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EFFECT OF FINANCIAL PRESSURE ON ECONOMIC GROWTH IN TURKEY: EVIDENCE FROM SYMMETRIC AND ASYMMETRIC REGRESSIONS

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ABSTRACT

Financial repression is defined as regulations, laws and other non-market restrictions that are implemented by governments that prevent financial system intermediaries from working effectively. However, the necessity of financial repression for the stability of the financial system has started to be discussed after the 2008 financial crisis.

To understand necessity of financial repression in the Turkish economy, in this study we investigate the effect of financial repression on economic growth in Turkey. In order to examine the possible effect empirically, advanced econometrical methods which allow analyzing interaction between variables symmetrically and/or asymmetrically are employed on the period covers 2005 – 2019. Empirical results indicate that there is no symmetrical relationship between financial pressure and economic growth, while only negative financial pressure change affects the economy asymmetrically.

Anahtar Kelimeler: *Financial Repression, Economic Growth, Time Series*

Jel Kodu: *E44-F43-C32*

TÜRKİYE’DE FİNANSAL BASKININ EKONOMİK BÜYÜME ÜZERİNDEKİ ETKİSİ: SİMETRİK VE ASİMETRİK REGRESYONLARDAN KANITLAR

ÖZ

Finansal baskı, hükümetler tarafından uygulanan ve finansal sistem aracılarının etkin bir şekilde çalışmalarını engelleyen düzenlemeler, kanunlar ve diğer piyasa dışı kısıtlamalar olarak tanımlanmaktadır. Bununla birlikte 2008 finansal krizi sonrasında finansal baskının finansal sistemin istikrarı açısından gerekliliği tartışılmaya başlanmıştır.

Finansal baskının Türkiye açısından gerekli olup olmadığının sınanması amacı ile bu çalışmada finansal baskının ekonomi üzerindeki etkisi Türkiye ekonomisi açısından incelenmektedir. Etkinin ampirik yolla incelenebilmesi için, simetrik ve asimetrik ilişkilerin analizini sağlayan gelişmiş ekonometrik yöntemler 2005 – 2019 yılları arası döneme ait aylık Türkiye verileri üzerinde kullanılmıştır. Elde edilen ampirik sonuçlar göstermektedir ki, finansal baskı ile ekonomik büyüme arasında simetrik bir ilişki yok iken asimetrik olarak sadece negatif finansal baskı değişimi ekonomiyi etkilemektedir.

Keywords: *Finansal Baskı, Ekonomik Büyüme, Zaman Serisi*

Jel Codes: *E44-F43-C32*

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INTRODUCTION

A conventional view on how financial markets have to be claims that it has to be liberal. That means there has to be no regulation and/or no room for governmental repression. Although there are alternative definitions of financial repression, it is possible to allocate the definitions as a set of government regulations, such as interest rate ceilings, laws like capital controls and other market restrictions such as restrictions on market entry into the financial sector, restrictions on directions of credit allocation (Gitau and Kosimbei, 2015:16). Financial repression notion has been popular among different time periods, especially aftermath of financial crisis periods, such as East Asia, Mexico crises in 1990s.

One of the periods emphasized above was post 1929 crisis. Keynesian view on economic management had also an opinion about how financial systems have to be controlled. Initial economic thinking has given a role for financial repression to prevent market failures and information frictions (Jafarov et al., 2019: 4). The Keynesian view supports financial repression in the context of necessity of government intervention in 1960s.

By the adoption of reforms purposed at removing restrictions and liberalizing economies, financial markets were free from financial repressive applications anymore in 1980s. According to McKinnon (1973) and Shaw (1973) who have the initial studies about the relation between economic growth and financial repression, financial repression should impact economic growth negatively. According to Xu and Gui (2019), McKinnon's and Shaw's arguments were about the negative effects of repression on savings and so investments. Because a repressed financial sector discourages both saving and investment because the available rate of return are lower than those obtained in a competitive market. In such a system, financial intermediaries do not function effectively and fail to channel savings efficiently into investment (Xu and Gui, 2019: 46). At the end, economic growth pattern would evolve negatively.

Latter studies followed McKinnon (1973). As a sequence of short survey, there are numerous empirical studies which financial liberalization promotes economic growth in various ways. One of them, Levine et al. (2000), conclude that liberal financial systems develop, it allocates financial sources efficiently, sustains financial stability and technologic development. Such beliefs were probably behind the waves of global financial liberalization beginning from the 1970s (Huang and Wang, 2010: 2).

On the other hand, a group of empirical studies curious about the positive effect of liberal financial systems investigate the causation linkage between economic growth and financial liberalization. One of them is Prasad (2003). According to him, there is no relation between them in emerging market economies. Moreover, Stiglitz (2000) claims risk – enhancing effect of liberal financial systems in emerging market economies. In an early study of Stiglitz in 1994, he favors financial repression in emerging market economies in the context of implementation of monetary policies, such as money supply and stability of financial system instruments.

Aftermath of global financial crisis experienced in the first decade of 21th century, a new debate on necessity of financial repression by economic researchers. Global financial crisis had been occurred in a financially liberalized environment. In this regard, there might be both positive and negative effect of liberalization. To clarify the situation, Xu and Gui (2019) call financial liberalization as a double – edged sword. Moreover, Loayza and Ranciere (2006) called the effect of financial liberalization as dual effect. All these identifications mean the positive and negative effects of liberalization in financial system.

The main purpose of this study is to investigate the impacts of financial repression on economic growth in the Turkish economy. In this regard, we employ recently developed econometric methods which can analyze the relation both symmetrically and asymmetrically to better understand if financial liberalization policies are better than financial repression policies or not. The originality of this study is twofold. First of them is the econometric method employed. To our knowledge, there is no study investigating relationship between financial repression policies and economic growth. The second is that after global crisis, the possibility of financial repression policies' success in supporting economic growth has to be investigated in especially emerging market economies. That is why

advanced research of relation between economic growth and financial repression is essential.

In the next section, theoretical explanation of relation between financial repression and economic growth will be explained and literature will be reviewed. In third section, empirical model will be built. After empirical results are summarized in the fourth section, conclusion and policy implication will be presented in the last section.

1.THEORETICAL BACKGROUND AND LITERATURE REVIEW

Financial repression is defined as prevention of the financial intermediaries in an economy from working at full capacity through government regulation, law and other restrictions (Gitau and Kosimbei, 2015: 15). The phenomenon of financial repression, whose theoretical background was created by Keynes (1936), is a policy which employed by numerous governments in 1970s in order to earn income through low interest rates and inflationary monetary policies and to catch high growth rates (Eschenbach, 2004: 1).

Governments repress financial markets in different ways in emerging market economies. There six ways to do (Williamson, 1998: 1):

- By making credit rationing,
- By determining interest rates,
- Organizing new institutions which enter the financial sector,
- By intervening in banking transactions,
- With financial institution ownership,
- By arranging borrowing and lending conditions.

The main purpose of financial pressure policies is to increase the investments by keeping the real interest rates low, to increase income level and savings level by accelerating economic growth. Thus, the increase in savings will increase the amount of fund and contribute to the development of the financial system. Also, functioning of the financial system in a closed way is the element of financial pressure policies to ensure financial stability. This mechanism worked until the 1970s and a period called the golden years was experienced in growth (Erdem ve Dumrul, 2014: 81).

Increasing financial distress may increase systematic risk and affect economic activities negatively. During periods of high financial repression, it is necessary to look primarily at the source of the financial distress. If the source of financial distress is repression on the foreign exchange market, policy makers should focus on the foreign exchange market. If the global crisis arising from the spread of systematic risks is the source of financial distress, policy makers should focus on external factors that cause the crisis (Kaya ve Kılınç, 2016: 412).

According to those who advocate financial liberalization theory, liberalization process will bring financial deepening along, so that resources will shift from the non-productive to the productive ones. In order to achieve this, especially emerging market economies have to eliminate ceiling implementation on nominal interest rates and allow interest rate free from government control. That would increase savings and resources to finance investments. At the end, it would accelerate economic growth and allow extinguishing inflationary pressure on economy via consumption demand. Also, along with a rise in interest rate, savings would be oriented to more productive areas instead of unproductive investments, providing efficiency in resource allocation (Öztürk and Kuşçu, 2017: 12).

Basics of financial repression and liberalization views belong to theories of McKinnon (1973) and Shaw (1973) built in the same time period but they made it separately. According to McKinnon and Shaw, the fact that interest rates are lower than the level they should be in the market causes financial repression. The mortalities occurring in the system due to financial repression can only be eliminated by liberalizing the financial system. Through the liberalization process, increase in the institutions and instruments used in the financial market would create financial deepening. When financial system develops and deepens, savings would accelerate and investments would increase, economic growth also accelerates via providing efficiency in resource allocation and distribution. In

1970s, removal of financial repression through arrangements in the context of financial liberalization in both developed and developing economies has provided a financial structure which better works and supports economic growth (Öztürk et al., 2012: 96 – 97).

In the Turkish economy, financial liberalization policies had started to be implemented after the “24th of January Decisions” in 1980. Before then, financial market had been managed via financial repression policies in the control of ruling governments. Until 1989, arrangements in exchange rate, interest rate, banking sector and financial markets, liberalization process in financial sector were completed. As a consequence of policies implemented in the process of liberalization, the Turkish economy achieved to reach high growth ratio. On the other hand, financial crises were experienced due to negative effects of liberalization of capital movements. The similar processes were experienced in other emerging market economies like Turkey (Kılıç, 2012: 140).

As the financial liberalization theory advocates, a system must be established free from financial pressure and control to ensure financial development. The initial studies investigating how governments prevent effective treatment of financial system by intervening on financial market belong to McKinnon (1973) and Shaw (1973) (Güneş, 2013: 74). A brief of literature review is summarized in this section.

Göçer (2013) investigates the effect of current account deficit on financial repression in the Turkish economy. The author analyzes the economy in 1998:M01 – 2013:M02 period and employs unit root test takes structural breaks into account developed by Carrion-I Silvestre et al. (2009) and causality test developed by Toda – Yamamoto (1995). Empirical analysis results imply that increasing current account deficit increases financial pressure on the Turkish economy.

Another study investigating the Turkish economy belongs to Çevik and Yavuz (2019). They try to measure financial stress of the Turkish economy between years 1997 and 2018 by using monthly data. To do this they build a financial stress index. They identify index by using factors may induce financial pressure such as monetary market, capital market, country risk, foreign debt and inflation factors. According to ARDL method results, they estimate that factors put into model make positive effect on financial pressure level and increase financial stress.

Öztürkler and Göksel (2013) try to forecast recession periods via financial pressure index prepared themselves for the Turkish economy. In the study where monthly data belonging to 1998 – 2012 period was used, the most meaningful variables are estimated in probit models built to forecast financial pressure. According to analyses, there variables are emerging market bond index, ratio of trade deficit to reserves and exchange rate volatility. According to financial pressure index established, variables accounts one if reel GDP contracts two quarters one after another vice versa, zero. As a results of analyzes, contraction periods are forecasted successfully with the ratio of over 0,95 for the 2008 – 2009 and 2000 – 2001 periods and 0,90 for the 1998 - 1999 period.

Ang and McKibbin (2007) investigate the relation between financial development and economic growth in Malaysia. Data covers 1960 – 2001 period and co-integration and causality methods are employed. According to results obtained, by the financial liberalization process, elimination of financial repression policies creates positive impact on financial development. Also there is a positive interaction between financial depth and economic growth.

Huang and Wang (2010) analyze possible effect of financial repression on economic growth in the Turkish economy. Empirical analysis by employing co-integration method covers 1978 – 2008 period. According to results of analysis, financial repression policies have bad effect on economic growth via preventing financial development in the period analyzed.

Gitau and Kosimbei (2015) examine possible effect of financial repression policies on economic growth in Kenya. Different from existing studies, this study employs quarterly data and covers 1996 – 2014 period. According to OLS regression analysis results, financial repression ingredients, interest rate ceiling, broad money and public debt are related economic growth significantly and but high required banking reserves does not have any statistically significant relation between variables.

A group of studies empirically analyzes the interaction between financial repression and

economic growth for country groups. One of initial studies belongs to Roubini and Sala-i Martin (1992). They analyze the relation between financial repression policies and economic growth. According to regression analysis method results which made by using data belonging to 53 countries and between years 1960 and 1985, financial repression policies induce reduction in savings volume and efficiency of capital and so speed of economic growth would decelerates. Another one belongs to Jinjarak (2013). The author uses data for 44 countries and panel data econometrical method. According to analysis results, there is a negative relation between trade openness and financial pressure in the related countries between years 1990 and 2009. Avcı and Altay (2013b) analyze predictability of financial crises via signal approach in Turkey, Thailand, Argentina and United Kingdom for the period 1990 – 2010. Authors identify fifteen indicators in order explain financial pressure index. At the end of the study, the most successful indicators in the prediction of financial crisis are differences in real interest rate between countries, deviation in real exchange rate from its trend, monetary market pressure index and domestic credits to industrial production index ratio. The signal approach implies that crises experienced in 1994 – 2001 in the Turkish economy, 2002 in Argentine, 1997 in Thailand and 1992 and 2008 in United Kingdom were all predicted by using different indicators. Doğan (2019) tests the relation between financial pressure index and GDP in Turkey, Brazil, Mexico and Argentina. Data belongs to 2000:M02 – 2018:M04 period. According to vector auto regression (VAR) method, an increase in financial pressure index induces a reduction in GDP by increasing uncertainty and risks in the economy

2. MODEL AND DATA SET

In order to measure effect of financial repression policies and to forecast financial crises, an index called financial pressure index is called. In the literature, nominal exchange rate, net international reserves and interest rate are employed to calculate financial pressure index. In financial crisis periods, while nominal exchange rate and interest rates increases in a considerable degree, net international reserves decreases abnormally (Avcı and Altay, 2013a: 116-117). In this regard, it is expected to increase financial pressure index when nominal exchange rate and interest rate increases and net international reserve decreases.

In this study, financial pressure index (FPI, hereafter) is calculated via study of Uygur (2001). Three basic indicators are employed in the construction of FPI. These are nominal interest rate (*i*, hereafter), nominal exchange rate (*neer*, hereafter) and central bank reserve (*res*, hereafter). In the light of these explanations, FPI is calculated for January 2005 – August 2019 period by using following equation;

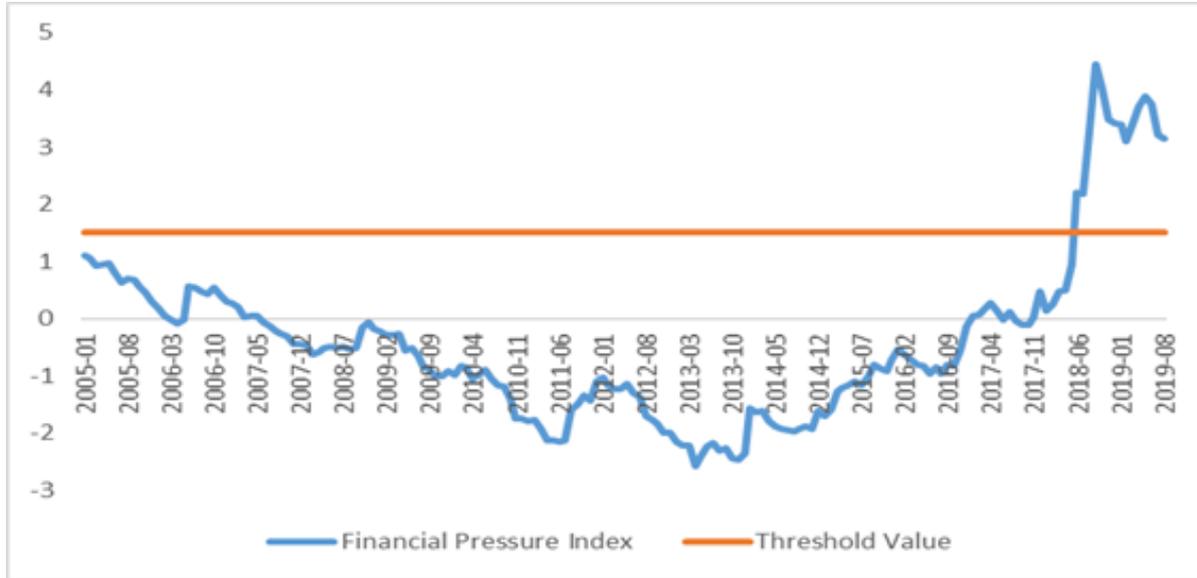
$$FPI = (\% \Delta i + \% \Delta neer) - \% \Delta res \quad (1)$$

In the equation 1, each indicator is standardized separately and calculated without weighted. According to Uygur (2001), there is a certain threshold value for financial pressure index. Above of the threshold value, financial pressure increases and below it, financial pressure decreases. While average of financial pressure index is denoted by μ and σ denotes standard deviation;

$$FPI \geq \mu + 1.5 \sigma$$

In this expression, threshold value is determined as 1,5 (Uygur, 2001).

Graphic 1: Financial Pressure Index Belonging to January 2005 – August 2019 Period



Source: Prepared by author.

3. EMPIRICAL RESULTS

In this study, effect of financial pressure index (FPI) on natural logarithm of industrial production index (IPI) is investigated in the period between years January of 2005 where explicit inflation targeting strategy and August of 2019. Data belonging to variables are obtained from the Central Bank of the Republic of Turkey for Electronic Data Distribution System. In the empirical analysis, unit root tests developed by Dickey and Fuller (1981) (ADF, hereafter) and Phillips and Perron (1988) (PP, hereafter), symmetrical delay distributed regression (ARDL) developed by Pesaran et al. (2001) and co-integrating nonlinear autoregressive distributed lag (NARDL) model developed by Shin et al. (2014).

Table 1. ADF (1981) and PP (1988) Unit Root Test Results

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		Variables	ADF	PP			
Level	Constan t	IPI	-1.864 (13) [0.678]	-2.977 (17) [0.039]**	First Differences	-2.776 (12) [0.063]*	-40.760 (35) [0.00]***
		FPI	-0.439 (1) [0.893]	-0.433 (6) [0.899]		-10.359 (0) [0.00]***	-10.435 (5) [0.00]***
	Constan $t + Trend$	IPI	-3.095 (13) [0.11]	-8.464 (5) [0.00]***		-2.784 (12) [0.205]	-39.04 (34) [0.00]***
		FPI	-0.788 (1) [0.963]	-0.700 (4) [0.970]		-10.728 (0) [0.00]***	-10.742 (3) [0.00]***

Notes: The figures which is ***, **, * show 1 %, 5 % and 10 % levels, respectively.

For the ADF test: The figures in parenthesis denote the results of Dickey Fuller test in the case of zero lag length and lag length chosen due to SIC criteria. For the ADF test, the Mac Kinnon (1996) critical values for with constant -3.485, -2.885, -2.579 at the 1 %, 5 % and 10 % levels. The critical values for with constant and trend -4.035, -3.447 and -3.148 at the 1 %, 5 % and 10 % levels, respectively.

For the PP test: Values in the parenthesis show bandwidths obtained according to Newey-West using Bartlett Kernel criteria. For the PP test Mac Kinnon (1996) critical values for with constant -3.483, -2.884, -2.579 at the 1 %, 5 % and 10 % levels. The critical values for with constant and trend -4.033, -3.446 and -3.148 at the 1 % 5 % and 10 % levels, respectively.

The unit root test results are presented in the table 1. According to ADF results, industrial production index has unit root in level, but it is stationary after the differentiating. So unit roots disappear in first difference. But the same variable is stationary in 5 % significance level according to result of PP test and it is stationary in level in 1 % significance level in model with constant and trend. Financial pressure index has unit root in level and it is stationary when it is differentiated. This result is valid for both unit root test methods.

According to unit root test results, industrial production index has long memory, that is why unit root test results are not clear. For this reason, empirical analysis will be made by accepting that industrial production index is stationary in level and financial pressure index is stationary in first difference. In the symmetrical delay distributed regression (ARDL) model developed by Pesaran et al. (2001), it is allowed to stationarity of variables in different levels. For this reason, bounds test results of model with industrial production index is dependent variable and financial pressure index is independent, are presented in table 2.

Table 2. Bounds Test Results

	Symmetric ARDL		Asymmetric ARDL	
	F Statistic		F Statistic	
	1.415		7.551	
Critical Value	I(0)	I(1)	I(0)	I(1)
10%	3.02	3.51	2.63	3.35
5%	3.62	4.16	3.1	3.87
2.5%	4.18	4.79	3.55	4.38
1%	4.94	5.58	4.13	5

Source: Prepared by Author himself.

Null hypothesis of symmetric ARDL model claims there is no co-integration between variables and alternative hypothesis claims existence of co-integration between variables. The null hypothesis which claims there is no co-integration between variables is accepted because F stat is smaller than I(0) critical value. The fact that there is no long run relation between industrial production index and financial pressure index as a whole, brings to mind the question whether negative and positive components of financial pressure index have separate effects on industrial production index or not.

Disintegration of variables into positive and negative components are put forward by Granger and Yoon (2002) for the first time. Then, Shin et al. (2014) analyze effects of positive and negative components of independent variable on dependent variable by employing asymmetric ARDL. In asymmetric ARDL model, it is also built on the question if there is a co-integration relation or not as in the symmetric ARDL model.

According to asymmetric ARDL bounds test results, F stat value is bigger than I (1) critical value, that means there is a long run relationship between positive and negative components of financial pressure index and industrial production index. The lowest Akaike information criterion belongs to ARDL (2,0,0) model and this model is chosen (see appendix 1 for details). According to the model above, there is a long run relationship between actual value of positive and negative components of financial pressure index and two lag value of industrial production index (see appendix 2 for details). Long run effect of components on industrial production index is presented in table 3.

Table 3. Asymmetric ARDL Long Run Parameter Prediction Results

Constant Term	1.752 (0.00)***
FPI ⁺	-0.000435 (0.925)
FPI ⁻	-0.030105 (0.00)***

ECM(-1)	-0.434803 (0.00)***
χ^2_{SC}	0.703 (0.496)
χ^2_H	0.986 (0.416)
χ^2_{FF}	0.145 (0.884)
χ^2_N	11.947 (0.00)***
$W_{fpi+-fpi-}$	11.323 (0.00)***

Notes: ***, ** and * values presents significance levels of coefficients 1 %, 5 % and 10 %, respectively. Values in pharanttheses show probability values. χ^2_{SC} , χ^2_H , χ^2_{FF} and χ^2_N values represent serial correlation, (Breusch-Pagan-Godfrey) changing variance test, RESET Ramsey test and normality tests, respectively

Coefficient belonging to positive component of financial pressure index is statistically insignificant. That means increasing financial pressure (positive component) has no meaningful effect on industrial production index. Coefficients belonging to constant term and negative component of financial pressure index are statistically significant in 1 % significance level. Results imply that one percentile reduction in negative component of financial pressure (a decrease in financial pressure) induce a 0,03 % reduction in industrial production index.

According to Bayat et al. (2014), central banks collect excessive amount of foreign exchange to defense against volatility in nominal foreign exchange and increases required reserve ratios. Accumulation of excessive foreign exchange induces emerging of unproductive sources. Also, implementation of exchange rate via dirty floating exchange rate strategy by monetary authorities affects nominal exchange rate expectations of economic actors about future negatively. Another important issue which policymakers have to take into account is that regulations on credit interest rate disturbs the balance between fund suppliers and fund – seekers and involves market failure.

Nominal interest rate does not reflect country risk that is why institutional structure has to be established in order to support economic growth (Kar, et al., 2016). Negative value of error correction coefficient implies that imbalances in the short run decrease in the long run and it is corrected just in a quarter. Lastly, there is no auto-correlation and changing variance problem and the model is built correctly. Shocks in error term move in a certain band and there is no structural breaks (see appendix 3 for details).

RESULTS AND POLICY IMPLICATIONS

Debate in the type of intervention in financial system and/or necessity of intervention in financial system is inconclusive. In 1960s, Keynesian view claims necessity of governmental intervention, in 1980s, it is highly supported that liberalization of financial systems is essential. In this regard, financial repression policies were left. After the global financial crisis in 2008, a new debate came to mind whether financial repression policies have to be implemented in order to eliminate possible disruption in the system.

In this study, effect of financial pressure index on industrial production index is investigated in the Turkish economy between years January 2005 where open inflation targeting strategy was started to implement and August 2019. In empirical analysis, unit root tests employed conventionally in empirical studies, symmetric and asymmetric ARDL methods are used. According to unit root test results, both financial pressure index and industrial production index have unit root in level. So, first differences of series are employed in the analysis. According to symmetric co-integration analysis, there is no co-integration relation between series. Asymmetric regression results imply that positive component of financial pressure index does not have any effect on industrial production index. Negative component of financial pressure index has negative effect on industrial production index. But the coefficient of effect is so small, that is why it is negligible.

Econometrical analysis results imply that financial repression does not have an effect on economic growth in the Turkish economy in 2005 – 2019 period. It is possible to conclude that financial system of Turkey was developed compare to 1980s and 1990s where transition to liberal market conditions. Also there were a number of regulations made just after 2000 – 2001 crisis experienced in the Turkish economy. Regulations made the system more disciplined and more

independent from governmental interventions.

In the light of explanations above, it is possible to imply that regulations made in 2000s might be more effective than possible regressions. For other emerging market economies, such structural regulations will be more effective on both financial sector and economic growth.

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