ANALYSIS OF MACROECONOMIC FACTORS WHICH AFFECT PERFORMANCE OF GLOBAL FINANCE CENTERS

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🆔 **Tahsin Karabulut[1]**
🆔 **Gülşah Şen[2+]**

[1]*Faculty of Political Sciences, Department of Economics, Necmettin Erbakan University, Turkey*
Email: tkarabulut@konya.edu.tr Tel: 5304062258

[2]*Ph D. Candidate, Necmettin Erbakan University, Turkey*
Email: gulsah.sen@ogr.konya.edu.tr Tel: 5304062258

(+ Corresponding author)

ABSTRACT

Financial centers, which have a continuous and rapid growth performance as a natural result of the developments in global financial activities, can be defined as centers where fund demand and fund supply come together and intermediaries work to this end, as a result financial employment are concentrates in the financial centers. The purpose of this study is to analyze macroeconomic indicators that affect the performance of international financial centers. In this context, an empirical study is carried out by panel data analysis method using the macro financial sizes of 32 financial centers including the leading financial centers of the world such as London and New York, and the relationship between the performance of international financial centers and the macroeconomic indicators of the country is analyzed.

1. INTRODUCTION

Financial system; refers to a collective where certain people and institutions, financial markets, financial instruments and organizations coexist in order to fulfill various functions. The financial system, which is of great importance in terms of the development of economies, has gradually gained a global dimension in recent years. As a result, financial institutions direct their global activities into several international and regional centers (Uzunoğlu *et al.*, 2000). Financial centers have emerged as the result of the financial service institutions' coming together in economically important cities of some countries (Karagöl *et al.*, 2017). The liberalization process on the financial markets has contributed positively to the globalization of finance centers. As a result of globalization, in addition to the enrichment of investment instruments traded on financial markets, portfolio investments have become more fluid and foreign fund inflows into the domestic financial markets have increased. As a result of these developments, financial systems, which are the center of fund transfers, are the most important component of economic systems. In addition, the effectiveness of the financial system has greatly influenced the macroeconomic success of countries (Akıncı *et al.*, 2014). The interaction is bi-directional. Because, there is also the effect of macroeconomic variables on the functioning of the financial system. Macroeconomic factors can affect the economic performance of the country by reflecting on financial markets. On the other hand, the impact of macroeconomic factors on the financial system depends on financial development. A number of applied studies have been conducted in the literature on

determinants of financial development and macroeconomic factors have been analyzed in this context (Akıncı *et al.*, 2014). The main macroeconomic factors affecting financial markets include savings ratios, portfolio investments, national income, real interest rates, inflation rate and current account balances (Akıncı *et al.*, 2014).

One of the main macroeconomic factor affecting financial markets is saving rate. Because common effort of all financial systems is; to ensure that the savings are efficiently directed to the economy. Transfer of savings to investments takes place through the financial system (Afşar, 2007). In countries with a strong financial system, savings are transferred to investors through financial institutions. If the country does not have a strong financial system, investments can be transferred to nonproductive inefficient areas by saving owners. This can have negative impact on positive effects of savings on investment and economic growth. The positive impact of savings on investment and economic growth, therefore, depends on the development of the financial system. The development of the financial system is related to the provision of financial depth. Because, as the level of financial depth increases, savings will be transferred to productive areas and an economic growth based on investment will emerge (Gökten *et al.*, 2008).

Regardless of the level of development, increasing investment has a central duty for all countries. Increasing investments depends on funding needs. An advanced financial system plays an important role in addressing this need. Countries with an advanced financial system are becoming the center of attraction for investments because of low funding costs, improved development of intermediary activities, financial instrument diversity and access to world capital markets. In economies with a financial system that includes these characteristics, it is facilitated that increasing savings and economic (Ergeç, 2004).

Among macroeconomic factors affecting financial markets, portfolio investments are regarded as risky for the investing country. Portfolio investments increase due to the increase in real interest rates. Portfolio investments are the most risky investment type because they have the ability to leave the country very quickly in case of negative development in the related country's economy (Pazarlıoğlu and Gülay, 2007). This is because the most important thing for investors in portfolio investments is safety of capital and high return (Mucuk, 2011).

National income, one of the macroeconomic factors affecting financial markets, is sum of investment, consumption, public expenditures and net exports. Investments in countries with advanced financial systems increase national income as a result of multiplier effect and the economy grows (Afşar, 2007).

Another macroeconomic factor affecting financial markets is real interest rates. There is a similar relationship between real interest and risk. As the level of financial risk of an country increases, financial investors will demand higher interest to prefer the financial assets of that country (Özatay, 2013). Therefore, real interest rates are extremely important both in attracting portfolio investments to the country and in terms of domestic investments in the domestic market. For this reason, real interest rates should be kept at a reasonable level to encourage investments (Akıncı *et al.*, 2014).

Inflation, another macroeconomic factor affecting financial markets, has a negative effect on monetary savings and prevents taking decisions about the future (Akıncı *et al.*, 2014). High inflation contracts forward-looking planning horizons and affects investment decisions negatively (Özatay, 2013). This situation causes investors to focus on real assets rather than financial assets (Akıncı *et al.*, 2014). Because, in an economy with high inflation, economic units can not have a definite knowledge about the profitability of investments due to the uncertainty created by the inflation and as a result, financial sector is affected negatively (Özatay, 2013).

The last of the main macroeconomic factors affecting financial markets is the current account balance of the country. A change in the current account balance are considered as a leading signal for the course of the country's economy and have an impact on the decisions and expectations of economic units (Erdoğan and Bozkurt, 2009). In the aftermath of increase in the growth rates of countries, the problem of the current account deficit emerges, especially in the developing countries as the import volume increases. The current account deficit has an adverse effect on the economic growth by causing the investment risk of the country to increase (Yılmaz and Akıncı, 2011).

The usage of short-term capital inflows in finance the current account deficit is extremely risky. Because short-term capital movements are extremely sensitive to risk and uncertainty and have a volatile character. Therefore, the risk on the financial sector should be avoided by choosing long-term capital investments in the finance of the current account deficit (Erdoğan and Bozkurt, 2009).

Financial centers often emerge in economically important cities of the countries (Karagöl *et al.*, 2017). Therefore, a successful financial center in terms of macroeconomic factors becomes an attraction center for investments and investors thanks to the economic stability it provides. This study contributes the existing literature in two ways. Initially, to our knowledge there is no study investigating the effects of macroeconomic variables on finance centers. Secondly, we employ advanced panel data methods in order to investigate the effects of variables on finance centers' performance.

2. MODEL AND METHODOLOGY

In this study, panel data method is used to investigate the effects of macroeconomic variables on financial centers. The data range of the covers the period 2007-2015.

While determining the financial centers in the study, the index named "Global Financial Centers Index", one of the most important studies following the development of financial centers around the world, which has been periodically published since March 2007 by the City of London is employed (Yılmaz, 2010). The effects of selected macroeconomic variables on 32 financial centers of different countries are examined by employing Global Financial Centers.

The business environment, financial sector development, infrastructure, human capital and reputation factors constitute the necessary factors for the financial centers to compete in the global financial centers index (Yen, 2016). The index scores of the countries belonging to September of each year are accepted as dependent variables. For only the Moscow and Athens financial centers, March index score is used because of the lack of data belonging to September.

The finance centers used in this study are presented in table 1.

Table-1. Finance Centers

London	Frankfurt	Warsaw	Prague
New York	Beijing	Sao Paulo	Mumbai
Singapore	Paris	Milan	Budapest
Tokyo	Dublin	İstanbul	Helsinki
Zurich	Amsterdam	Bahrein	Moscow
Sydney	Vienna	Johannesburg	Athens
Luxemburg	Bangkok	Brussel	Copenhagen
Seoul	Stockholm	Lisbon	Madrid

All independent variables are derived from the World Development Indicators (WDI), which is the World Bank statistics database. The most important macroeconomic factors affecting financial markets in this study are; loans provided by the financial sector in order to indicate the development level of financial sector, credit given by the financial sector to private sector, savings, portfolio investments, foreign direct investments, national income, inflation rate, trade volume and financial markets, were considered as independent variables. When independent variables are determined, possible macro financial sizes of 32 countries are selected between 2007 and 2015 in order to make a sound deduction from the analysis results.

These macroeconomic factors are all interconnected and are factors that influence the development of financial centers. Table 2 shows the variables used to measure the effects of macroeconomic and macro financial factors on the financial centers for the period 2007-2015.

Table-2. Variables Employed In Model

Variable	Definition	Period	Source
GFCI	Global finance center index	2007-2015	Z/Yen
FDI	Foreign direct investments	2007-2015	World Bank WDI
DCF	Domestic loans provided by financial sector (% GDP)	2007-2015	World Bank WDI
DC	Credit to private sector (% GDP)	2007-2015	World Bank WDI
INF	Inflation rate (%)	2007-2015	World Bank WDI
S	Savings	2007-2015	World Bank WDI
T	Trade volume (% GDP)	2007-2015	World Bank WDI
PI	Portfolio investments	2007-2015	World Bank WDI
GDP	Gross domestic product	2007-2015	World Bank WDI

The model developed in the study is as follows:

$$\ln gfci_{it} = \alpha_{0i} + \beta_{1i} \ln fdi_{it} + \beta_{2i} \ln dcf_{it} + \beta_{3i} \ln dc_{it} + \beta_{4i} \ln mf_{it} + \beta_{5i} \ln s_{it} + \beta_{6i} \ln t_{it} + \beta_{7i} \ln bop_{it} + \beta_{8i} \ln gdp_{it} + \varepsilon_{it}$$

In the model, i = 1, ..., 32 and t = 2007, ..., 2015 show the cross-sections and time, respectively. ε refers to the error term. First of all, when the model is estimated, the unit root test will be done to reveal the time series properties of the variables. Panel cointegration tests will then be conducted to demonstrate cointegration parameters, and finally panel causality tests will be applied to explain the short- and long-term relationships between variables (Şahbaz *et al.*, 2014).

3. EMPIRICAL FINDINGS

Initially, the series are tested to see whether they contain unit roots in order to not to live spurious regression problem. The stationary of the series is tested by using unit root tests of Levin, Lin, Chu (LLC), Breitung, Im, Pesaran, Shin (IPS), Maddala and Wu (ADF Fisher and PP Fisher).

As a result of constructed unit root tests; (FDI), saving rate (S), trade volume (T) and gross domestic product (GDP) are stationary on level; but the level values of the other variables are found to carry unit roots. The unit root tests by employing the first differences of the series imply that the first differences of all variables are stationary.

Table-3. Unit Root Test Results

		LLC	Breitung t stat	IPS	ADF Fisher	PP Fisher
Level/Trend-Intercept	**GFCI**	-13.422	-14.454	-1.045	80.23	93.33
	FDI	-22.13	2.062	-6.136	161.50	190.36
	DCF	-5.704	3.593	0.714	58.86	186.59
	DC	-11.510	1.572	-0.324	80.514	184.19
	INF	-15.612	0.176	-0.685	88.049	147.26
	S	-29.464	1.641	-3.964	161.31	140.02
	T	-33.886	0.321	-4.262	196.57	113.17
	PI	-19.314	1.197	-0.846	100.18	138.83
	GDP	-37.465	-3.044	-5.014	195.29	230.464
First Differences/Trend-Intercept)	**GFCI**	-9.496	1.102	-2.163	90.48	179.49
	FDI	-19.812	1.471	-1.009	93.95	235.20
	DCF	-27.832	-0.003	-2.166	114.91	267.21
	DC	-23.670	-2.790	-3.844	158.45	197.77
	INF	-49.752	-1.583	-7.964	225.64	256.73
	S	-23.825	1.322	-1.922	101.01	161.93
	T	-78.374	-0.580	-10.502	233.08	151.57
	PI	-14.599	-0.655	-0.7924	86.30	220.80
	GDP	-65.585	-4.790	-9.922	287.62	217.28

The equation formed by the unit root test, the coefficients of each variable and the significance results are given in Table 4. Private sector credits which are provided by the financial sector (DC), inflation rate (INF), savings rate (S), trade volume (T) and portfolio investments (PI), has a statistically significant effect on the performance of the

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financial center. While significance level of portfolio investments is 1%, inflation rate (INF), savings rate (S) and trade volume (T) are significant in 5% level. Lastly ratio of domestic credits provided by financial sector to GDP has a considerably low significance level and it is significant 10% level.

When the coefficients are examined theoretically, it is possible to see that the ratio of the domestic credit volume provided by the financial sector to the gross domestic product (DCF), the credit ratio given to the private sector (DC), the saving rate (S) and the volume of trade (T) positively affect the financial center performance; inflation rate (INF) and portfolio investment (PI) variables negatively affect the performance of financial centers.

When the magnitudes of the coefficients are examined, it is seen that the saving rate (S) variable has the greatest positive contribution to performance. The adverse effect of the inflation rate (INF) variable on performance is quite large. It is seen that the inflation rate variable affects the financial center performance by -4.1 points.

In the analysis, the negative signs of foreign direct investment and portfolio investment variables are not theoretically significant, although statistically significant. Because, it is envisaged that foreign direct investments and portfolio investments will contribute to the development of the country's economies as well as enhancing the performance of financial centers.

Table-4. Panel OLS Results

Variables	Coefficient	Prob
FDI	-0.203	0.4277
DCF	0.233	0.0898
DC	0.534	0.0059
INF	-4.083	0.0260
S	1.545	0.0142
T	0.156	0.0205
PI	-0.0001	0.0002
GDP	1.959	0.1966
C	467.9	0.000

If the non-stationary variables become stationary in their first differences, co-integration tests should be performed to investigate the long-term relationship (Şahbaz, 2014). For this purpose, panel co-integration test is performed in the second stage. Test results are given in Table 5. According to the table, co-integration tests in both fixed and fixed and trending models provide evidence of co-integration. It is appropriate to apply dynamic OLS and FMOLS analyzes on variables in the light of these results.

Table-5. Panel Co-integration Test Results

		Constant	Constant –Trend
Panel -tests	Panel υ -Statistic	-1.1241 (0.9752)	3.0448 (0.9860)
	Panel ρ -Statistic	3.6588 (0.9996)	5.6030 (1.000)
	Panel PP-Statistic	-1.7723 (0.0000)	-5.3827 (0.000)
	Panel ADF-Statistic	0.0501 (0.3672)	-2.9453 (0.1293)
Group-tests	Group ρ -Statistic	5.9145 (1.000)	6.9833 (1.000)
	Group PP-Statistic (non-parametric)	-7.3737 (0.000)	-13.5847 (0.000)
	Group ADF-Statistic (non-parametric)	-0.8398 (0.2005)	-1.5013 (0.0666)
	Kao (1999) Cointegration Tests	-3.4088 (0.0003)	

Table-6. Panel Co-integration Coefficients

	Panel Fully Modified OLS		Panel Dynamic OLS	
	Constant	Constant and Trend	Constant	Constant and Trend
FDI	-0.061 (0.787)	-1.149 (0.029)	-0.014 (0.901)	-0.025 (0.652)
DCF	1.504 (0.001)	1.345 (0.000)	1.354 (0.000)	0.154 (0.338)
DC	-0.309 (0.537)	0.662 (0.068)	0.131 (0.728)	0.283 (0.392)
INF	-13.321 (0.000)	20.939 (0.000)	-9.479 (0.000)	0.523 (0.708)
S	2.295 (0.278)	8.829 (0.000)	-0.776 (0.654)	-2.341 (0.012)
T	1.976 (0.000)	0.527 (0.000)	1.794 (0.000)	0.228 (0.367)
PI	-0.002 (0.553)	-0.027 (0.001)	-0.001 (0.458)	-0.001 (0.219)
GDP	-3.724 (0.023)	-4.125 (0.153)	-0.537 (0.730)	1.118 (0.108)

Panel DOLS and panel FMOLS results are presented in Table 6. The results from both tests show that, variables such as domestic credit volume provided by the financial sector (DCF), trade volume (T) and inflation rate (INF) significantly affect the performance of financial centers. Inflation variables (INF) affect performance negatively, whereas trade volume (T) and domestic credit volume provided by the financial sector (DCF) provided by the financial sector have a positive effect on performance.

Table-7. Panel Granger Causality Test Results

Variables	F-statistic	Prob.
FDI does not cause of GFCI	0.99655	0.3709
GFCI does not cause of FDI	0.69980	0.4978
DCF does not cause of GFCI	0.21571	0.8061
GFCI does not cause of DCF	0.09990	0.9050
DC does not cause of GFCI	0.14298	0.8669
GFCI does not cause of DC	0.69596	0.4997
INF does not cause of GFCI	0.02334	0.9769
GFCI does not cause of INF	2.77637	0.0645
S does not cause of GFCI	2.60173	0.0765
GFCI does not cause of S	2.51494	0.0833
T does not cause of GFCI	0.04332	0.9576
GFCI does not cause of T	0.37019	0.6911
PI does not cause of GCFI	0.62055	0.5386
GFCI does not cause of PI	0.10133	0.9037
GDP does not cause of GFCI	13.3905	0.0000
GFCI does not cause of GDP	4.80961	0.0091

Panel Granger causality test results are presented in table 7. Accordingly, there is a uni-directional causality between inflation rate (INF) and financial center performance (GFCI), and the direction of causality is from the performance of the financial center to inflation rate. An increase in the performance of financial centers can lead to inflation rate increase by increasing total demand. In an economy where inflation rate is known, economic units postpone investment decisions due to uncertainty created by inflation rate and as a result the financial sector is negatively affected (Özatay, 2013). For this reason, inflation rates should be kept at reasonable levels in economies where finance centers are located.

There is a bi-directional causality between the performance of financial centers (GFCI) and savings (S). This results in the fact that the financial center is also influential on the savings decisions for the country, and that domestic savings are also effective in the formation of the financial center. The greatest positive contribution to the

performance of financial centers is at savings rates. As a matter of fact, increasing the savings in terms of financial centers means increasing the funds. The increase in funds is affecting the performance of these centers positively by increasing the transaction volume of financial centers. In addition, the analysis results show that the increase in savings levels allows the credit volume provided by the financial sector to increase. In this context, the improvement in the ratio of the domestic credit volume provided by the financial sector to the GDP (DCF) and the credit ratio given to the private sector (DC) is positive for the performance of financial centers.

Finally, it concludes that there is a bi-directional relationship between the gross domestic product variance (GDP) and the performance of financial centers (GFCI). Unlike the tests made so far, the emergence of a meaningful relationship with the gross domestic product supports the assumption that financial centers have a positive impact on the economy, and vice versa, as the economy develops, the financial center index rises.

4. CONCLUSION

Along with the intensification of globalization, with the development of international trade and accordingly the increase of international financial activities, the competition between international financial centers has increased. Factors that determine the extent of competition between international financial centers are divided into three groups; distinctive basic factors, relative factors for competition, and factors that make a difference. The main differentiating factors of financial centers for competition are political stability, geographical position, legal environment, central bank independence, financial environment. Relative factors for competition consist of qualified labor force, infrastructure, potential for income generation, access to professional services, cost and ease of doing business, regulation by product and taxation. The factors that make a difference for a financial center are their image and the quality of life they offer. The success of a financial center varies according to the improvement situation that it can provide in the mentioned factors.

Competitiveness and success of international financial centers are announced to the public with prepared indexes. The most important indices published in this issue are; Global Financial Centers Index (GFCI), Global Financial Centers Development Index (IFCD), Global Power City Index (GPCI), Global Cities Index (GCI), Globalization and World Cities Research Network (GAWC).

Factors that International financial centers should have, according to the study by Deloitte Consulting, which includes factors that enable a city to assess its feasibility as an international financial center; quality of work, financial depth, image, legal environment, political and economic stability, regulatory framework, ease of doing business, financial environment, lifestyle, infrastructure, cost of doing business, accessibility to professional services (TBB-Deloitte, 2009).

In the empirical analysis of the macroeconomic factors affecting the performance of global financial centers, the effects of selected macroeconomic sizes of financial centers of 32 different countries based on the most widely accepted and periodically published Global Financial Centers Index in financial environments on financial centers are examined. Within the scope of the empirical study, econometric analysis methods such as panel unit root, panel co-integration and causality analyzes have been used. While the index scores in the study are considered as dependent variables, savings rates, portfolio investments, foreign direct investments, national income, inflation rate, trade volume, domestic credit volume provided by the financial sector and credit ratios given in the private sector are considered as independent variables. According to the findings, the savings ratio (S), the ratio of the domestic credit volume to the GDP (DCF) provided by the financial sector, the credit ratio given to the private sector (DC) and the trade volume (T) inflation rate (INF) and portfolio investments (PI) have a negative effect on the performance of financial centers. The negative impact of portfolio investments is statistically significant but theoretically insignificant. Results imply that macroeconomic stability and certainty are the most important conditions for the success of a finance centers. In this regard, economies trying to establish a finance center has to provide stable economic environment.

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