



THE EFFECTS OF MACROECONOMIC FACTORS ON BANKING SECTOR TOTAL DEPOSITS: EVIDENCING TURKEY

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Abstract

The low savings caused by the low income level leads to a low investment, which leads to a increase in unemployment, to a decrease in production and national in-come and due to decreased national income it is caused to an inadequate savings in a vicious circle over again. This vicious circle is causing emerging countries to struggle to finance themselves at the point of increasing their economic perfor-mance and growth. By way of this thought, in this paper, the relationship between the periodic changes of the banking sector total deposits and the periodic changes in macroeconomic parameters have been investigated in Turkey for the period 2002-2016 with two models. Mentioned in the OECD reports dated 2015; %75 of total household financial assets in Turkey is composing from currency and deposits as can be seen in Figure 1, so in this paper total deposits are thought as savings for Turkey. Data set and methodology were mentioned in part III. According to the results obtained; we claim that in Turkey Banking Sector, the effects of percentage changes of macroeconomic parameters are statistically significant on the percent-age change of total deposits. In model 1; the effects of IPI(Industrial Production Index) and CPI (Consumer Price Index) are statistically significant according to Huber-Eicker-White robust estimator and Arellona-Froot-Rogers robust estimator. But related to Parks-Kmenta robust estimator only CPI and Export are resulted as significantly. Similarly in model 2; the effects of CPI,Import,Export are statistically significant according to all robust estimator. But related to Parks-Kmenta robust estimator GDP (Gross Domestic Products) is resulted as significantly according to 95 percent level of significance. In brief; in this paper we see that the periodic changes in the parameters of macroeconomic indicators effects the Banking Sector Total Deposits in Turkey sig-nificantly.

Key Words:Deposits, savings, macroeconomic parameters, GDP, IPI, CPI, export, import, panel data, robust estimators

I- Introduction

Emerging economies have a problem of saving money and if you have a problem of saving money that it means that you have serious deficits. The inability to overcome these deficits also negatively affect other areas of economic life in emerging economies. As a matter of fact, the low savings caused by the low income level leads to a low investment, which leads to a increase in unemployment, to a decrease in production and national income and due to decreased national income it is caused to an inadequate savings in a vicious circle over again. This vicious circle is causing emerging countries to struggle to finance themselves at the point of increasing their economic performance and growth. In this case, countries with insufficient savings are dependent on foreign savings. However, countries are struggling to develop policies and measures to increase their savings in order to reduce their foreign resource dependency. At this point, it is extremely important to increase the savings of the household, which is one of the important elements of economic life. (Duzgun, 2009).

For Turkey, which had made important strides in achieving macroeconomic stability by successfully passing important structural reforms after the financial crisis that experienced in 2001, the provision of sustainable and high economic growth still stands out as one of the most important problems. Covering from the adverse effects of the global crisis by providing high growth in 2010 and 2011 with the help of resuscitative policies for internal demand, the Turkish economy is about to enter a turn to experience once again a low growth period. Ofcourse It is important that the impact of unfavourable global economic conditions is not neglected, however, the existence of the problems that Turkey needs to solve for high and sustainable growth must also not be ignored.

Since 2001, the high savings deficit arising as a result of the drop in savings rates and the deficit of balance of current account are the top of these problems. Low saving rates lead the economy to become increasingly dependent on external savings in order to reach the desired investment levels. This makes the economy more sensible and vulnerable to foreign capital movements, especially in times of global economic uncertainty. Although the Turkish economy has attracted considerable foreign capital due to its successful stabilization policies and opportunities and at-tractive returns in the post-2001 period, it is clear that this

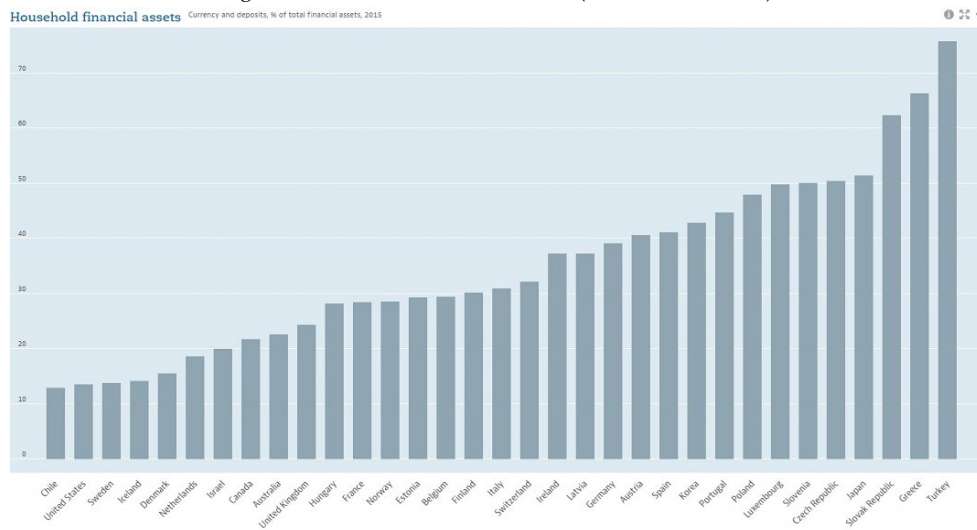
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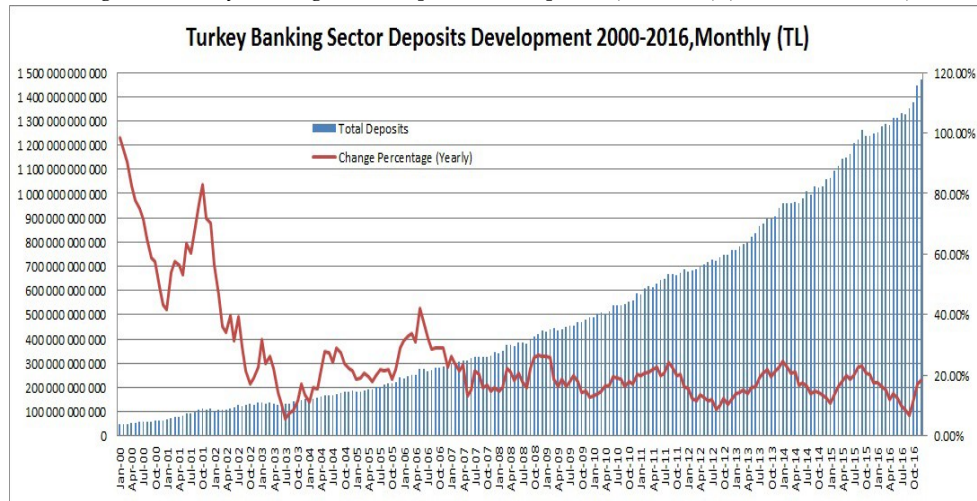
growth strategy is not sustainable. International comparisons show that the savings rates in Turkey are lower than the OECD average and the savings rates of the countries in the same income group (Ozlaie and Karakurt, 2012).

Figure 1: Household Financial Assets (Data Source:OECD)



Mentioned in the OECD reports dated 2015; %75 of total household financial assets in Turkey is composing from currency and deposits as can be seen in Figure 1, so in this paper total deposits are thought as savings for Turkey. As can be seen in Figure 2, although the total deposits in banking system is increasing steadily from 2000-2016 month by month but the percentage change of total deposit amount with respect to previous month in the Turkey banking sector is decreasing in a fallen trend and the linear slope is confirming this decreasing. In other words, the rate of increase in deposits is falling.

Figure 2: Turkey Banking Sector Deposits Development (2000-2016) (Data Source:BRSA)



To examine it closely that one of the most important reasons for the drop in saving rates seen in the last 10 years in Turkey, is the increase in purchases of durable goods. With improved macroeconomic conditions and increased foreign financing, the banking sector has gone to a significant increase in consumer loans, which has led to a dramatic increase in household purchases of durable goods such as motor vehicles and housing (Ozlaie and Karakurt, 2012).

In the report published by the World Bank in 2012 (Report No: 66301-TR) namely 'High Growth Sustainability: The Role of Domestic Savings, Turkey Country Economy Report', it is emphasized that "the national income ratio of savings" in Turkey tends to decrease. This decreasing is likely to have a negative impact on economic growth (Vurur and Ozen,2013).

As can be seen both in Figure 3 and Figure 4, the percentage change of total deposit amount with respect to previous month and previous year respectively in the Turkey banking sector is decreasing in a fallen trend and the linear slope is confirming this decreasing.

Figure 3: Turkey Banking Sector Monthly Deposits Total Change by Previous Month (2000-2016)(Data Source:BRSA)

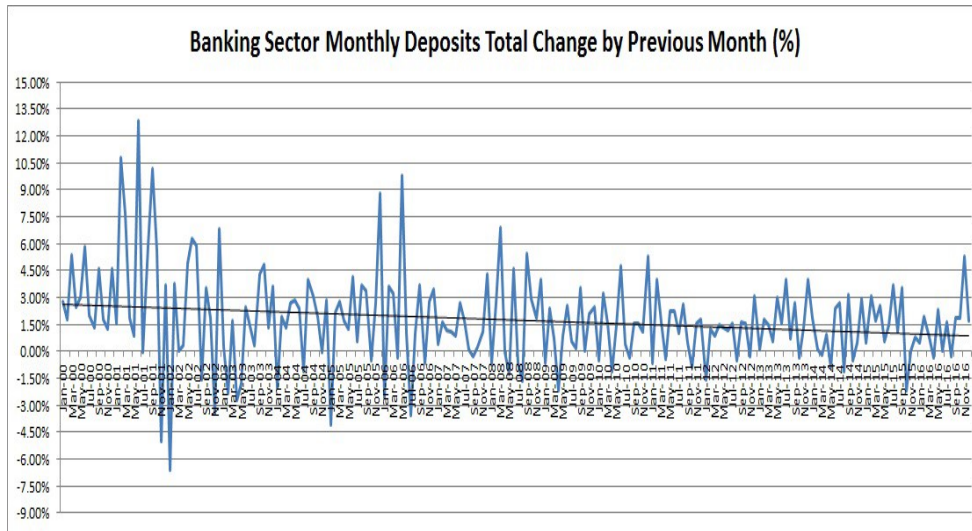
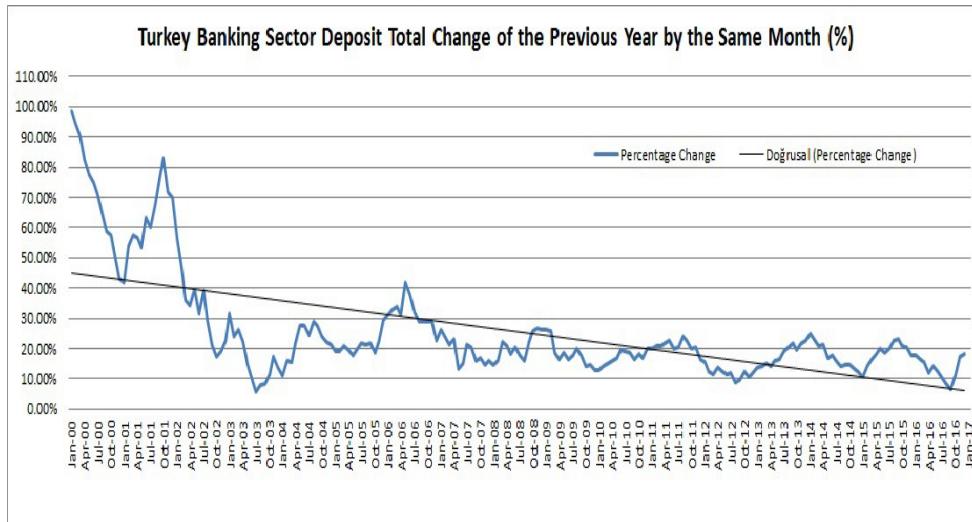


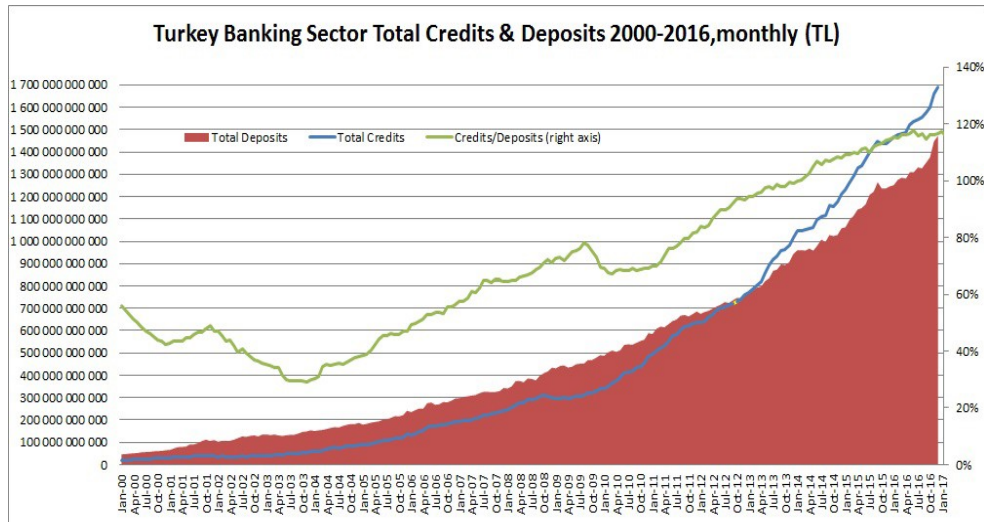
Figure 4: Turkey Banking Sector Deposit Total Change of the Previous Year by the Same Month (2000-2016)(Source:CBRT)



When we look at the monthly changes in deposits volume compared to the previous month and the graphs showing the change in the monthly volume of deposits with respect to the same month of the previous year as a percentage, the increase in monthly deposits decreased to 4 percent from the 12 percent slices and decreased further in the recent periods, in the year-on-year basis, the increase in deposits decreased to 25% from the 80% slice and have continued to decline even further in recent years with annual increases of less than 20%.

However, domestic savings are the main factor in continuing the sustainable growth of developing countries like ours, but the declining deposit growth slowing down even to a certain extent and even turning to shrinkage has the potential to seriously distort macroeconomics of our country's economy.

Figure 5: Turkey Banking Sector Total Credits and Deposits(Source:CBRT)

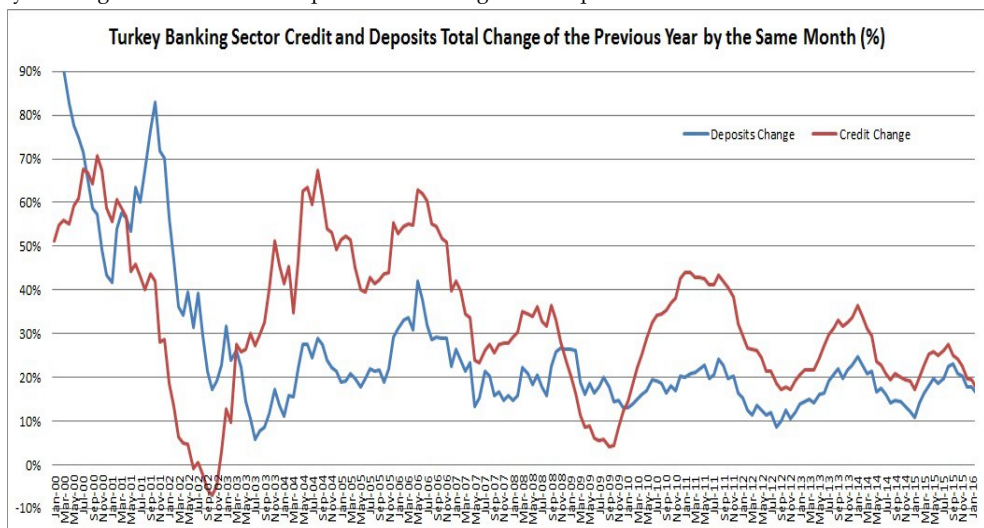


Thus; as can be seen in Figure 5, while the total deposit amount in the banking sector until 2013 is larger than the loans, this situation has changed since 2013 and the total of loans has increased above the total deposits. Credits/Deposits ratio is over %120. Deposits are inadequate for the sum of loans.

Consumption trend seems to be ahead of saving tendency and it is thought that the credit growth of the banking sector is largely financed by external resources rather than internal resources with lower quantitative expansion cost resulting from the global crisis. It is thought that more effective policies should be applied which will prevent the problem of saving in the future, which is one of the most important side effects of the strategy of supporting growth with internal consumption due to the dynamics of foreign markets, which declined after the global crisis of 2008 in particular.

In this context, it is expected that there will be effective results in medium and long term applications such as "Individual Pension System" and "Housing Account" and "Dowry Account" which are aimed at encouraging the private pension system and savings which have been established and successfully implemented in recent years and It is thought to be a positive contribution to domestic savings. It is clear that the closely monitored credit growth rate target, which has been introduced by the CBRT as a performance criterion in recent years, has resulted in a harmonious correlation with deposits since 2011, as can be seen from the Figure 6. It is noteworthy that when the increase in deposits decreased, there was a similar decrease in the increase in loan volumes and thus the "credit/deposit" balance was managed in a sustainable manner. However, credit usage, which is one of the basic conditions for the large number of small and medium sized enterprises (SME) that need operating capital in our country to continue their activities on a healthy basis, is limited due to this performance criterion which naturally draws down the capacity utilization and this situation causes both growth and employment to be below the desired levels.

Figure 6: Turkey Banking Sector Credit and Deposits Total Change with respect to the same month of the Previous Year,2000-2016(%)



II- Brief Review of Literature and Hypothesis



a. Brief Literature

In the literature, in some of the studies the effects of economic growth on saving and the relationship between saving and economic growth are examined. In some other studies, the determinants of saving and the effect of income on saving have been examined and in some studies the causality relation between saving and growth has been examined.

In the Harrod-Domar Growth Model (Domar,1946), (Harrod,1939), it is clear that savings are the main determinant of growth and depend on the tendency to grow marginally. (Solow,1956) suggest that long-term saving does not affect growth. Friedman's continuous income hypothesis is one of the leading studies in this field and according to this hypothesis, a rational consumer is saving less as the expectation of income increases in the future (Friedman,1957). One of the important studies on saving tendencies is the life cycle hypothesis which is put forward by (Brumberg and Modigliani,1954). According to this hypothesis, consumption choices depend on the level of income they expect to receive in the next period. In the academic studies conducted after the middle of the 1980s; ((Barro and Mar-tin,1995), (Lucas,1998), (Mankiw and Romer and Weil,1992), (Romer,1986) and (Romer,1987), (Rebelo,1991); It has been suggested that the increase in savings will have a positive impact on investment and capital accumulation, leading to permanent and high growth. In studies on saving determinants, it has been suggested that income is a positive influence in the growth of savings.(Attanasio and Picci and Scorcu,2000); (Carroll and Overland and Weil,2000); (Carroll and Weil,1994); (Deaton ve Paxson-2000); (Loayza and Hebbel and Serven,2000); (Rodrik,2000); (Schmidt-Hebbel, Servén ve Solimano-1996).

(Singh,2010) explores the long-term effects of domestic savings for India and explores causality between saving and growth; sided causality between savings and growth and at the same time suggests that financing of current account deficits and investments is often financed by internal savings. In another study (Gu and TAM,2013) using with structural vector autoregressive (SVAR) studied the relationship between savings and growth in China and at the end they have reached the result is that China's growth is a positive influence of savings and there is a limited effect on savings and an inequality between savings and growth and that this inequality is a stronger factor for growth than the saving. Similarly, (Cardenas and Escobar,1998) investigated the determinants of savings in Colombia through a time series approach and concluded that the result is a perfect correlation between the change in the national economy and the change in investment, and the savings are the granger cause of growth.

It is certain that inflation affects savings. As a matter of fact, many of the literature suggests that the amount of savings will increase with inflation in any case where consumers are aiming to maintain the target level of their wealth or liquid assets relative to their incomes. When we look at literature studies about the relationship between CPI and deposits; (Athukorala and Sen,2004) mentioned in his research for india that the Inflation due to the through impact on wealth can affect savings and the amount of savings will increase with inflation in all cases where the consumers intent is protect their wealthy target level.

(Deaton,1989) and (Kimball,1990); argued that inflation has uncertainties related to future income flows, so that prudence may be even more appropriate for households in emerging countries whose savings are likely to rise, which is far less vague than their counterparts in developed countries. (Deaton,1977), (Fischer,1993) and (Loayza and Hebbel and Serven,2000) also suggested that inflation together with real interest rates is an explanatory variable on savings previously with similar reasons.

Each developed or developing country wants to make current account surplus in foreign trade for its healthy macroeconomic balances. Because the current surplus can serve as a safety valve for economy getting a protection against exchange rate shocks. In the literature review; there have been very few studies investigating the relationship between foreign trade and the banking sector directly. (Al-Yousif Y.K.,2002), (Beck,2003) , (Svaleryd and Vlachos,2005) , (Jordaan and Eita,2007), (Jenkins and Katircioglu,2010) and (Shahbaz and Azim and Ahmad,2011), (Zhang and Wang and Wang,2012), (Shahbaz and Rah-man,2014) suggest that exports have positive effects on economic growth in most of these studies.

(Tang,2016) which one of the rare studies on direct export and banking sector relations investigated the development of Eastern and Central European countries exports to other EU countries after inclusion and integration in European Union Financial System in his study and cliamed that one of the reasons for the absence of the positive effect of the bank credit effect on exports is that there is no increase in bank credits for exports despite the presence of the EU bank. In another study (Zegarra,2014) investigated the influence of the legal and economic factors on the growth of commercial banking in the 19th and 20th centuries in Latin America countries including Argentina, Chile, Brazil,Peru and Mexico by using economical datas from 1840 to 1920 and claimed that the growth of exports was an important and positive effect on the resources of the banks deposits and bonds. In addition, (Sun and Ford and Dickinson,2010) investigated the Chinese



economy and China's monetary policy between 1996 and 2006 and in his work he studied China's monetary policy indicators, bank balance variables such as total deposits, total credits, bank securities and real economic variables such as GDP, inflation, export, import, foreign exchange reserves. He claimed that total credits play a serious role on the Chinese Economy in the long run term. One of the rare works (Kubo,2008), during a period for 7 years in his work on the monetary transmission mechanism in Thailand; specifically suggest that monetary tightening is a strong negative impact on import demand in the short run, although import prices have fallen. In another study (Rufael,2009) investigated the causal relationship between development and economic growth for Kenya during the years 1966-2005, and claimed that some tangible results were obtained that the financial development was a causality for import and export development but in the opposite direction the results obtained were weak.

b. Hypothesis

The hypothesis of our work is that periodic changes in the parameters of macroeconomic indicators effects the Banking Sector Total Deposits. The statistical methodology and obtained results specified in part 3 and 4 seperately.

III- Data Set and Methodology

In this study, the data set is compiled from quarterly data covering the years 2000-2016. All variables in the panel data set consist of the percentage change of the 'deposits' with respect to the previous quarter and the percentage change with respect to the same period of the previous year and these two values constitute the dependent variables of our data set obtained from CBRT (Central Bank Republic Turkey). The deposits datas are obtained from 17 bank with a 95 percent market share of the banking sector which actively work in Turkey's banking sector. All variables are expressed in percent data forms.As the macroeconomic parameters of the data set, the following variables are taken as data between 2000 and 2016 quarterly.

a. Data Set Definition

Gross Domestic Product (GDP): As announced by Turkstat seasonally and calender adjusted GDP data were used.

Inflation (CPI): As announced by Turkstat Consumer Price Index (2003 = 100) series data were used.

Export and Import (EXP and IMP): As announced by Turkstat Foreign Trade by Months on statistical data were used.

Industrial Product Index (IPI): As announced by Turkstat Industrial produciton index (2010 = 100), 1986-2013 (Gross Indices) data were used.

b. Table of Variables

Table 1: Table of Variables
Panel Data Variables

Variable	Short Code	Type
Deposits Difference Change to previous Quarter	DEPOS_PQ	Dependent Variable
Deposits Difference Change to previous Year	DEPOS_PY	Dependent Variable
GDP Change to Previous Quarter	GDP_PQ	Independent Variable
GDP Change to Previous Year	GDP_PY	Independent Variable
IPI Change to Previous Quarter	IPI_PQ	Independent Variable
IPI Change to Previous Year	IPI_PY	Independent Variable
CPI Change to Previous Quarter	CPI_PQ	Independent Variable
CPI Change to Previous Year	CPI_PY	Independent Variable
EXP Change to Previous Quarter	EXP_PQ	Independent Variable
EXP Change to Previous Year	EXP_PY	Independent Variable
IMP Change to Previous Quarter	IMP_PQ	Independent Variable
IMP Change to Previous Year	IMP_PY	Independent Variable

t:time, period from 2000-2016,quarterly

n:bank, panel unit consists of 17 bank with a 95 percent market share of the Turkey Banking Sector

Table 2: Panel Data Summary Statistics



Variable	Mean	Std. Dev.	N
Deposits Difference Change to previous Quarter	0.071	0.243	1072
Deposits Difference Change to previous Year	0.295	0.461	1024
GDP Change to Previous Quarter	0.013	0.026	1088
GDP Change to Previous Year	0.051	0.053	1088
IPI Change to Previous Quarter	0.014	0.071	1088
IPI Change to Previous Year	0.051	0.088	1088
CPI Change to Previous Quarter	0.035	0.037	1088
CPI Change to Previous Year	0.168	0.174	1088
IMP Change to Previous Quarter	0.026	0.082	1088
IMP Change to Previous Year	0.124	0.229	1088
EXP Change to Previous Quarter	0.027	0.061	1088
EXP Change to Previous Year	0.116	0.157	1088

c. Methodology

i. Panel Unit Root tests

In panel data analysis, the panel unit root test must be taken first in order to identify the stationary properties of the relevant variables. In this study, we choose second generation panel unit root tests Pesaran (2003) with stata command 'pescadf' and Fisher Test with stata command 'xtfisher'. The null hypothesis of the unit root test is that there exist unit root (i.e. the variables are non-stationary), whereas the alternative hypothesis states that no unit root exists in the series (i.e. the variables are stationary). For this purposes; we use stata command 'xtfisher var xi, trend lags()' and it can be seen from table that all the variables in level are statistically significant under the Fischer test, indicates that all variables with mentioned lags have no unit root.

Table 3: Second Generation Unit Root Results

Panel Data	Variables			
Short Code	lag	chi2()		prob > chi2()
GDP_PQ	lag (0)	chi2(32)=643.9746		Prob > chi2=0.000
GDP_PY	lag (0)	chi2(32)=57.5668		Prob > chi2=0.000
IPI_PQ	lag (0)	chi2(32)=1231.3149		Prob > chi2=0.000
IPI_PY	lag (0)	chi2(32)=129.8038		Prob > chi2=0.000
CPI_PQ	lag (0)	chi2(32)=188.1251		Prob > chi2=0.000
CPI_PY	lag (5)	chi2(32)=85.4392		Prob > chi2=0.000
EXP_PQ	lag (0)	chi2(32)=621.2916		Prob > chi2=0.000
EXP_PY	lag (0)	chi2(32)=70.7895		Prob > chi2=0.000
IMP_PQ	lag (0)	chi2(32)=275.1796		Prob > chi2=0.000
IMP_PY	lag (1)	chi2(32)=251.9677		Prob > chi2=0.000

* :calculated the 5th lag value in order to eliminate the unit root

** :calculated the 1th lag value in order to eliminate the unit root

ii. Defining Panel Models

In this section we identify the best panel estimator model that helps us identify the effects of macroeconomics variables on credit to deposits ratio and then describe our model in mathematical form. To identify the best estimator model whether pooled OLS or random effects or fixed effects model we first test the classical model by using F-test and/or Likelihood Ratio (LR) test with stata command xtreg and xtmixed. It is not need to use a different command in stata and only enough to predict fixed effect model regression by using 'xtreg var xi, fe' for F test. The pooled OLS model could not be used incase of the test results pointing time effects and/or unit effects.

model-1

Dependent variable: DEPOS_PQ ("Total Deposits Difference Percentage Change with respect to previous Quarter) in figure 7 and figure 8.

Figure 7: Stata Graphs for Total Deposits

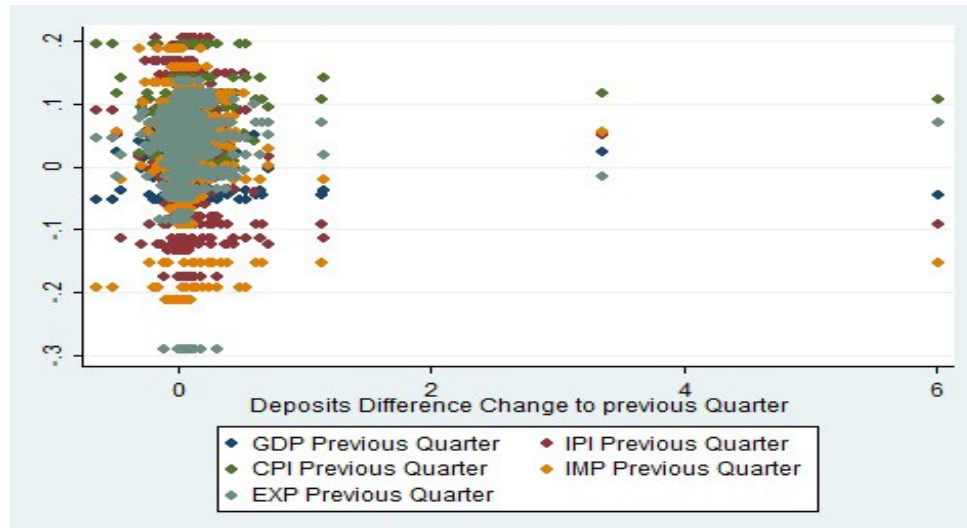
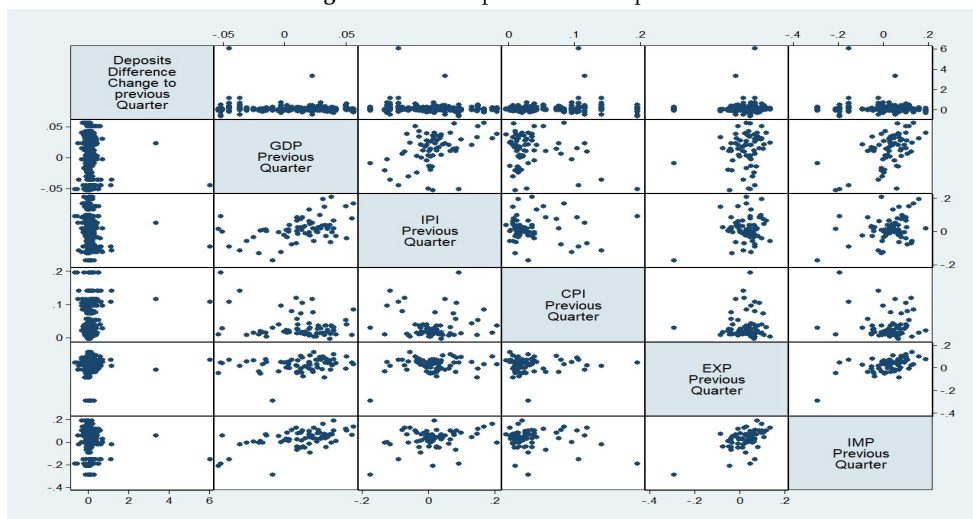


Figure 8: Stata Graphs for Total Deposits



For unit effects; getting the result of F test that 'F test that all $u_i = 0$: $F(15, 1051) = 0.47$ Prob > F = 0.9573' according to F-distribution table for $F(15, 1051) = 0, 9573$, it can not be said that unit effects exist. With it; for time effects with stata command xtmixed the result of LR test that 'LR test vs. linear regression: $\chi^2(01) = 15.79$ Prob >= $\chi^2 = 0.0000$ ' it can be said that time effects exist. Due to existence of time effects we eliminated the pooled OLS model. So now it needs to apply Hausman test for the choice the fixed effect (FE) or random effect (RE) with stata command 'hausman'. Getting the result of hausman test that ' $\chi^2(5) = 0.00$ Prob > $\chi^2 = 1.0000$ ', it can be said that random effects (RE) model can be used for an estimator. After defining the RE model, we should check the panel data basic assumptions formerly known as heteroskedasticity, autocorrelation and cross-sectional dependence in panel-data models with tests mentioned table-4.

Table 4: Tests for heteroskedasticity, autocorrelation and cross-sectional dependence in RE model

Heteroskedasticity	Autocorrelation	Cross-sectional Dependence
Breusch-Pagan/Cook-Weisberg Test	t-Test	Durbin Watson Test
White Test	Durbin-Watson Test	Pesaran Test
Levene-Brown-Forsythe Test	Breusch-Godfrey test	Friedman Test
	Wooldridge Test	Frees Test



Heteroskedasticity Breusch and Pagan Lagrange multiplier test for random effects: After estimated the xtreg regression we use 'xttest1' command to get Breusch and Pagan Lagrange multiplier test result to check the heteroskedasticity. Levene – Brown – Forsythe Test also can be applied for checking heteroskedasticity. Both test gave the result for the existance of heteroskedasticity.

Autocorrelation Bhargava-Franzini-Naredranathan Test: After estimated the 'xtregar var xi, re lbi' regression in stata we get directly the test result to check the auto-correlation. Getting the result 'modified Bhargava et al. Durbin-Watson = 2.2186183, Baltagi-Wu LBI = 2.2319715', it can be said about that because the test statistics 2,2186183 and 2,2319715 are bigger than 2 which refer to chi-square critical value, the existance of autocorrelation with AR(1) could be said. The same results also obtained with the LM Test.

Cross-sectional dependence Pesaran Test: After estimated the xtreg regression we use 'xtcsd,pesaran' command to get Pesaran Test result to check the cross-sectional dependence. Getting the result 'Pesaran's test of cross sectional independence = 16.040, Pr = 0.0000', it can be said about the existance of cross-sectional dependence. The same results also obtained with the Friedman Test and Frees Test. In summary; after the tests results it is decided Random Effect (RE) model as a panel estimator model but existing with heteroskedasticity, autocorrelation and cross-sectional dependence. Due to existance of heteroskedasticity, autocorrelation and cross-sectional dependence at the same time the regression model should be estimated with the known robust estimators some of mentioned below:

- Huber-Eicker-White Estimator (HU-EI-WH)
- Arellona-Froot-Rogers Estimator (AR-FR-RO)
- Parks-Kmenta Estimator (PA-KM)

model-2 Dependent variable: DEPOS_PY (Total Deposits Difference Percentage Change with respect to previous Year) in figure 9 and figure 10.

Figure 9: Stata Graphs for Total Deposits

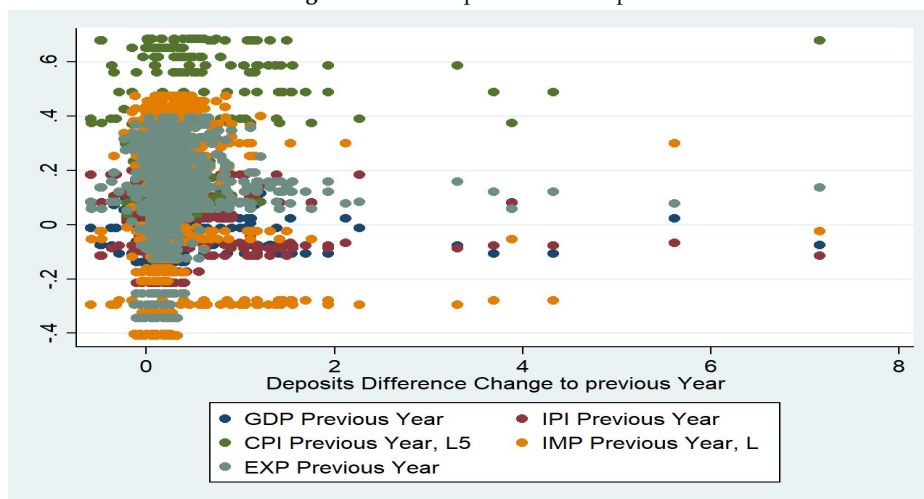
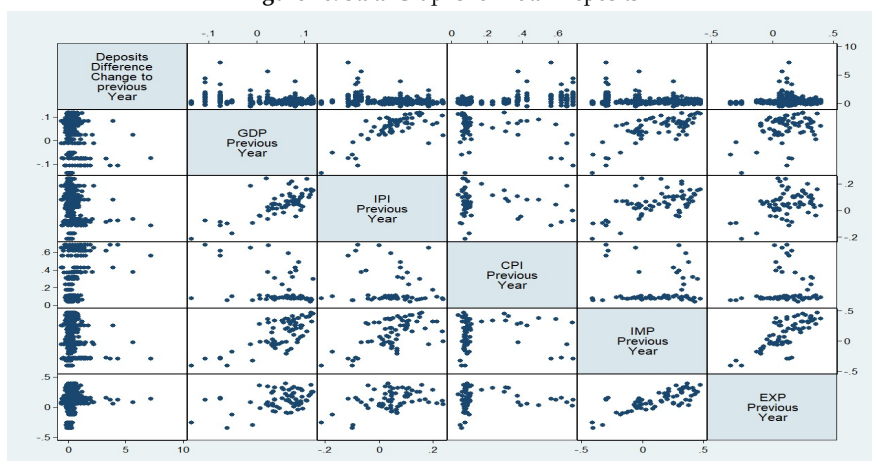


Figure 10: Stata Graphs for Total Deposits



For unit effects; getting the result of F test that 'F test that all $u_i=0$: $F(15, 987) = 2.01$ Prob > F = 0.0122' according to F-distribution table for $F(15, 987) = 0.0122$, it can not be said that unit effects exist.



With it; for time effects with stata command xtmixed the result of LR test that 'LR test vs. linear regression: $\chi^2(1) = 63.22$ Prob > $\chi^2 = 0.0000$ ' it can be said that time effects exist. Due to existence of time effects we eliminated the pooled OLS model. So now it needs to apply Hausman test for the choice the fixed effect (FE) or random effect (RE) with stata command 'hausman'. Getting the result of hausman test that ' $\chi^2(5) = 0.00$ Prob > $\chi^2 = 1.0000$ ', it can be said that random effects (RE) model can be used for an estimator. After defining the RE model, we should check the panel data basic assumptions formerly known as heteroskedasticity, autocorrelation and cross-sectional dependence in panel-data models with tests mentioned table-10.

Heteroskedasticity Levene-Brown-Forsythe Test for random effects: Getting the result ' $W_0 = 3.4204479$ $df(15, 992)$ Pr > F = 0.00001055, $W_5 = 2.5071890$ $df(15, 992)$ Pr > F = 0.00120188, $W_{10} = 2.5288866$ $df(15, 992)$ Pr > F = 0.00108044', it can be said about the existence of heteroskedasticity.

Autocorrelation Bhargava-Franzini-Naredranathan Test: After estimated the 'xtregar var xi, re lbi' regression in stata we get directly the test result to check the auto-correlation. Getting the result 'modified Bhargava et al. Durbin-Watson = .69350824, Baltagi-Wu LBI = .99431012', it can be said about that because the test statistics 0,69350824 and 0,99431012 are less than chi-square critical value:2 , the existence of autocorrelation with AR(1) could not be said.

Cross-sectional dependence Pesaran Test: After estimated the xtreg regression we use 'xtcsd, pesaran' command to get Pesaran Test result to check the cross-sectional dependence. Getting the result 'Pesaran's test of cross sectional independence = 22.641, Pr = 0.0000', it can be said about the existence of cross-sectional dependence. The same results also obtained with the Friedman Test and Frees Test.

In summary; after the tests results it is decided Random Effect (RE) model as a panel estimator model but existing with heteroskedasticity and cross-sectional dependence but without autocorrelation. Due to existence of heteroskedasticity and cross-sectional dependence at the same time the regression model should be estimated with the known robust estimators some of mentioned at table 3.

IV- Empirical Results

a. Results for Model-1

	(HU-EI-WH)	(AR-FR-RO)	(PA-KM)
	DEPOS_PQ	DEPOS_PQ	DEPOS_PQ
GDP_PQ	0.489 (1.84)	0.489 (1.84)	0.241 (0.99)
IPI_PQ	-0.298*** (-3.36)	-0.298*** (-3.36)	-0.0781 (-1.03)
CPI_PQ	1.161*** (4.57)	1.161*** (4.57)	1.062*** (7.46)
IMP_PQ	-0.244 (-1.08)	-0.244 (-1.08)	-0.152 (-1.76)
EXP_PQ	0.334 (1.11)	0.334 (1.11)	0.222* (2.30)
_cons	0.0276*** (5.10)	0.0276*** (5.10)	0.0242** (3.15)
N	1072	1072	1072

t statistics in parentheses

* p < 0.05, ** p < 0.01, *** p < 0.001

(HU-EI-WH):Huber-Eicker-White Estimator

(AR-FR-RO):Arellona-Froot-Rogers Estimator

(PA-KM):Parks-Kmenta Estimator

All the results obtained from these robust estimators are shown above table. According to the results; we claim that in Turkey Banking Sector, the percentage change of deposits with respect to previous



quarter is affected by the percentage change of industrial product index (IPI) negatively for all estimator except PA-KM estimator, consumer price index (CPI) positively for all estimator and export (EXP) positively for only PA-KM estimator. That is; with respect to previous quarter an increase in the percentage change of IPI leads to a decrease in the percentage change of deposits according to levels of significance. Moreover; with respect to previous quarter an increase in the percentage change of CPI leads to an increase in the percentage change of deposits according to levels of significance. Similarly; with respect to previous quarter an increase in the percentage change of EXP leads to an increase in the percentage change of deposits but only according to 95 percent levels of significance in PA-KM estimator.

If we were to evaluate all these together firstly we would say that an unit increase in percentage change of industrial production index leads to a decrease in percentage change of total deposits in Turkey; in other words it can be said that the incline in industrial output has reduced the savings. Especially in Turkey organizations or companies in the industrial sector are classified in three subsectors. The main subsector is manufacturing industry sector which constitutes % 85.5 of all. So the increase in IPI means more production costs and in order to protect profit-ability less bank loans for manufacturing industry sector. So in this case savings are being spent for production costs naturally. Secondly, an unit increase in percentage change of consumer price index leads to a increase in percentage change of total deposits in Turkey; in other words saving owners invest their savings in the bank to protect against inflation. Because increased inflation also raises interest rates. Thirdly, an increase in percentage change of export leads to an increase in percentage change of total deposits in Turkey. It's reasonable because international markets for our business have an important place but also more risky, harder to enter and harder to stay in. However, if being competable in international markets, they will carry large sales and profit potential which can not be compared with the domestic market. So it can be said that the value added of the export is high especially in Turkey because income is in foreign currency and obligations in turkish liras. Increased income can return to savings naturally.

b. Results for Model-2

	(HU-EI-WH)	(AR-FR-RO)	(PA-KM)
	DEPOS_PY	DEPOS_PY	DEPOS_PY
GDP_PY	-0.687 (-1.66)	-0.687 (-1.66)	-0.839 (-1.98)
IPI_PY	-0.468* (-2.13)	-0.468* (-2.13)	-0.117 (-0.54)
L5.CPI_PY	0.586*** (3.52)	0.586*** (3.52)	0.550*** (7.13)
L.IMP_PY	-0.407*** (-3.34)	-0.407*** (-3.34)	-0.202* (-2.10)
EXP_PY	0.645*** (4.57)	0.645*** (4.57)	0.362** (2.83)
_cons	0.207*** (14.70)	0.207*** (14.70)	0.207*** (9.00)
N	1008	1008	1008

t statistics in parentheses

*p < 0.05, **p < 0.01, ***p < 0.001

(HU-EI-WH):Huber-Eicker-White Estimator (AR-FR-RO):Arellona-Froot-Rogers Estimator (PA-KM):Parks-Kmenta Estimator L5.CPI_PY means 5th lag.

L.IMP_PY means 1th lag.

All the results obtained from these robust estimators are shown above table. According to the results; we claim that in Turkey Banking Sector, the percentage change of deposits with respect to previous year is affected by the percentage change of industrial product index (IPI) negatively, consumer price index (CPI) with 5th lag positively, import(IMP) with 1th lag negatively, export (EXP) positively and gross domestic product (GDP) negatively only for PA-KM estimator. The estimation results that we obtained for model-2 is more stronger than model-1. Almost all independent variables give statistically significant and strong results



in the three estimators. According to the results obtained; we claim that with respect to previous year an increase in the percentage change of IPI leads to a decrease in the percentage change of deposits according to 95 percent level of significance. Moreover; with respect to previous year an increase in the percentage change of CPI with 5th lag leads to an increase in the percentage change of deposits according to levels of significance. Similarly; with respect to previous year an increase in the percentage change of IMP with 1th lag leads to a decrease and an increase in the percentage change of EXP leads to an increase in the percentage change of deposits according to levels of significance for all estimators. Moreover; with respect to previous year an increase in the percentage change of GDP leads to a decrease in the percentage change of deposits but only according to Parks-Kmenta (PA-KM) Estimator. Com-pared to model-1 we reached much more meaningful and wide results in Model-2.

In addition to IPI, CPI and EXP we also got strong results for IMP. An unit increase in percentage change of import leads to a decrease in percentage change of total deposits in Turkey. It's reasonable due to facilitate the acquisition of goods by Turkish companies from abroad by direct payment. That is; Turkish companies do import by payment instead of deferred payment especially while importing raw materials and machinery. Certainly this situation negatively affects the change of deposits. Lastly, an unit increase in percentage change of GDP leads to a decrease in percentage change of total deposits in Turkey. Along with growth, consumption demands for households also increases instead of savings since young population because the new and astonishing products based on industrial development and the face of rapidly changing technology attract the attention of individuals and encourage them for consumption.

V- Conclusion

The hypothesis of our work is that periodic changes in the parameters of macroeconomic indicators effects the Banking Sector Total Deposit. In accordance with this purpose; we compiled quarterly data covering the years 2000-2016 both in Turkey Banking Sector and economy. In Turkey; when we evaluate from the perspective of periodic percentage changes we may say that IPI and IMP strongly affect the the total deposits negatively.

On the other hand, CPI and EXP strongly affect positively. IMP and IPI are related to each other. Because raw materials and advanced equipments are necessary for our economics activities. If the industry revolves, it means industrial production (IPI) is also increasing. But especially the raw materials and advanced tools and equipments are usually provided by import. Mostly Turkish companies do import by direct payment instead of deferred payment especially while importing raw materials and machinery. In this case; companies use their savings in bank accounts for import. Companies should be encouraged for deferred payment for importing raw materials and equipments. Besides; foreign dependence on raw materials and advanced machinery should be reduced, for this private sector should be encourage to invest by government policies. In this way we will save our industry from imported raw material dependency.

It's also important for Turkey increase its export both on quantity and quality. Because international markets for our business have an important place but also more risky, harder to enter, and harder to stay in. However, if being competable in international markets, they will carry large sales and profit potential which can not be compared with the domestic market. So it can be said that the value added of the export is high especially in Turkey because income will be in foreign currency whereas obligations be in turkish liras. Increased income can create to savings naturally. Therefore; incentives and fiscal policies should be applied for companies in order to increase export.

REFERENCES

- AL-YOUSIF Y.K. (2002), "Financial development and economic growth another look at the evidence from developing countries", *Review of Financial Economics*, 11:131-150, 2002.
- ATHUKORALA Prema Chandra and SEN Kunal (2004), "The determinants of private saving in India", *World Development*, 32-3:491-503, 2004.
- ATTANASIO O.P., PICCI L., and SCORCU A.E. (2000), "Saving, growth, and investment: A macroeconomic analysis using a panel of countries", *The Review of Economics and Statistics*, 82 (May (2)):182-211, 2000.
- BARRO R.J. and MARTIN Sala-i (1995). *Economic growth*, New York: McGraw-Hill, 1995.
- BECK T. (2003), "Financial dependence and international trade: is there a link", *Review of International Economics*, 11:296-316, 2003.
- CA'RDENAS Mauricio and ESCOBAR Andre's (1998), "Saving determinants in Colombia:1925-1994", *Journal Of Development Economics*, 57-1998:5-44, 1998.
- CARROLL C.D., OVERLAND J., and WEIL D.N. (2000), "Saving and growth with habit formation", *The American Economic Review*, 90(June (3)):341-355, 2000.
- CARROLL C.D. and WEIL D.N. (1994), "Saving and growth: A reinterpretation", *In Carnegie-Rochester conference series on public policy*, vol. 40 June:133-192, 1994.
- DEATON A. (1977), "Involuntary saving through unanticipated inflation", *American Economic Review*, 67 (5): 899-910, 1977.



- DEATON A. and PAXSON C. (2000), "Saving and growth among individuals and households", *The Review of Economics and Statistics*, 82 (May (2)), 212-225, 2000.
- DEATON A. (1989), "Saving in developing countries: theory and review", In *Proceedings of the World Bank Annual Conference on Development Economics Washington*, DC: World Bank, pages 61-108, 1989.
- DOMAR Evsey D. (1946), "Capital expansion, rate of growth, and employment", *Econometrica*, 14/2:137-147, 1946.
- DÜZGÜN Recep (2009), "Türkiye'de Özel tasarrufun belileyicileri", *Erciyes Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 32:173-189, 2009.
- FICSHER S. (1993), "The role of macroeconomic factors in economic growth", *Journal of Monetary Economics*, 32:484-512, 1993.
- FRIEDMAN Milton A. (1956), "A theory of the consumption function", Princeton: Princeton University Press, 1956.
- GU Xinhua and TAM Pui Sun (2013), "The saving-growth-inequality triangle in China", *Economic Modelling*, 33 (2013):850-857, 2013.
- HARROD R.F. (1939), "An essay in dynamic theory", *The Economic Journal*, 39/193:14-33, 1939.
- HEBBEL K.Schmidt, SERVEN L. and SOLIMANO A. (1996), "Saving and investment: Paradigms, puzzles, policies", *The World Bank Research Observer*, 11(February (1)):87-117, 1996.
- JENKINS H.P. and KATIRCIOĞLU S.T. (2010), "The bounds test approach for cointegration and causality between financial development, international trade and economic growth: the case of cyprus", *Applied Economics*, 43(13):1699-1707, 2010.
- JORDAAN A.C. and EITA J.H. (2007), "Export and economic growth in namibia: a granger causality analysis", *South African Journal of Economics*, 75:540-547, 2007.
- KIMBALL M. (1990), "Precautionary saving in the small and the large", *Econometrica*, 58:53-73, 1990.
- KUBO Akihiro (2008), "Macroeconomic impact of monetary policy shocks:evidence from recent experience in Thailand", *Journal of Asian Economics*, 19 (2008):83-91, 2008.
- LOAYZA N., HEBBEL K. Schmidt, and SERVEN L.(2000), "What drives private saving across the world?", *The Review of Economics and Statistics*, 82(May (2)):165-181, 2000.
- LUCAS Jr.R.E. (1988), "On the mechanics of economic development", *Journal of Monetary Economics*, 22(July (1)):3-42, 1988.
- MODIGLIANI Franco and BRUMBERG Richard H. (1954), "Utility analysis and the consumption function: an interpretation of cross-section data" in Kenneth K. Kurihara, ed., *Postkeynesian economics*, NJ. Rutgers University Press, pages 388-436, 1954.
- ÖZLALE Ümit and KARAKURT Alper (2012), "Türkiye'de tasarruf açığının nedenleri ve kapatılması İçin politika Önerileri", *Bankacılar Dergisi*, 83:1-33, 2012.
- REBELO S. (1991), "Long-run policy analysis and long-run growth", *Journal of Political Economy*, 99 (June (3)):500-521, 1991.
- RODRIG D. (2000), "Saving transitions", *The World Bank Economic Review*, 14(3):481-507, 2000.
- ROMER P.M. (1986), "Increasing returns and long-run growth", *Journal of Political Economy*, 94 (October (5)):1002-1037, 1986.
- ROMER P.M. (1987), "Growth based on increasing returns due to specialization", *The American Economic Review*, 77(May (2)):56-62, 1987.
- RUFÄEL Yemane Wolde (2009), "Re-examining the financial development and economic growth nexus in Kenya", *Economic Modelling*, 26 (2009): 1140-1146, 2009.
- SHAHBAZ M. and RAHMAN M.M. (2014), "Exports, financial development and economic growth in Pakistan", *International Journal of Development Issues*, 13(2):155-170, 2014.
- SHAHBAZ M., AZIM P., and AHMAD K. (2011), "Exports-led hypothesis in Pakistan: further evidence", *Asian Economic and Financial Review*, 1:182-197, 2011.
- SINGH Tarlok (2010), "Does domestic saving cause economic growth? a time-series evidence from India", *Journal of Policy Modeling*, 32 (2010):231-253, 2010.
- SOLOW Robert M. (1956), "A contribution to the theory of economic growth", *The Quarterly Journal of Economics*, 70/1:65-94, 1956.
- SUN Lixin, FORD J.L. and DICKINSON D.G. (2010), "Bank loans and the effects of monetary policy in China: Var/vecm approach", *China Economic Review*, 21 (2010):65-97, 2010.
- SVALERYD H. and VLACHOS J. (2005), "Financial markets, the pattern of industrial specialization and comparative advantage: evidence from oecd countries", *European Economic Review*, 49(1):113-144, 2005.
- TANG Donny (2016), "Has the financial integration affected the european union (eu) trade with the new member countries from central and eastern europe (ceec) during 1994-2013?", *The Journal of Economic Asymmetries*, 13 (2016):8-20, 2016.
- WEIL D.N. (1992), MANKIW N.G. and ROMER D., "A contribution to the empirics of economic growth", *The Quarterly Journal of Economics*, 107(May (2)):407-437, 1992.
- ZEGARRA Luis Felipe (2014), "Bank laws, economic growth and early banking in latin america: 1840-1920", *Explorations in Economic History*, 53 (2014):101-119, 2014.
- ZHANG J. , WANG L. and WANG S. (2012), "Financial development and economic growth: recent evidence from China", *Journal of Comparative Economics*, 40:393-412, 2012.