved up for 14.0%, 18.6%, 39.5% and 4.7% of control group. The pattern shows that social life enhanced after microfinance mediation at household level and the impact was more inclined towards sample group.

#### 4.2. Empirical Analysis

The way microfinance affects the household's life, can be seen by various factors like increase or decrease of income, saving, consumption, health, education and establishing a business. A healthy turn in these factor leads to poverty eradication conversely situation of the household becomes even more complex. The underlying assumption in providing microfinance to the poor is that it will provide some income for them to entangle themselves in any small business or income generating activity for a permanent source of income. For empirical analysis of the intervention of microfinance on underlying factors, logistic regression is applied having the membership in control group (first loan cycle =0) and treatment group (higher loan cycles =1).

**Table 4: Logistic Regressions for Membership in Control Group and Treatment Group with Underlying Poverty Indicators**

| Poverty Indicators           | B      | S.E   | Wald   | Df    | Sig.  | Ex(B) |
|------------------------------|--------|-------|--------|-------|-------|-------|
| Income                       | 1.085  | 0.428 | 25.648 | 1     | 0.000 | 8.725 |
| Saving                       | -3.185 | 0.568 | 31.449 | 1     | 0.010 | 3.824 |
| Spending                     | 1.593  | 0.402 | 15.705 | 1     | 0.000 | 4.917 |
| Schooling                    | 0.883  | 0.388 | 5.165  | 1     | 0.023 | 2.417 |
| Health Status                | 1.119  | 0.344 | 10.58  | 1     | 0.001 | 3.062 |
| Establishing Venture         | 1.480  | 0.398 | 13.831 | 1     | 0.014 | 4.395 |
| Cox and Snell R <sup>2</sup> |        |       |        | 0.132 |       |       |
| Nagelkerke R <sup>2</sup>    |        |       |        | 0.172 |       |       |

Source: Developed by author based on survey data

The analyzed poverty indicators found comprehensively significant. Ex(B) of 4.395 for establishing a venture reveals that over the successive loan cycles, borrowers did establish a business for themselves which turned to be a permanent source of income. The odds ratio of 3.824 and 4.917 for saving and spending respectively show that the participants managed to enjoy a better life status after exposition to microfinance (Table 4). Status of schooling seems to narrate the similar impact as it is found significant at  $0.023 < 0.05$ . Income generation looks much better with higher value of odds ratio.

Findings of the study seem to remain parallel with Shirazi (2012) and Crepon et al (2011) in terms of poverty reduction but did not stand with them in terms of business creation. Finding of the study regarding new venture did not stand with Banerjee et. al., (2015) who resulted with failure of microfinance to help poor creating any venture. However, present study is carried in extreme rural areas to that of urban areas as studied by Banerjee et. al., (2015) with first randomized approach of impact study of microfinance. Cultural values, norms of the society and the behavior of people usually affect the results. Apart from current results, it is quite still difficult to reach a conclusion regarding effectiveness of microfinance as poverty reducing agent; because poverty in any society keeps its existence in multiple shapes (Roser abd Ospina, 2017). An extensive study for higher poverty lines and an amalgamated study of multiple societies with larger variables is needed to access to the core of the issue.

#### 5. CONCLUSION

Poverty is one of the core issues of third world countries. In rural areas, situation goes beyond alarming condition. Various tools have been developed to resolve the issue, among which, microfinance has been used to be an effective tool and is often exercised by developing nations.

The focus of this study is to seek the impact of microfinance program on poverty alleviation. In order to portray the role of microfinance in true sense, the study is carried in district Gilgit, where microfinance activities were started for the first time in 1982 by Aga Khan Rural Support Program (AKRSP) (Riaz et. al., 2012; AKRSP, 2001). Poor, particularly the poor women are vulnerable and economically inactive almost in every society; therefore microfinance is usually targeted to make them capable to produce some income (Spoelberch and Shaw, 1987). Considering the fact, data was collected from 245 clients of First Microfinance Bank through household survey of six rural and far flung areas of district Gilgit Pakistan. Analysis of the study was made using control group (for first loan cycle) and treatment group (for higher loan cycles).

The study compared respondents of control group to that of treatment group to analyze impact of microfinance on poverty. Data was analyzed both with simple descriptive technique and logistic regression. The study finds that after inclusion of microfinance, the clients manage to start a venture with the subsequent loan cycles. Clients in treatment group expanded their income and raised consumption beside uplifting the schooling. Possession of durable household items did also improve along with improvement in health condition and access to health units. Clients in higher loan cycles did spend more on social activities and respond to the shock in a better way, which indicates an upward shift in social status. Hence observed poverty indicators found improved. Existence of various colors of poverty in any society makes it impossible to pass a strong notion regarding the issue. To pass a solid statement regarding success and failure of microfinance in addressing poverty needs further study with amalgamated cultural values, larger variables and higher poverty lines is needed. Comparative studies of the issue in rural and urban areas for various variables in same time frame may also be helpful to decide the corner.

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## PREDICTION OF RESIDENTIAL GROSS YIELDS BY USING A DEEP LEARNING METHOD ON LARGE SCALE DATA PROCESSING FRAMEWORK

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Semra Erpolat Tasabat<sup>1</sup>, Olgun Aydin<sup>2</sup>, Ali Hepsen<sup>3</sup>

<sup>1</sup>Mimar Sinan University, Department of Statistics, Istanbul, Turkey,

[semra.erpolat@msgsu.edu.tr](mailto:semra.erpolat@msgsu.edu.tr), ORCID: 0000-0001-6845-8278

<sup>2</sup>Mimar Sinan University, Department of Statistics, Istanbul, Turkey,

[olgun.aydin@ogr.msgsu.edu.tr](mailto:olgun.aydin@ogr.msgsu.edu.tr), ORCID: 0000-0002-7090-0931

<sup>3</sup>Istanbul University, Faculty of Business Administration, Department of Finance, Istanbul, Turkey,

[alihepsen@yahoo.com](mailto:alihepsen@yahoo.com), ORCID: 0000-0002-3379-7090

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### ABSTRACT

**Purpose-** Households, investors and companies who want to make an investment on residential properties are interested in sales prices and rental values that vary depending on regional factors, location and attributes of residential units. It is the preference of investors to buy a new house with higher rental income. Real estate developers and real estate consultants as well as the real estate investors are also interested in investigating relationship between gross yield rate and location, regional factors, attributes of residential units. The purpose of this study is to examine the relationship between attributes of the residential units, location of the units and the gross yield rate.

**Methodology -** In this study, the prediction model of residential gross yield rates with the help of city, county, district, residential attributes information, was created by using LSTM, which is a deep learning method, on big data platform Spark.

**Findings-** According to test results, it has been proven that gross yield rates could be estimated with high accurate model by the aid of Long short term memories. With this model, researchers can predict gross yield rate of any specific flat.

**Conclusion-** The LSTM network has been built in this study shows that the residential gross yield rate could be estimated using city, county, district, number of rooms, number of bathrooms, floor number, total floor attributes. This study also shows that the Spark framework can be used to deal with the growing size of data in real estate and to develop deep learning applications on distributed data processing platforms.

**Keywords:** LSTM, real estate, residential gross yield rates, big data

**JEL Codes:** R31, R10, R30, C13, C82

### 1. INTRODUCTION

Real estate industry is based on balance of supply-demand. Due to the reasons such as the rapidly increasing population of Turkey, urbanization, increasing income levels and improving life standards, there is an increasing demand for the properties on a constant basis. Even though political and economic unrest in the MENA and Turkey, Turkey succeed to remain politically and economically stable and the average of GDP growth rate is 7% in the last 15 years. However, inflation rate reached to %11 in October 2017. There were 1.03 million house sales transactions were recorded in the first 9 months of 2017 which is 10% more than same period in 2016. Turkey's population has just crossed 80 million and around 35 million people are between the productive age group of 20-55 years and 49% of the population is under 30 years. Based on the population stats, there are around 400 thousand marriages take place. This is the direct effect on real estate demand. According to the REIDIN Turkey September 2017 report, residential sales prices increased 11.5 percent in the last one year and 44 percent in the last 3 years. On the other hand, rental values increased 4.89 percent in the last one year and 32 percent in the last three years. Average gross rental yield for a standard house is 5.5 percent as of September 2017. Additional to 400 thousand yearly new supply, there is an urban regeneration in the Turkey currently and around 7.5 million units needs to be rebuilt in the next 20 years which will have market value around USD 1.5 trillion. Turkish real estate also

attracts foreign investors especially from GCC region. Investment from foreign investors could accelerate the growth in the upcoming years. (Reidin Turkey, September 2017 Report)

Real estate is also defined as a land being a physical asset and structures built on this land by humans. Housing is thought as both a sheltering instrument and an investment instrument in Turkey. When housing is thought as an investment instrument, investors both expect a capital income from the difference between purchase and sale and plan to have a regular rental income. At this point, it becomes important to invest on residential unit with efficient characteristics. In this case estimating real estate prices and analysing gross yield rates become crucial.

Gross yield rate is the return of the income from the investment that is calculated without including any costs. Interest rates are also excluded when gross returns are calculated. Gross yield rate in residential investment is the ratio calculated using a residential unit's sale price and gross rental income of this residential unit.

Gross yield rate is an excellent indicator of the overall outlook of the rental income of a residential unit compared to its value. Gross yield rate of a residential unit helps to quickly understand the characteristics of different units. For example, it is obvious that which of the residential units with a gross yield rate of 4% and gross yield rate 10% brings more cash flow.

It could be asserted that optimization in residential investments is overemphasized for people who not only content with capital gain but also prefer residential investments to obtain a regular rental income in long-run period.

## **2. LITERATURE REVIEW**

There are some studies in the literature about estimating real estate prices and analysing gross rental. Ratchatakulpat et al. (2009) noted that the factors that prospective buyers consider when purchasing residential property in Queensland, Australia. A drop-off survey was used, with 376 property buyers and a response rate of 62.7 percent. Affordability, maintenance and interior design, and a good neighbourhood were considered as most important. Of least importance are the affluence and quality of the area, water, views and roads, and features, such as a pool or air-conditioning. Therefore, location is important in the sense of neighbourhood and community, rather than prestige. In another study, Lee (2001) presented an elegant and simple approach to the decomposition of property type and regional influences on property returns, and thus provided a quantitative framework for analysing the relative impact of these two diversification categories to real estate portfolio selection. Using data on retail, office and industrial properties spread across 326 real estate locations in the United Kingdom, over the period 1981 to 1995, the results showed that the performance of real estate was largely property type-driven, a result in line with previous work. This implied that the property type composition of the real estate fund should be the first level of analysis in constructing and managing the real estate portfolio. Consequently, real estate fund managers needed to pay more attention to the property type allocation of their portfolios than to the regional spread. Jackson (2002) conducted an alternative classification study to examine the development of the return on investment in rent for the regional retail market. Baker studied about the gross yield rate of real estate in Australia (Baker, 2001) and Goetzmann et. al. (2001) applied clustering algorithm to effective rents for twenty-one metropolitan U.S. office markets, and to twenty-two metropolitan markets using vacancy data. Unlike other clustering studies, they found strong evidence of bi-coastal city associations among cities such as Boston and Los Angeles. They presented a bootstrapping methodology for investigating the robustness of the clustering algorithm and developed a means for testing the significance of city associations. While the analysis was limited to aggregate rent and vacancy data, the results provided a guideline for the further application of cluster analysis to other types of real estate and economic information.

## **3. DATA AND METHODOLOGY**

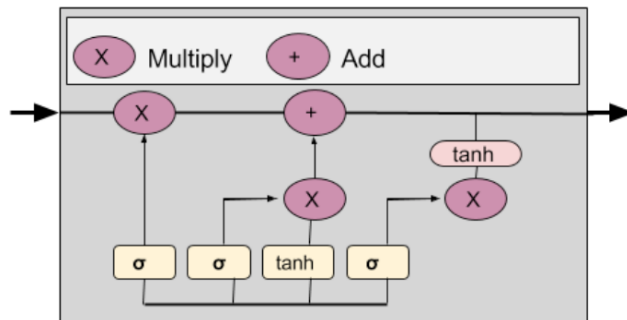
Neural Nets (NNs) can estimate almost any linear or non-linear function in an efficient and stable manner, when the underlying data relationships. The NN model is a nonlinear, adaptive modelling approach which relies on the observed data rather than on an analytical model. The architecture and the parameters of the NN are determined solely by the dataset (Feng, 2005). NNs has been evolving for years.

Nowadays Deep Neural Nets (DNN) are one of the trending topics in this domain. With DNNs, researchers are able to build NN model in a more efficient way. Deep Learning is rising star of Machine Learning and Artificial Intelligence domains. Until 2006, many researchers had attempted to build deep neural networks, but most of them failed. In 2006, it was proven that deep neural networks are one of the most crucial inventions for the 21<sup>th</sup> century. Nowadays, deep neural networks are being used as a key technology for many different domains: self-driven vehicles, smart cities, security, automated machines

In this paper, we applied Long Short Term Memories (LSTM) which is one of DNNs on big data platform Spark. We trained and compared our LSTM models at various numbers of parameters and configurations. LSTM models converges quickly and gave effective prediction performance.

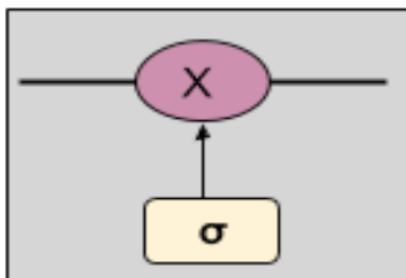
Sepp Hochreiter and Jürgen Schmidhuber proposed LSTM in the mid 90s for vanishing gradient problem. LSTMs have a chain of repeating modules of neural network as standard Recurrent Neural Networks (RNN) (Mahammad et.al, 2010). Repeating modules in standard neural networks have the simple structures like tanh and sigmoid layers; however, LSTMs have different repeating modules comparing other type of neural networks. Instead of having a single neural network layer, LSTMs have four interacting special layers as seen on Figure 1.

**Figure 1: LSTM Modules Including Four Layers**



Each layer carries an entire vector from the output of layer to inputs of the next layer. LSTMs have an ability to add information or remove information while going through gates that are a way to decide how much information to carry among the layers Figure 2 shows the point wise multiplication operation which carries the information among the cells. (Greff et. al, 2016).

**Figure 2: LSTM Module Including Add Operation**



In this study, the relationship between the attributes of the residential units, location of the units and the gross yield rate was examined. This relationship was modelled by LSTM, one of the deep learning methods. All model development processes were built using big data platform Spark. Spark, one of the distributed data processing architects, was used to increase data processing power and speed. Apache Spark has been started some research group's discussions with Hadoop users. The main advantage in Apache Spark is resilient distributed dataset (RDD), Users can explicitly cache an RDD and it is available to reuse in multiple MapReduce-like parallel (Zaharia et. al, 2010).

Residential unit listing data obtained from the online listing portals serving in Turkey were used. The dataset covers 150081 flat listings for sale from 2981 districts, 308 counties and 74 cities. In this context, the final dataset including the city, county, district, number of rooms, number of bathrooms, number of floors, total floor numbers, building age, rental value and sales price information was used. The residential gross yield rate for each listing was calculated by using the sales price and rental value of each listings.

For all these operations, Keras, which is a high-level neural networks library, written in Python and capable of running on top of TensorFlow, was used (<https://keras.io/>). Another Python library, Elephas, was used to enable the model developed with Keras to run on Spark (<https://github.com/maxpumperla/elephas>).

#### 4. FINDINGS AND DISCUSSIONS

In the generated model for estimating residential gross yield rates; city, county, district, number of rooms, number of bathrooms, floor number, total floor number, building age were used as independent variables and residential gross yield

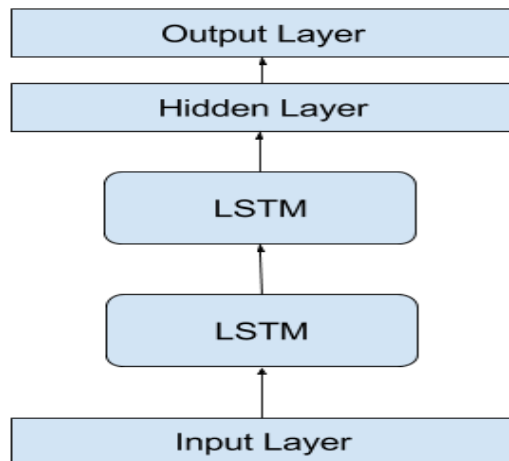
rate were used as dependent variable. The dataset was divided two parts as train set and test set. 70% of the data set was used as train set and the remaining parts of the dataset was used as test set. According to Table 1 which shows descriptive statistics of all the dataset, Gross yield ratio is in the range between 1.34% and 17.23%.

**Table 1: Descriptive Statistics of Dataset**

|          | Noofrooms | NoofBaths | Size (sqm) | Tot. Floor | NoofFloor | Yield  |
|----------|-----------|-----------|------------|------------|-----------|--------|
| Min      | 1         | 1         | 30         | 3          | 1         | 1.34%  |
| Max      | 6         | 3         | 650        | 35         | 35        | 17.23% |
| Mean     | 2.8129    | 1.3926    | 154.17     | 5.8612     | 3.5983    | 5.21%  |
| Variance | 1.1055    | 0.7016    | 10.6553    | 8.6789     | 9.8724    | 0.02%  |

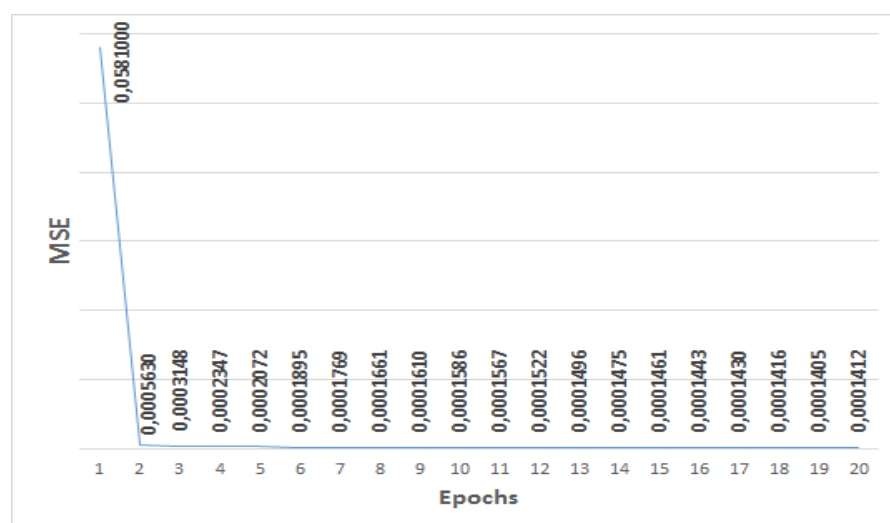
To train the LSTM network, the number of epoch was set as 20 and the batch size set as 30. The mean square error was used as the loss function and the Adadelta algorithm was used as the optimization algorithm. The LSTM network has been built shown in Figure 3.

**Figure 3: LSTM Network has been built**



According to results shown in Figure 4, at the end of final epoch MSE was measured as 0.00014122. Rooted Mean Square Error (RMSE) could be calculated as 0.01192, by using this information.

Figure 4: Training Process



Finally, to investigate performance of model, we have calculated biases for test set and descriptive statistics of them. It could be clearly said that mean bias is 0.6502 and standard deviation of bias is 0.2009 by the aid of Table 2.

Table 2: Descriptive Statistics of Bias

| Min    | Max    | Mean   | Variance | Std. Deviation |
|--------|--------|--------|----------|----------------|
| 0.0801 | 0.6374 | 0.6502 | 0.0004   | 0.2009         |

According to results shown in Table 3, the residential gross yield rates for the 210 sqm sized unit at the 6th floor of 12 floored building has 3 rooms, 2 bathrooms and with the age of 8 in Adana, Cukurova, Belediye Evleri could be calculated as 3.22% and for the 80 sqm sized apartment unit at the 4th floor of 4 floored and has 1 room, 1 bathroom and with the age of 35 in Istanbul, Besiktas, Abbasaga could be calculated as 5.2%.

Table 3: Some Estimated Gross Yield Rates

| Location                     | N.of Room | N.of Bathroom | Size | Floor Number | Total Floor | Estimated Gross Yield Rate | Observed Gross Yield Rate |
|------------------------------|-----------|---------------|------|--------------|-------------|----------------------------|---------------------------|
| Adana, Cukurova, Belediye E. | 3         | 2             | 210  | 6            | 12          | 3.22%                      | 3.87%                     |
| Istanbul, Besiktas, Abbasaga | 1         | 1             | 80   | 4            | 4           | 5.2%                       | 5.28%                     |

## 5. CONCLUSION

The shining star of the real estate sector, which has an important place in the economies of emerging countries, is the housing sector. It is very important to know how much a house will have a rate of return and to make investment according to this knowledge. With this information, investors have the chance to estimate in advance which property in which region has the highest return rate. Thus, investors can buy houses with a high rate of return.

The LSTM network generated in this study shows that the residential gross yield rate could be estimated using city, county, district, number of rooms, number of bathrooms, floor number, total floor information. This study also shows that the Spark framework can be used to cope with the growing volume of data in the real estate sector and to develop deep learning applications on distributed systems.

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## DETERMINANTS OF M&A PREMIUMS: EMPIRICAL EVIDENCE FROM KUWAITI FIRMS

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Mohamed Nazir Tarabay<sup>1</sup>, Jamil Hammoud<sup>2</sup>

<sup>1</sup> Rafik Hariri University, Mechref, Lebanon.

[tarabaymn@rhu.edu.lb](mailto:tarabaymn@rhu.edu.lb), ORCID: 0000-0003-2796-0127

<sup>2</sup> Rafik Hariri University, Mechref, Lebanon.

[hammoudja@rhu.edu.lb](mailto:hammoudja@rhu.edu.lb), ORCID: 0000-0003-2796-0127

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### ABSTRACT

**Purpose-** This is an empirical study examining the premium paid over book value to target firms, and attempts to discover whether there are patterns in the firms that are involved in the acquisitions. We explore target financial characteristics that were considered attractive by the acquirer and thus motivated the acquiring firm to pay a premium to acquire these characteristics. This analysis will highlight some motivating reasons behind the decision to integrate.

**Methodology-** The empirical study analyzes a sample of 68 M&A deals that took place between 2010 and 2017. The cross-sectional data gathered aimed at examining possible relationships between various financial variables and merger premiums. The objective was to determine the variables that were statistically significant in explaining variations in merger premiums. In this research, the price offered to acquire the stock is compared to the prevailing book price of equity.

**Findings-** Takeover premium paid to target firm shareholders was found to be statistically negatively related to net income, and significantly positively related to percentage of ownership, debt-to-equity, sustainable growth rate, market value of the merger transaction, and gross cash flow to current liabilities.

**Conclusion-** This study found that acquirers are seeking firms that are highly leveraged, with the ability to grow in the future, and a good liquidity position.

**Keywords:** Mergers and acquisitions, merger premiums, finance, Kuwait, M&A motives

**JEL Codes:** G10, G20, G30

### 1. INTRODUCTION

The issues relating to mergers and acquisitions have attracted the attention of scholars, bankers and regulators. Although the topic is one of the most extensively researched topics in the field of finance, some basic issues continue to be controversial and unresolved. Most previous studies concluded that shareholders of target firms earn significantly positive abnormal return, while acquiring firms' shareholders earning negative or not significant returns. Some studies found that M&A deals impact positively institutional efficiency (Akhavain, Berger and Humphrey, 1997) and market-book value (Cyree, Wansley and Black, 2000), while other studies found no significant positive gain in efficiency (Berger and Humphrey, 1992; DeYoung, 1993 and Peristiani, 1997) or profitability (Srinivasan and Wall, 1992; Linder and Crane, 1992 and Pilloff, 1996).

The lack of profits in M&A transactions could be attributed to the high premium paid by the acquiring firm and thus threaten the solvency, stability and efficiency of the transaction (Cuervo, 1999). In this study, we aim at analyzing the determinants of the premium paid by the acquiring firm using financial variables of targets. A careful analysis of the premium could provide a better understanding the target characteristics that were deemed attractive by the acquirer to justify the premium, help us better understand the reasons behind the merger wave that took place recently (Rhoades, 1987), and how the continuation of these transactions would affect participating firms.

Most studies were focused on companies listed on developed countries stock exchanges. Focusing on this data has the disadvantage of holding many institutional factors relatively fixed. As Cheng, Gup, and Wall (1989) remarked that premium determinants can be influenced by where and when the M&A transaction took place and consequently, the results found cannot be applied to any country or institution. Acquisition activities listed on the stock exchanges of MENA countries remain unexplored. This study then, becomes essential because it expands the insight available on merger and acquisitions which have not been tackled before.

This paper focuses on acquisitions within the Kuwaiti financial system, and thus is better able to explain the importance of a wider range of institutional behavior, corporate governance rules, corporate laws and regulations, and market conditions which is not possible under developed markets structures, and therefore will provide insights to academics, and policy implications to investors, businesses and regulators.

Recent developments in the regulatory and economic policies have deeply impacted the financial sector in Kuwait. With more deregulation, globalization, and developments in technology, firms are resorting to M&As to face increasing competition. As mergers and acquisitions continue in the future, businesses actively seeking mergers and acquisitions may find the expansion provided by this research significant. While mergers and acquisitions are considered the biggest investment decision of the company, this research would highlight the different variables that could drive value from such an investment. Understanding the interaction of various financial factors in determining acquisition premiums offers insight into management's pursuit of mergers and acquisitions. This insight is important to business managers and their financial advisors who are seeking improved returns through better understanding of the factors that are important in valuation.

This study investigates five main research questions centering around target firm characteristics to better understand the motive behind the takeover and consequently the determinants of the takeover premium. Variables that are addressed in the study are size of target firm, growth, liquidity, leverage, and performance. For each of these variables certain financial variables have been used as surrogates.

#### **Target and Deal Size**

The size of the control premium is often attributed to the estimation of the bidder's gains from the acquisition, and the strength of the target bargaining power. Acquisition gains may in return be derived from synergetic gains expected from combining the participating firms, or the target being underpriced or poorly managed.

Eckert (1997) found that the size of the firm consistently impacted acquisition premiums over the entire study period that ranged from 1988 to 1995. This study suggests that smaller firms are more attractive targets than large firms. Acquirers are willing to pay higher premiums for smaller firms because they could more rapidly and effectively assimilate their operations and gain synergies from the merger. Also, smaller targets require fewer share dilution of the current shareholder ownership of the bidder, and since this is a very important feature in Kuwait since most firms are closely held, therefore, we expect to find a negative relationship between target asset and equity size and the merger premium.

#### **Target Firm Growth**

This study also postulates that acquiring firms are willing to pay higher premium for targets with high growth history. Target firm total growth rate may indicate either a growth rate in the region or the market in which the firm operates, and thus offer bidders an opportunity to gain access to these growing markets, or may surrogate the management's ability to achieve growth and offer acquirers ability to utilize this management expertise. This study utilized three growth measures: Sustainable growth rate, assets growth rate, and equity growth rate. A recent rising historical trend in these values may indicate higher levels in the future. Consequently, this hypothesis suggests a positive linear relationship between merger premiums and target growth rates.

#### **Target Liquidity**

High liquidity measures are also attractive target attributes that help explain higher merger premiums. From the perspective of the acquirer, target liquidity can be used to finance its own acquisition. The additional liquidity is even more applicable to leveraged targets for it may be an important factor in the target's ability to pay for its financing after the merger. Thus, a positive relation is expected between target firm liquidity, and the merger premium paid to those liquid targets.

#### **Target Leverage**

Previous literature review has also concluded that target firms with low leverage are also desirable. Low leverage indicates a lower level of risk as well as added debt capacity that can be used to finance the takeover. Lewellen (1971) agreed with Modigliani and Miller positions that low leverage firms are more likely to be subject to takeovers than high leveraged firms. We argue that the special features and characteristics of our study provide an exceptional case. A long-standing convention



in Kuwait holds that the government of Kuwait will always act to protect shareholders from debt and credit crisis. This convention allows firms to be more aggressive in their merger and acquisition strategies by undertaking high risk investments and projects whether by acquiring highly leveraged firms or financing the acquisition premium by additional debt, expecting the government to intervene and protect shareholders if investments turned out bad.

### **Target Performance**

The elimination of inefficient management hypothesis postulates that acquiring firms will be able to squeeze more profit from inefficient firms after replacing it with the superior management skills of bidders. If the hypothesis stands correct, we should expect that the market will perceive such a decision positively. However, if the market perceives that targets are already efficient, then the decision to integrate will not be rewarded by shareholders. If return on assets, return on equity, return on invested capital, net income and earnings per share are surrogates of managerial efficiency, then we should expect that acquirers are not willing to pay high premiums for efficient firms because of their hindered ability to exploit abnormal returns from the efficient firm. On the other hand, we should expect markets to reward the elimination of inefficient management, and acquirers willing to pay higher premiums for inefficient firms that represent higher opportunities for abnormal returns.

## **2. LITERATURE REVIEW**

This study selected the variables included in the model according to a number of hypothesis based on existing literature and previous empirical evidence. This section of the paper introduces these studies and identify variables used.

Walkling and Edmister (1985) attempted at analyzing the motivating factors behind bid premiums. They utilized a model that uses debt, working capital, type of combination, valuation related variables, and bargaining strength variables. They applied the model to a sample of tender offers filed with the securities and exchange committee between 1972 and 1977. Complete data on 158 cash tender offers were obtained of which 65 were conglomerates and the remainder was either vertical or horizontal. The results indicate that debt to assets, market to book-value, and the number of bidders was significant in explaining the premium paid over book value.

Rhoades (1987) researched bank mergers between 1973 and 1983. Using cross sectional regressions of financial ratios to determine the premium paid to book value for 1835 bank mergers, he found growth, capital to assets ratio, and market growth were significant.

Beatty, Santomero, and Smirlock (1987) researched 265 bidding and target banks between 1984 and 1985. The research aimed at regressing 14 financial ratios against price to book value (the dependent variable). They found that higher premiums were paid for well managed banks represented by the target return on equity (ROE), and for banks in noncompetitive environment.

In his unpublished doctoral dissertation at the University of Texas at Arlington, Nagassam (1989) researched 52 target bank acquisitions spanning 1980 through 1987. The researcher regressed premiums to book value against 46 independent variables. Significant variables were target profitability, capital adequacy, management efficiency, size, diversification and leverage; collectively, they produced an R-square of 77 percent.

Cheng, Gup, and Wall (1989) attempted to investigate financial determinants of banks takeovers. The research was based on a sample of 136 takeovers in the southeast during the period 1981-1986. The authors analyzed common financial variables of both the target and acquirer (i.e., return on assets, return on equity, net income growth, total assets growth, earning asset growth, core deposit growth, equity growth, retail loans/ total loans, and charge off/ total loans) and found results supporting the hypothesis, that better managers pay more for acquisitions. They also found that some banks attempt to takeover banks with higher profitability ratios and faster earnings growth. The relative asset size (target/acquirer) suggested that bidders' ability to enhance target service is inversely related to their relative size.

Rose (1991) researched 496 acquiring banks and 503 acquired banks. He regressed the number of bidders, relative risk-return, efficiency ratios, growth rates, and other financial measures. He found that the number of target banks in the target operating area, size of the target, and the targets return on average equity were significant. On the other hand, insignificant parameters were market concentration, number of bidders and efficiency ratios of the target.

Henry Servaes (1991) researched 704 mergers and takeovers. Using Tobin's Q ratios and considering takeover gains, he found target returns to be positive and significant, while on the other hand, bidder returns were negative with a mean of -1.07 percent and total returns are positive with a mean of 3.66 percent. Losses to bidding firms were on average 4 percent larger in hostile takeovers than in friendly takeovers, while target firms earn 10% more in hostile takeovers. Consistent with previous research, he also reports that both targets and bidders earn higher abnormal returns in all-cash takeovers. Total returns are 10 percent higher in cash takeovers than in pure securities takeovers, total returns are negative in an exchange

of securities. If Q is interpreted as a measure of managerial performance, the results indicate that takeover gains were larger if the target company is performing poorly and bidding company is performing well.

Palia (1993) researched 137 bank mergers occurring between 1984 and 1987. Palia reports that in the 137 mergers, the price-to-book value premium varies from minimum value of 0.7 to a maximum value of 4.9 with a mean of 1.89 and a standard deviation of 0.64. The difference in merger premiums was related to the characteristics and regulatory environment of both acquirer and target banks. Using takeover premium-to book values as a dependent variable and regressing against various independent variables, Palia results were consistent with that of Cheng, Gup, and Wall (1989) and Beatty, Santomero and Smirlock (1987); Target return on assets was significant and had a positive sign, suggesting that premiums to be positively related to targets profitability. Relative size of acquirer to target was statistically significant and negative. On examining the quality of loan variables, the variable for non-performing loans was negative and very significant indicating that targets with large amounts of nonperforming loans are unattractive to potential bidders. TCNOC a factor to represent four-bank-concentration in the targets state was positive and significant suggesting that acquirers are attracted to concentrated markets.

Bugeja and Walter (1995) used a sample of 78 Australian takeovers occurring between 1981 and 1989 to test for determinants of target shareholder premium. The results indicated that higher premiums were associated with provision of financial slack to the target firm by the bidder, and the performance of the bidder in the period prior to the bid. High bidder ownership resulted in lower premiums.

Crawford and Lechner (1996) researched 305 corporations acquired between 1971 and 1981 and tested the direct and anticipated effects of target attributes on merger premiums. The research used takeover premium as the dependent variable with independent variables divided into two categories, tax related and financial ratios. The premium calculated over an event window that approximately began 50 trading days before the announcement date, and ends when the target shares are delisted. Based on the regression results and the information from the model they found significance in liquidity, leverage and return on equity. High liquidity increased the probability of a firm to be taken over, while leverage decreased the probability of acquisition.

Shawky, Kilb, and Staas (1996) Examined 320 bank mergers occurring between 1982 and 1990. The dependent variable explained in this analysis is the merger premium defined as the purchase price paid over book value of the target firm. They found that the target bank returns on common equity appeared to be the most important determinant of bank merger premiums. In the absence of return on equity, return on assets was a strong substitute, while return on assets was a very close substitute. Consistent with Palia (1993), they find a significant negative relationship between the merger premium and the asset size of the target bank.

Jackson and Gart (1999) researched 200 completed large bank mergers occurring between 1990 and 1996. Using price to book value as the dependent variable they found the following significant at the 0.01 level: target core deposits, target leverage, target's return on assets, a factor representing pooling transaction, and a factor representing the target's state deposit cap restrictions.

Scarborough (1999) focused on bank acquisitions over \$100 million accomplished between 1989 and 1998 by purchasing or pooling transactions. The research attempted to identify financial and accounting variables that help explain the price paid to book value. Variables selected for the study were target percentage of non-performing assets, target return on average assets, bidder size measured by total assets, target size measured by total assets, relative size of the bidder relative to target, and deal size. Significant variables were bank profitability, asset utilization, size of the deal, and the accounting method.

Shawver (2002) attempted to analyze variables significant in explaining merger premium paid to target firm shareholders using 178 transactions all in the United States. The stepwise regression results reported significant values for target bank profitability measured by return on equity and the ability to account for the transaction using the pooling method. The adjusted R-square accounted for 42.7 percent indicating that the two significant variables accounted for 42.7 percent in the variation of the premium paid to the targets book value.

Glenn (2006) attempted to use macroeconomic variables to explain the size of the merger's premium paid by bidders to target firm shareholders. The researcher utilized 430 takeovers spanning 11 years from January 1993 to December 2003. The dependent variables were selected from three categories: financial/operating variables, market variables, and macroeconomic variables. Significant variables proved to be from the three categories. The researcher concluded that market and macroeconomic variables are as important in explaining the premium paid to target shareholders as financial and operating variables.

### 3. DATA AND METHODOLOGY

The final sample of the study consisted of 68 target firms that took place between 2010 and 2017. A firm or a merger case was excluded from the research if the available data was insufficient or not reliable. The initial sample collected consisted of 75 targets but 7 cases were eliminated due to the absence of the data on the price offered or the existence of unreliable data since not all companies provide their financial statements. Merger cases were extracted from Zawya M&A monitor, Noor financial fund data base, public newspapers, and annual reports. To meet the criteria of firms to be included in this study, the business firms would have had to possess the following set of characteristics:

1. Be headquartered in Kuwait, or belonging to a Kuwaiti holding company.
2. All the information necessary for calculating the price offered to book value and various financial characteristics were available and appear reliable.
3. The merger or the acquisition must have been officially announced in the newspaper or some other official publication.
4. Only mergers and acquisitions that took place between 2010 and 2017 were included in the sampling frame.

#### Pearson Correlation Test

The Pearson correlation test is a statistical method used to measure the strength of a linear relationship between two variables. Values for the Pearson correlation coefficient ( $r$ ) range from (-1) indicating a perfect negative linear association between the variables to (+1) indicating a perfect positive linear relationship. A zero value, on the other hand refers to a lack of the linear relation between the variables. The formula for the Pearson correlation coefficient,  $r$ , is

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n(\sum x^2) - (\sum x)^2][n(\sum y^2) - (\sum y)^2]}}$$

For price paid-to-book value, the first processing steps were to run paired correlations tests of each of the identified independent variables against the dependent variable (targets price-to-book). A preliminary evaluation of each independent variable was studied for significance, and potential multicollinearity. The independent variables included in this methodology were assets, equity, net income, debt-to-equity ratio, return on assets, return on equity, market value of the merger transaction, and percentage of acquisition, gross cash flows to current liability, sustainable growth rate, asset growth rate, and equity growth rate.

#### Multiple Regression Analysis

Multiple regression analysis is a widely utilized statistical technique utilized to examine the relation between a single dependent variable, and several independent variables. The basic form of the multiple regression equation is

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \dots + \beta_n X_n$$

Where  $\alpha$  is the intercept of the equation, and  $\beta_1$  to  $\beta_n$  are regression coefficients.  $Y$  is the dependent variable and  $X_1$  to  $X_n$  are the independent variables.

Regressions were run with the independent variables against the price-paid to book value. A preliminary evaluation was studied for significance in explaining the variation in the dependent variable.

Also, progressive (step-wise) regressions of potentially significant variables were run against the dependent variable seeking to find the highest R-squared factor offering explanation in the premium-to-book value. Stepwise regression is a technique that adds and deletes one independent variable based on whether the variable improves the model.

### 4. FINDINGS AND DISCUSSIONS

This section will provide some at first some descriptive statistics of the sample and then proceeds to analyze the results for the Pearson correlation at first and then for the regression analysis before drawing the conclusion

#### Price-to-Book Value and Pearson Correlation Analysis

Table 1 provides descriptive statistics for the cases included in this study and includes range, minimum, maximum, mean, standard deviation, skewness, and kurtosis. The average value was 19.024 percent. Average ROA was 8.073 percent, and average ROE was 13.71 percent. Total assets ranged from 5,465 thousand Kuwaiti dinars minimum to 1,457,144 thousand Kuwaiti dinars maximum, while equities ranged from minimum 4,611 thousand Kuwaiti dinars to a maximum of 832,840 thousand Kuwaiti dinars.

**Table 1: Descriptive Statistics Descriptive Statistics of Target Firm Financial Characteristics**

|        | N         | Range      | Minimum   | Maximum    | Mean        | Std. Deviation | Skewness  | Kurtosis  |            |            |
|--------|-----------|------------|-----------|------------|-------------|----------------|-----------|-----------|------------|------------|
|        | Statistic | Statistic  | Statistic | Statistic  | Statistic   | Statistic      | Statistic | Statistic | Std. Error | Std. Error |
| TOSHIP | 68        | 97.00      | 3.00      | 100.00     | 19.0243     | 24.49725       | 2.128     | .393      | 3.887      | .768       |
| TASST  | 68        | 1451679.00 | 5465.00   | 1457144.00 | 147836.4257 | 2.46039E5      | 4.483     | .388      | 23.247     | .759       |
| TEQTY  | 68        | 828229.00  | 4611.00   | 832840.00  | 86197.1572  | 1.37447E5      | 4.710     | .388      | 25.417     | .759       |
| TNI    | 68        | 281799.11  | -331.11   | 281468.00  | 19232.8761  | 50086.25665    | 4.624     | .388      | 22.588     | .759       |
| TROA   | 68        | 26.39      | -.78      | 25.61      | 8.0731      | 5.80698        | 1.122     | .388      | 1.654      | .759       |
| TROE   | 68        | 33.21      | -.90      | 32.32      | 13.7105     | 8.40690        | .344      | .388      | -.311      | .759       |
| TDE    | 68        | 3.18       | .01       | 3.19       | .8436       | .79445         | 1.343     | .388      | 1.481      | .759       |
| MVMT   | 68        | 105750.00  | 850.00    | 106600.00  | 21492.9730  | 30334.15758    | 2.029     | .388      | 2.751      | .759       |
| TGCCCL | 62        | 13.07      | -2.28     | 10.79      | 1.1928      | 2.52494        | 2.778     | .414      | 8.381      | .809       |
| TSSG   | 62        | 127.30     | -89.75    | 37.55      | 6.2744      | 20.34462       | -3.307    | .414      | 16.645     | .809       |
| TASSTG | 54        | 246.70     | -21.48    | 225.22     | 43.5243     | 66.05901       | 1.986     | .427      | 3.092      | .833       |
| TEQTYG | 54        | 207.84     | -28.29    | 179.55     | 29.0890     | 49.23478       | 2.291     | .427      | 4.833      | .833       |

Table 2 reports the Pearson correlations for the relationship between the dependent variable (price-to-book value) and various financial characteristics of these target firms. The results reported that 6 out of the 12 tested relationships were statistically significant. Variables significant at the 10% level were percentage of acquisition (0.286), sustainable growth rate (0.312), and target firm net income (-0.055), with the corresponding correlation coefficients provided in brackets. The positive association between the takeover premiums and percentage of ownership and sustainable growth rates clearly indicates that acquirers are willing to pay higher premiums to gain higher control of the firms, with higher ability to grow in the future. The negative significant relation with net income, indicates that acquirers pay less for firms with higher profits. One explanation could indicate that acquirers perceive targets with high profits are efficiently managed, and consequently less ability to exploit it as an inefficient target.

The variable market value of the merger transaction (MVMT) was positive and significant at the 5% level with a correlation coefficient of 0.374 indicating that the bidding bank is willing to pay more when the size of the deal is larger. Another variable that was positive and significant at 5% level was the target debt-to-equity (TDE). With a correlation coefficient of 0.335, the results indicated that bidders paid higher premium to acquire more leveraged firm.

Gross cash flow- to -current liabilities (TGCCCL), a liquidity measure, was also positive and statistically significant at the 1% level. This indicates that higher premiums were paid to more liquid targets that confirmed higher abilities to pay their debt obligations. Read in the context of the positive associations between premium paid and target sustainable growth, as well as target debt/equity ratios, it could be understood that acquirers were willing to pay higher premiums for firms that follow aggressive growth policy financed with debt, but still can meet these obligations.

**Table 2: Correlations between Takeover Premiums and Selected Financial Variables**

| Financial Characteristics             | N  | r      | p-value |
|---------------------------------------|----|--------|---------|
| Percentage of Acquisition(TOSHIP)     | 68 | 0.286  | 0.09*   |
| Assets (TASST)                        | 68 | 0.018  | 0.914   |
| Equity(TEQTY)                         | 68 | -0.104 | 0.539   |
| Target Asset Growth Rate (TASSTG)     | 54 | -0.054 | 0.776   |
| Target Equity Growth Rate (TEQTYG)    | 54 | -0.002 | 0.991   |
| Debt/ Equity ratio(TDE)               | 68 | 0.335  | 0.043** |
| Target Sustainable Growth Rate (TSSG) | 62 | 0.312  | 0.082*  |
| Market Value of Merger (MVMT)         | 68 | 0.374  | 0.023** |
| Return on assets (TROA)               | 68 | -0.022 | 0.897   |
| Return on equity(TROE)                | 68 | 0.026  | 0.877   |
| Net Income(TNI)                       | 68 | -0.055 | 0.074*  |

|                       |    |       |          |
|-----------------------|----|-------|----------|
| Gross CF to CL(TGCCL) | 62 | 0.487 | 0.005*** |
|-----------------------|----|-------|----------|

\*, \*\*, \*\*\* . Indicates 10, 5, and 1 %, levels of significance, respectively.

### Price-to-Book Value and Multiple Regression Analysis

The primary processing steps to test for this hypothesis is to run a stepwise regression with all the variables included seeking to find the highest R-squared factor offering explanation in the premium-to-book value. The results reported in table 3 indicate that the highest R-square of 55% was explained by three variables: Target gross cash flow to current liabilities, market value of the merger transaction, and target equity. While target gross cash flow to current liabilities and market value of the merger transaction are consistent with the correlation results in being significant and positive, target equity reported significant results in the step wise regression and statistically insignificant results in the correlation test. Noticeable however, is the negative coefficient of the equity variable which supports the previous findings from the correlation test of debt/equity ratio. These consistent results again, support the results that acquirers paid higher premium to leveraged firms. One potential problem rises from this model is the multicollinearity problem noted in the correlation matrix between market value of the merger transaction, and gross cash flow to current liabilities. To better understand the existing situation, a multivariate linear regression analysis, after accounting for multi-collinearity is conducted.

**Table 3: Step Wise Regression Analysis of Takeover Premiums Paid to Target Firm Shareholders and Various Financial Characteristics**

| Dependent Variable: Price Paid - to-Book Value |             |                       |              |          |
|--|-------------|-----------------------|--------------|----------|
| Method: Step Wise                              |             |                       |              |          |
| Sample: 68                                     |             |                       |              |          |
| Variable                                       | Coefficient | Std. Error            | t- Statistic | p-value  |
| Constant (C)                                   | 1.774       | 0.222                 | 7.987        | 0.000*** |
| Target GCF to CL (TGCCL)                       | 0.268       | 0.066                 | 4.087        | 0.000*** |
| Market Value Merger Transc. (MVMT)             | 2.887E-5    | 0.000                 | 3.673        | 0.001*** |
| Target Equity (TEQTY)                          | -3.384E-6   | 0.000                 | -2.322       | 0.028**  |
| R Squared                                      | 0.550       | F- Statistic          |              | 10.607   |
| Adjusted R squared                             | 0.498       | P-Value (F-Statistic) |              | 0.000*** |

\*, \*\*, \*\*\* . Indicates 10, 5, and 1 %, levels of significance, respectively.

Table 4 presents the results for the ordinary least square regression analysis of premium paid to target firm shareholders and various financial variables. After accounting for the multicollinearity problem, by eliminating variables that correlated highly at the 10% level of significance, the estimated regression equation included five independent financial variables: target equity, gross cash flow to current liabilities, and debt to equity, sustainable growth rate, and equity growth rate. The sample consisted of 68 merger cases that were involved in mergers, or acquired by another firm between 2010 through 2017. The result of the R-square ( $R^2$ ) suggested that 47% of the variation in the premium paid to target firms could be explained by these five attributes. The findings also revealed that out of the six used the only statistically significant variable was gross cash flows to current liabilities with a coefficient of 0.287 and 3.968 t statistic, indicating the importance of liquidity as a desirable feature in targets.

**Table 4: Multiple Regression Takeover Premium Paid to Target Firm Shareholders and Financial Characteristics**

| Dependent Variable: Price Paid - to-Book Value |             |                       |              |          |
|--|-------------|-----------------------|--------------|----------|
| Method: Least Squares                          |             |                       |              |          |
| Sample: 68                                     |             |                       |              |          |
| Variable                                       | Coefficient | Std. Error            | t- Statistic | p-value  |
| Constant (C)                                   | 1.531       | 0.367                 | 4.169        | 0.000*** |
| Target Equity (TEQTY)                          | 9.547E-8    | 0.000                 | 0.073        | 0.942    |
| Gross Cash flows to Cur. Liab. (TGCCL)         | 0.287       | 0.078                 | 3.698        | 0.001*** |
| Debt-to-Equity (TDE)                           | 0.469       | 0.278                 | 1.687        | 0.105    |
| Sustainable Growth Rate (TSSG)                 | 0.015       | 0.010                 | 1.565        | 0.131    |
| Equity Growth rate (TEQTYG)                    | -0.002      | 0.004                 | -0.384       | 0.705    |
| R Squared                                      | 0.470       | F- Statistic          |              | 4.255    |
| Adjusted R squared                             | 0.359       | P-Value (F-Statistic) |              | 0.007*** |

\*, \*\*, \*\*\* . Indicates 10, 5, and 1 %, levels of significance, respectively.

## 5. CONCLUSION

The study investigated the premium paid to target shareholders, and financial characteristics that contributed to creating the value of the premiums. This study test was particularly important because it helps explain the driving force behind the acquisition decision, i.e. the motive behind the acquirer's decision to target the firms with values that they believe are important and value creating.

Takeover premium paid to target firm shareholders was found to be statistically negatively related to net income, and significantly positively related to percentage of ownership, debt-to-equity, sustainable growth rate, market value of the merger transaction, and gross cash flow to current liabilities. Insignificant variables included assets, equity, assets growth rate, equity growth rate, return on assets, and return on equity.

The cross-sectional regression results of the relationship between price-to-book value premium and various financial target firm characteristics was as follows:

$$\text{Price-to-book value premium} = 1.531 + 9.547E-8(\text{TEQTY}) + 0.287(\text{TGCCL}) + 0.469(\text{TDE}) + 0.015(\text{TSSG}) - 0.002(\text{TEQTYG})$$

The Pearson correlation results of price paid –to- book value reported significant positive correlation with percentage of acquisition and market value of the merger transaction. This indicates that bidder banks paid higher premium if the deal size was bigger and the higher the percentage they wanted to control of the target firm. The significant negative correlation of the merger premium with net income confirms that acquirers were willing to pay higher premium for targets with lower net income levels perceived to be inefficient, aiming to drive value from replacing inefficient target management with the better and superior acquirer target management. The negative correlative nature of net income taken as a surrogate of managerial efficiency, along with the significant and positive correlative nature of the merger premiums with sustainable growth rate, lends support to Gaughan (2007) "improved management" hypothesis that acquirers should seek small, poorly managed firms, with considerable opportunity for growth.

In contradiction to the Modigliani and Miller propositions of leverage irrelevance, the debt –to- equity variable was found to be statistically significant and positive, indicating that highly leveraged firms are attractive targets and received higher premiums. Lewellen (1971) asserted that firms with less leverage enhance the ability of acquirers to borrow additional funds. In contrast, this study found that acquirers are seeking firms that are highly leveraged, with the ability to grow in the future, and a good liquidity position.

The positive significant association of the merger premium and the variable measuring sustainable growth rate of the firm supports the above hypothesis. While leveraged targets were considered attractive, also acquirers made sure that those targets possessed the ability to grow without having to borrow additional funds, or increase their leverage.

The gross cash flow to current liabilities was found to be statistically significant and positive in correlation tests, and was the only significant variable in the cross-sectional regression analysis. This suggests that acquirers were seeking targets with high leverage but still possessed enough cash liquidity to meet the debt obligations. Worth noting that from the correlation matrix, in addition gross cash flows to current liabilities also highly correlated with the percentage of acquisition indicating that not only acquirers paid higher premiums for liquid companies, but also attempted to gain higher control of these firms.

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