“Transformation of the financial structure in an emerging market due to financial liberalization: a case study for Turkey”

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Transformation of the financial structure in an emerging market due to financial liberalization: a case study for Turkey

Abstract

The distinction between bank-based versus market-based financial system and its relationship with the economic growth has been a divisive issue in the last two decades. The authors suggest a new way to distinguish financial systems based on the idea "bank-biased" versus "market-biased" rather than "bank-based" versus "market-based" distinction. The empirical results of this paper illustrate a "market-biased" transformation of the Turkish financial system for the years 1987-2009. The main cause of this transformation is huge public debts and financial openness in the long run.

Keywords: financial transformation, "bank-based" versus "market-based", "bank-biased" versus "market-biased" distinction.
JEL Classification: C20, G10, G20.

Introduction

The last 25 years have witnessed the liberalization and global integration of the financial systems across the world. The stylized facts of this era can be summarized as elimination of all the policies hindering capital movements across borders; the removal of repressions on interest rates and exchange rates by monetary athorities; having the opportunity to make portfolio investments in foreign securities and increasing access to financial services at competitive prices. On the theoretical side these developments also stimulated endogenous growth models which concentrate on the finance-growth nexus (Greenwood and Jovanovic, 1990; Bencivenga and Smith, 1991; Saint-Paul Gilles, 1992; King and Levine, 1993b). These studies indicate theoretically the mechanism behind the positive impact of finance on growth. On the empirical side many cross-country studies provide empirical results which support also positive relationship between finance and growth (King and Levine, 1993a; Demirgüç-Kunt, 1998; Levine and Zervos, 1998; Levine, 1998; Benhabib and Spiegel, 2000; Rousseau and Wachtel, 2000; Beck and Levine, 2004; Caporale, Howells and Soliman, 2005; Demirgüç-Kunt and Levine, 2008).

The literature which advocates the positive impact of finance on economic growth theoretically and empirically, suggests different channels about "finance-growth" nexus. Thorsten Beck et al. (2000) classified the existing literature into four categories. The first category is based on the "bank-based" view which underlines the advantages of banks over markets by providing some services like risk management, resource allocation and monitoring. The "market-based view", the second approach, highlights the importance of markets in economic growth. The proponents of this view stress the main advantage of the market as the diversification of risk and the customization of risk management. The third view is called the "law and finance view" and is based on the idea that the favorable and unfavorable effect of finance on economic growth depends mainly on the differences in the law systems. According to this view, the distinction between "bank-based" and "market-based" financial structure becomes irrelevant in relation to economic growth. The fourth and the last view focuses on the key financial services provided by the financial markets and intermediaries and called as "financial services view". Due to this view the distinction between "market-based" and "bank-based" financial structures does not help to explain economic growth differences across countries. On the contrary the main point is to provide these services effectively, no matter by which financial intermediaries or markets these are performed (Beck, Kunt, Levine and Maksimovic, 2000).

In his influential paper Ross Levine (2001) assessed empirically these four theoretical views and indicated that there is no evidence for the bank-based or market-based views. On the other hand, the cross-country data support strongly the "financial services" view which asserts countries with greater degrees of financial development can reach greater level of economic growth (Levine, 2001). This inspired work of Levine draws our attention to the transformation of financial structure and the facts behind this transformation. The reason for our interest in the transformation process is grounded on our criticism of the classification of countries as "market-based" or "bank-based". The problems which arise as a result of such classification can be listed as follows:

1. The classification of countries as "bank-based" or "market-based" provides only a statement which shows the "relative condition" of financial structures of different countries among others. Because of the "relative" nature of the analysis it seems impossible to state a definite threshold to make a clear distinction between "bank-based" and "market-based" financial structures.

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2. The "bank-based market-based" classification in cross-country studies which is based on the average summary values force us to accept the assumption that there were economically and financially no difference between the start and the end of the period. In addition the cross-country analysis prevents observations about the country-specific differences. For instance a less developed country like Ghana, Jamaica or Zimbabwe could be seen as more market-based than many developed countries because these countries have very small and underdeveloped banking systems (Levine, 2001). The "bank-based" versus "market-based" distinction could be only logical if economic conditions of other comparable countries were the same.
3. Even if it were possible to define a threshold to distinguish the "bank-based" structure from the "market-based" structure, it would still be impractical to make such a classification. Even in the US, considered as one of the most market-based countries, only a part of the fund needs of firms are satisfied by stock markets. On the other hand, the majority of the fund needs are to be met by banks which indicate the importance of banks in the most market-based financial structure such as the US (Mishkin, 1998).

These facts bring us to the idea that in lieu of making a classification such as "market-based" or "bank-based" we should concentrate on the direction of the "financial structure transformation". These lead us to suggest a new concept to observe the transformation of the financial structures. We use the expression "bank-biased" instead of "bank-based" and "market-biased" instead of "market-based" financial structure. According to our definition "bank-biased" means that the role of the banks by channeling funds from savers to investors is growing over time; "market-biased" means that the role of financial markets by channeling funds is growing over time. But these concepts do not denote the dominance of banks or markets in the "finance-growth" relationship.

In order to analyze the transformation process we chose the Turkish financial structure which indicated a dramatic change after the financial liberalization and experienced deep financial crises during that period. The two indicators of Levine (2001), activity and structure of financial intermediaries and financial markets were used which states in his paper the classification as "bank-based" and "market-based". We carry out an empirical assessment of the transformation of the Turkish financial structure by using the same indicators for the years 1989-2009. Our main idea is to calculate these indicators for each year of this period and to investigate the changes for each indicator in time through time-series analysis. This period also enable us to ascertain the impact of financial liberalization process on the financial structure transformation in Turkey, since 1989 is considered to be the starting point of the capital market liberalization in the country.

As a result of our analysis we stated that there had been a dramatic change towards a "market-based" structure between the years 1989-2002 for Turkey. Within the framework of our definition there is a "market-biased" transformation of the financial structure during this period. After 2002 this transformation has slowed down and has shown a "steady" property. We associated the slowdown towards "market-biased" transformation with the regulation of the financial structure after 2001 financial crisis in Turkey.

These findings encourage us to state the reasons of this transformation. Therefore we investigate as the second step the relation between the "market-biased" transformation and some variables like financial openness, public debt ratio and domestic saving ratio for Turkey. The remainder of our work is organized as follows. Section 1 describes our indicators which describe the transformation toward "bank-biased" or "market-biased" financial structure, data and methodology that we used to analyze the transformation in time. Section 2 presents results. The final section concludes.

1. Data methodology

In order to examine the transformation of the financial structure for Turkey we used the measures which were constructed by Levine in his work (Levine, 2001). Levine used three measures to make the classification as "bank-based" or "market-based". The first measure represents the activity of stock markets relative to the activity of banks and is called structure activity (*STRACT*). Therefore the stock market activity which is represented with the "total value traded ratio" divided by the "bank credit ratio" which implies the activity of banking system by providing credits to the private sector. In order to examine the rate of change of this ratio logarithmic transformation was made. The second measure represents the size of the financial structure (*STRSIZE*) which is defined as the logarithm of the division of market capitalization ratio by bank credit ratio. Other ratios that we used to explain the transformation *STRACT* and *STRSIZE* are financial openness (*FINOPEN*), public debt ratio (*PUBDEBT*) and saving ratio (*SAVE*). *FINOPEN* is defined as the division of foreign direct and indirect investment, portfolio investment and other investments by gross domestic product (*GDP*). Moreover *PUBDEBT* and *SAVE* is the division of public debt and domestic savings by *GDP* respectively.

STRACT and *STRSIZE* which give nearly the same information, as expected they are very strongly correlated variables. This fact lead us to form a new

index variable from these series by using principal component analysis technique.

Table 1. Eigen analysis of the correlation matrix of *STRACT* and *STRSIZE*

	Eigenvalue	Proportion	Cumulative
1	1.883	0.941	0.941
2	0.116	0.058	1.000
Eigenvectors			
Variables	PC1	PC2	
STRACT	0,707	-0,707	
STRSIZE	0.707	0.707	

The new index variable formed by the suitable weights of *STRACT* and *STRSIZE* and explains 0.9415 percentages of the old variables' total variance. The values are given as follows:

$$SAGGR = 0.707STRACT + 0.707STRSIZE\,. \qquad (1)$$

To analyze the transformation of *SAGGR* we established a regression model to dismiss the relation between *SAGGR* and rest of other explanatory variables. Subjecting our variables individually to unit root analysis, we found that they both are *I*(1), that is they contain a unit root. The results are given in Table 2.

Table 2. DF and ADF unit root tests for stationarity

		DF			ADF	
Variable	Level/First dif.	Intercept	Intercept & trend	Intercept	Intercept & trend	Conclusion
SAGGR	Level	-1,730 (-2.674)	-1.944 (-3.77)	-3.592 (-3.769)	-1.828 (-4.532)	
	First diff.	-3.996 (-2.679)	-5.264 (-3.77)	-2.854 (-2.660)**	-5.30 (-4.467)	*I* (1)
FINOPEN	Level	-2.607 (-2.674)	-3.400 (-3.770)	2.684 (-3.769)	3.163 (-4.440)	
	First diff.	-4.723 (-2.679)	-4.917 (-3.77)	-4.733 (-3.788)	-4.655 (-4.467)	*I* (1)
PUBDEBT	Level	-3.629 (-2.692)	-3.696 (-3.770)	-4.104 (-3.831)	-3.937 (-4.532)	
	First diff.	-3.347 (-2.679)	(3.301) (-3.190)*	-3.256 (-3.052)*	-3.060 (-4.616)	*I* (1)
SAVE	Level	-0.913 (-2.674)	-4.0604 (-3.77)	-1.016 (-3.769)	-3.842 (-4.440)	
	First diff.	-5.519 (-2.685)	-5.113 (-3.77)	-5.519 (-3.808)	-5.301 (-4.498)	*I* (1)

Notes: Unit root test were performed using Eviews (Version7.0). Lag length: 0 (automatic-based on SIC, maxlag = 4). Figures in bracket indicate 99% critical values. Figures in bracket with (*) and (**) indicate 95% and 90% critical values, respectively.

But linear combination of the variables is *I*(0). In other words the linear combination cancels the stochastic trend in all four series. Economically speaking, all the variables will be cointegrated if they have a long-term equilibrium between them. The estimated model is shown in equation (2) and the results are given in Table 3.

$$SAGGR_t = \beta_0 + \beta_1 FINOPEN_t + \beta_2 PUBDEBT_t + \\ + \beta_3 SAVE_t + u_t. \qquad (2)$$

Table 3. Estimated long-term relation model (dependent variable: *SAGGR*)

Regressors	Parameter estimates	*P*-value
INTERCEPT	1.401	0.143
FINOPEN	10.098	0.062
PUBDEBT	10.504	0.010
SAVE	-0.134	0.008
Adj. R^2 = 0.5633		
Prob (Jarque-Bera) = 0.4756		
Prob (F-statistic) = 0.0000		
Prob (D.W.) = 0.0005		
Prob (L.M.) = 0.0844		

Note: Estimation with OLS and HAC standard errors.

We showed that our four variables are cointegrated; that is, there is a long-term equilibrium relationship between them. Of course, in the short run there may be disequilibrium. Therefore, we can treat the error term in long term model as the "equilibrium error." And we can use this error term to tie the short-run behavior of *SAGGR* to its long-run value. The short-run relation is formulated as error correction model (ECM) below. The estimated regression model is equation (3) and the results are shown in Table 4.

$$\Delta SAGGR_t = \alpha_0 + \alpha_1 \Delta FINOPEN_t + \alpha_2 \Delta PUBDEBT_t + \alpha_3 \Delta SAVE_t + \alpha_4 u_{t-1} + \varepsilon_t \qquad (3)$$

Table 4. Estimated error-correction model (dependent variable Δ *SAGGR*)

Regressors	Parameter estimates	*P*-value
INTERCEPT	1.401	0.143
Δ*FINOPEN*	2.202	0.062
Δ*PUBDEBT*	2.959	0.010
Δ*SAVE*	-0.084	0.008
LONG-TERM RESİD (-1)	-0.400	0.009
Adj. R^2 = 0.3156		
Prob (Jarque-Bera) = 0.3953		
Prob (F-statistic) = 0.0316		
Prob (D.W.) = 0.0703		
Prob (L.M.) = 0.4974		

The data are obtained from databases of Central Bank of Republic Turkey (TCMB), Istanbul Stock Exchange (ISE) and World Bank (WB) and International Financial Statistics (IFS).

2. Results

We find it crucial to show the transformation process of the financial system of Turkey between the years 1987-2009 graphically. As it can be seen in Figure 1 the structural activity (*STRACT*) indicates a sharp increase in 1987-2001 period. After reaching the maximum point in 2001 the graph shows a weak decrease until 2008. In Figure 2 the structural size (*STRSIZE*) shows a similar tendency with the structural activity. The difference between two graphs appears because of the high volatility in the structural size. The structural aggregate (*SAGGR*) which represents the combination of *STRACT* and *STRSIZE* have a strong tendency towards a "market-biased" transformation between the years 1987-2001 and this transformation turns into a "bank-biased" transformation until 2008. After 2008, the trend starts to increase again which implies tendency towards a "market-biased" structure.

Table 3 represents the financial system transformation results using ordinary least squares estimation in the long run. In our model residuals follow the normal distribution and there is no autocorrelation between them. In this way we provide the basic OLS estimation conditions. All the variables except constant term are statistically different from zero according to their *p*-values, and their signs they are also economically significant.

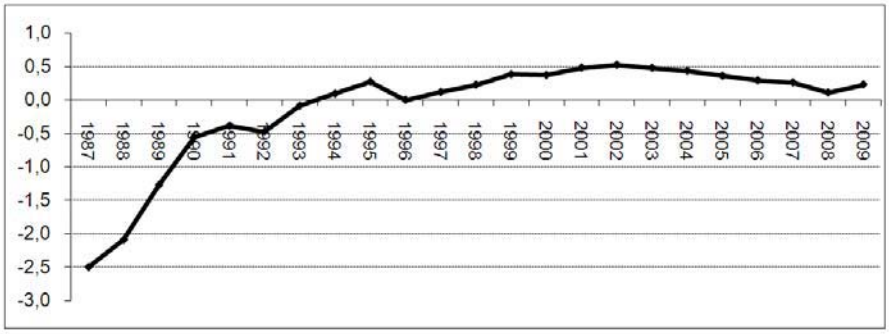

Fig. 1. The structural activity (*STRACT*) time series plot between 1987 and 2009

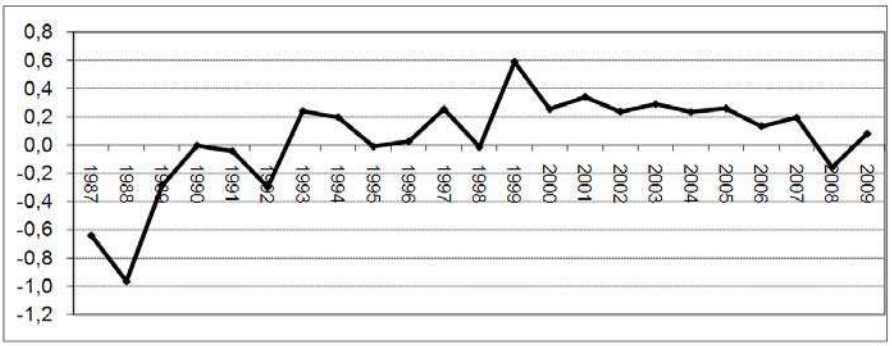

Fig. 2. The structural size (*STRSIZE*) time series plot between 1987 and 2009

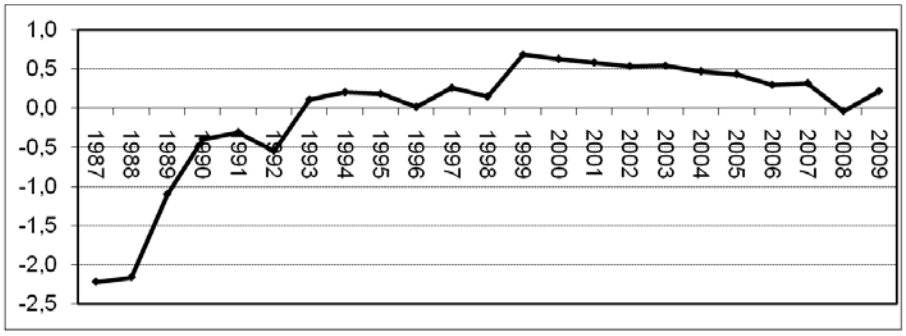

Fig. 3. The structural aggregate (*SAGGR*) time series plot between 1987 and 2009

An increase in the independent variables *FINOPEN* and *PUBDEBT* by 1 point results on the average increase in the dependent variable *SAGGR*, 10.098 and 10.504 points, respectively. On the other hand, an increase by one point in *SAVE* results on a decrease in *SAGGR* by -0.134, on the average.

According to our findings financial openness and the public debt have great influence on the transformation towards "market-biased" structure. The negative sign of the *SAVE* interprets the tendency towards a "bank-biased" structure under the assumption of the savings are collected mainly by banks.

Table 4 shows the short-run financial system transformation results by using ECM model. In the short-run residuals follow the normal distribution and there is no autocorrelation as in the long run. In this way the basic OLS estimation conditions are satisfied. As these results show, 0.40 of the discrepancy in the two ratios is eliminated. Because *SAGGR* ratio was higher than expected a priori in the last year, this year it will be reduced by 0.40 percentage points to restore the long-run relationship between the variables. Besides, short-run changes *FINOPEN*, *PUBDEBT* and *SAVE* are quickly reflected in the *SAGGR*, as the slope coefficients 2.2027, 2.9599 and -0.0841, respectively.

While the financial openness (*FINOPEN*) and public debt ratio (*PUBDEBT*) has a great impact on the transformation process; the domestic saving ratio (*SAVE*) has a weak impact on this transformation both in the long- and short-run. Besides the time depending comparison indicates that the effect of the financial openness and the public debt on the transformation process loses its power in the short run.

Conclusion

In our study we investigated the transformation of financial system between the years 1987-2009 for Turkey. We concluded that the financial system has shown a "market-biased" transformation in Turkish case. We state that the financial system between the years 1987-2002 has transformed more dramatically compared to the 2002-2009 period. Moreover, the transformation in the second period has reached a level which could be described as a steady position. This finding could be associated with the regulation of the Turkish financial system after the "Strengthened Stabilization Program" entered into force after 2001 financial crisis. We evaluated that the transformation is associated with the openness of financial system, the level of public depth and the level of domestic savings as percentage of GDP. The cointegration between these variables in the long run causes a need of analyzing this relation in the short run. As a result of our analysis we stated that the impact of domestic savings on the transformation is poor in the short and in the long run. On the other hand, the transformation of the financial system can be explained excessively with the change of financial openness and the level of public debt.

The policy implication of our result is based on the anomalies of the transformation process which indicates the relative activity of financial intermediaries versus financial markets. According to our view the drastic changes in financial capital transfer could be interpreted as an indicator of financial fragility. If there is an enormous activity in favor of financial intermediaries or financial markets, this could be associated with the huge inflow or outflow of financial capital. In developing countries and emerging markets these kinds of financial transfers could be a reason for financial crisis because of the poor financial depth. Therefore, our analysis could be used also as a warning system about the financial fragility of a country.

In future works we plan to carry out empirical assessments of the other countries financial systems transformation. Our aim is to provide a dynamic method of analyzing "finance-growth" nexus. This will help us to ascertain the impact of the financial system transformation over the economic growth. Furthermore, this new method will enable us to classify countries in a new way like "market-prone" or "bank-prone".

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Appendix

Table 1. Data set of the dependent and independent variables (1987-2009)

Obs.	*FINOPEN*	*SAGGR*	*STRACT*	*STRSIZE*	*SAVE*	*PUBDEBT*	*GDP*
1987	0.333130	-2.221310	-2.5019	-0.6395	23.76292	0.045428	8.72E+10
1988	0.028684	-2.161340	-2.0921	-0.9645	25.77702	0.035893	9.09E+10
1989	0.035532	-1.102100	-1.2748	-0.2838	22.92141	0.040193	1.07E+11
1990	0.031286	-0.394350	-0.5563	-0.0014	21.56892	0.055151	1.51E+11
1991	0.019081	-0.307030	-0.3918	-0.0424	21.49137	0.075688	1.51E+11
1992	0.048550	-0.545320	-0.4749	-0.2963	21.22336	0.079025	1.59E+11
1993	0.073982	0.109531	-0.0877	0.2426	21.44939	0.076502	1.8E+11
1994	0.078139	0.205132	0.0909	0.1992	22.10459	0.046071	1.31E+11
1995	0.036027	0.183636	0.2686	-0.0089	21.71803	0.037378	1.69E+11
1996	0.044810	0.017395	-0.0026	0.0272	18.91203	0.065174	1.81E+12
1997	0.056054	0.261556	0.1140	0.2559	20.09301	0.058252	1.9E+11
1998	0.054886	0.148846	0.2236	-0.0131	24.20664	0.071460	2.69E+11
1999	0.039804	0.686530	0.3795	0.5914	19.81575	0.116536	2.5E+11
2000	0.054204	0.631517	0.3690	0.2562	18.05625	0.088841	2.67E+11
2001	0.105405	0.582939	0.4808	0.3436	18.18257	0.120579	1.96E+11
2002	0.027639	0.537472	0.5218	0.2383	18.33561	0.099833	2.33E+11
2003	0.039432	0.543058	0.4770	0.2910	15.05598	0.073209	3.03E+11
2004	0.074002	0.473550	0.4347	0.2350	15.61058	0.036319	3.92E+11
2005	0.099035	0.436639	0.3564	0.2611	15.58556	-0.000740	4.83E+11
2006	0.124298	0.299531	0.2886	0.1350	16.24938	-0.018810	5.31E+11
2007	0.095456	0.322299	0.2597	0.1961	15.57305	0.000655	6.47E+11
2008	0.084539	-0.035920	0.1066	-0.1574	16.52124	0.016199	7.3E+11
2009	0.038924	0.218850	0.2280	0.0815	12.87441	0.064271	6.15E+11