

Integration of the Participation Banking Legislations to the Banking Law and its Influence on Competition

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Abstract

In some countries such as Turkey, Islamic banks and conventional banks coexist in banking industry. However, due to dissimilarities in their business models, these institutions may be subject to different statutory and regulatory arrangements. The arrangements in a dual banking system might repel potential customers from Islamic banks if privileged arrangements are solely open to conventional banks. Up until late 2005, Islamic banks in Turkey were recognized as “special finance houses” and were exempt from the rights that covered conventional banks, like deposit coverage. As an interesting case, the legislative changes in late 2005 have eliminated the deprivations and provided more constructive environment for Islamic banks. Yet, what these legislative changes have brought about for Islamic banks is still unexplored. In this paper, we study the effects of the legislative changes in Turkish Islamic banking on market structure. The results reveal that Islamic banks gained more market power after the enactment of various legislations and integration of these legislations to the Banking Law.

Keywords: *Market structure, competition, Islamic banks, participation banks, policy reforms*

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Introduction

The 2008 global financial crisis (hereafter 2008 crisis) was caused by the intertwined fragilities that arose in the financial sectors. The on-going debates relate 2008 crisis to loose regulation and accommodative monetary policy that stimulated financial institutions to do business without assessing the risk correctly (Diamond and Rajan, 2009; Obstfeld and Rogoff, 2009)¹. Ensuing to the failures of financial institutions worldwide, central banks and global financial institutions have engaged in collaboration to overhaul the shattered financial system. These institutions have initiated several joint regulatory measures to mitigate excessive risk taking. Beyond these on-going regulatory efforts worldwide, 2008 financial crisis clearly demonstrated an urgent need for rethinking the existing banking scheme. In this context, Islamic banking received more attention in global finance (Čihák and Hesse, 2010; Beck et al., 2013). Particularly, profit and loss sharing (PLS) based business model that is unique to Islamic banks is increasingly considered to be conducive to financial stability.

The growing interest toward Islamic banking on the globe reflected in a series of favourable legislative and regulatory changes for Islamic (participation) banks in Turkey. Thanks to positive climate created by these changes, Islamic banks have shown considerable growth and diversified their asset portfolio with new *Shariah* compliant securities, e.g. *sukuk* (rent certificates), revenue indexed bonds. Although positive developments with the introduction of these recent changes are visible, the scholarly research investigating the impact of legislative and regulatory changes on Islamic banks is still lacking. This study attempts to fill this gap by investigating the impact of enactment of various legislations and integration of these legislations to the Banking Law on the market power of Islamic banks.

Recent studies on the market structure of the Turkish banking solely studied conventional banks (see Gunalp and Celik, 2006; Abbasoglu et al., 2007, Aktan and Masood, 2010). Yet, the market structure of the Turkish banking with a specific interest to Islamic banking sector is not investigated at all. By employing the Panzar-Rosse model (hereafter P-R model), this study assesses the degree of competition in Islamic banking during January 2001- January 2013 period. Based on a balanced panel dataset of monthly data, the study analyzes the market structure and competition

in the Turkish Islamic banking for the *pre-reform* and *post-reform* periods when the reform refers to the enactment of various legislations and integration of these legislations to the Banking Law in 2006.

On the outset of Islamic banking in Turkey, Moore (1990) indicated potential threats to competition among Islamic banks and warned that these banks might simply replicate the oligopolistic behaviour of the established business groups in the country. He argued that due to close relationship between the political elites and the banks of the time, these banks could enjoy oligopolistic structure of the banking system (Moore, 1990:249). This study reopens this debate that Moore (1990) has elicited a while ago by thoroughly examining the market structure of the sector in the last decade. The findings of this study suggest that the market structure in Turkish Islamic banking changes after the implementation of various legislations and integration of these legislations to the Banking Law in 2006. Estimated P-R *H*-statistics clearly indicate an increasing market power for the Islamic banks and the market structure reverses from monopolistic competition to monopoly.

The remainder of this paper is organized as follows. In Section 2, we give an overview of the Islamic banking sector in Turkey. In Section 3, the P-R methodology and empirical model used for the analysis are briefly explained. Section 4 presents the data and the estimation results. In this section, we test whether the reforms in late 2005 have changed the market structure or not. The last section concludes with policy-implications.

Islamic Banking in Turkey

Turkish banking sector has witnessed substantial reforms over the last decade after a long period of weak performance. Recent regulatory reforms have dealt with the drawbacks in the sector by exercising various guiding changes. The triggering effect of the reforms has been the banking crisis in 2001 (hereafter 2001 crisis). Undoubtedly, the 2001 crisis caused a tremendous havoc in the economy. Nearly 50 percent of the bank deposits were withdrawn by depositors, and over 20 insolvent banks were transferred to the Savings Deposit Insurance Fund of Turkey (SDIF) during the crisis (see Aysan et al., 2011). Yet, the stark evidence demonstrated that Islamic banks in Turkey were able to survive and steadily grow with minor corrections after these distressed times.

Some claimed that the Islamic banks in Turkey stayed more resilient than the conventional banks during 2001 crisis thanks to the Islamic finance model that they have to strictly adhere to². During the 2001 crisis, profit and loss sharing helped Islamic banks avoid from the skyrocketed interest rates that hit the conventional banks severely. When the conventional banks created open positions with unbearable interest rates, the Islamic banks prevented from this massive exposure. Therefore just contrary to the conventional banks, the Islamic banks have shielded from the adverse market movements to great extent. Moreover, Islamic banks have also carried less foreign currency risk by not creating any interest rate risk through open foreign currency position. At that time, huge foreign exchange open positions put many conventional banks at risk since most of the banks in the sector used to be earning lucrative spread returns from interest rate differentials between domestic and international markets.

Arguably, Islamic banks were restricted by both Islamic principles and regulatory arrangements in Turkey. The first dimension of the limitation was due to its very nature that the prohibition of investment in fixed income securities deprives Islamic banks of lucrative returns in Turkish banking. The second dimension was the restrictive regulatory arrangements that put Islamic banks in a disadvantageous position. In its short history, relative success of Islamic banks was not very much supported by the regulatory treatments. For example, till 2005 these banks had been somehow exempt from a series of privileges provided to the conventional banks, such as the deposit insurance scheme. Furthermore, an interbank-like market for the Islamic banks does not exist in Turkey which left the Islamic banks highly exposed to illiquidity difficulties during distressed times (Syed Ali, 2006).

Islamic banks which exist in Turkish banking for more than three decades are prone to significant changes nowadays. Once a negligible sliver of the banking industry; Islamic banking sector has been growing steadily in recent years. The legislative changes enacted in late 2005 are shown as the principal factor for this improvement.

Regulations

The history of Islamic banking in Turkey goes back to 1983 when a number of financial institutions under the name of *special finance houses*

(SFHs) have entered into the banking industry by a governmental decree. Arguably, the reasons for the establishment of this decree were twofold. First of all, having scarce foreign exchange reserves at the time, the policy makers aimed at attracting additional resources from Gulf countries. Under the pressure of severe foreign currency needs, the government at that time treated the Islamic banks as a safe pool of foreign currency resources. Secondly and probably more importantly, religiously devoted people who were reluctant to invest in interest based products were targeted to be included in the financial system with the new *Shariah*-compliant products.

Shortly after the decree, *Al-Baraka Turk and Faisal Finance House*, both established in 1984, have entered into the Turkish financial system as the first SFHs. *Kuveyt-Turk Finance House* followed these two in 1988, bringing the number of SFHs to three. The majority ownership of these three SFHs was initially foreign, yet by 1991 three new SFHs were opened up with 100 percent domestic capital. With this wave, *Anadolu Finance House*, *Ihlas Finance House*, and *Asya Finance House* took their places in the system. This upsurge in Islamic banking is often perceived as a conduit for the religiously devoted people in Turkey to channel their accumulated capital to the financial sector.

The regulations governing the operations of SFHs went through several changes. Before 1999, SFHs were subject to the *Interest-free Banking Decree No.83/7506* and were monitored and supervised by the Undersecretariat of the Treasury and Central Bank of Turkey. This decree dealing with the foundation, operation, and liquidation of the SFHs did not provide fair competition for the Islamic banks and hence generate an environment relatively more favourable for the conventional banks (El-Gamal and Inanoglu, 2000). Since SFHs are governed by a governmental decree instead of a law as in the case of conventional banks, their regulatory status put these institutions under great uncertainty. Certainly, these institutions were not “banks” in essence, but fulfilled many operations similar to the conducts of the conventional banks. Besides the name “special finance house” created an illusion on the depositor side as if these banks were not doing “banking”.

Till 1999, SFHs have neither been a part of the banking industry nor have they been governed by a proper legislative framework. These institutions have been mainly administrated by various legislations which aggravated the opaqueness as to their legal status. Yet, partly due to the new

entrants that had been initially owned 100 percent by the domestic capital, existing SFHs became subject to the new *Banking Act No: 4389* and *4491*, effective 19 December 1999, which improved their already weak competitive position with respect to the conventional banks. Although several regulatory disadvantages have still persisted, becoming subject to this new law, these institutions have been reframed by law and gained the “complementary bank” standing instead of “alternative finance house” status.

2001 crisis has brought wide-ranging adjustment for the Turkish banking sector. The adjustments encompassed two major regulatory developments for the Islamic banks, namely the establishment of *Special Finance Houses Association* (SFHA) and the introduction of *Deposit Insurance Fund* for SFHs which was administered by the SFHA. At the time, a deposit insurance scheme provided by the state itself covered solely the conventional banks to prevent potential bank-runs during the crisis. Without accepting SFHs under the same scheme, the duality of conventional banks versus SFHs remained unresolved. Hence, the competitive disadvantage of SFHs sustained during the restructuring of the banking sector (Akin et al. 2009 and 2011).

Unfavorable regulatory treatment of the SFHs has come to the end with the *Banking Act No: 5411*, effective 1 November 2005. In the new law, the name “special finance houses” is replaced with “participation banks”. After alleviating the ambiguities over the status of these institutions, the banking sector is currently composed three types of banks: (i) commercial banks, (ii) development and investment banks, and (iii) participation (Islamic) banks. These alterations meant an official acknowledgement of the Islamic banks to be treated similar to the conventional banks in the sector. Treatment of SFHs similar to the conventional banks has several vital implications. Firstly, uncertainty and hesitations toward these institutions due to their names was ameliorated. With the new status as “participation banks”, these institutions, from a regulatory perspective, started to operate just like other banks in the industry. The new law has also given an explicit guarantee for the customers of these institutions to have same rights of the customers of the conventional banks in the sector. Besides, the deposit insurance used to be covered by SFHA beforehand were transferred to the SDIF. Last but not the least, the confusion in cross-border operations caused by naming these banks as “special finance houses” that had no use elsewhere other than Turkey has ended up.

Product Diversification

Apart from the statutory progress in Islamic banking, authorities have initiated numerous regulatory changes that enabled product diversification in the sector. The new changes paved the way for sukuk³ issuances for the general government financing as well as for the corporate financing. Thanks to newer regulatory changes applicable for the corporates, banks, and the government, it is now easier to reach to a wider pool of investors who were unable to transact Turkish originated debt. Apart from government financing turn-over in the country, gloriously growing economy with a vast web of infrastructural and industrial projects attracts the investor community. According to Ernst & Young (2012) estimates, as of 2023, Islamic banking in Turkey could triple in size and reach to more than USD 100 billion approximately where the size of Malaysia's Islamic banking is today. Apart from the regulatory changes that enabled the issuance of various Shariah compliant financial products, the tax law was also amended to facilitate the process whereby Turkish issuers could raise long term Islamic financing⁴. Certainly; the legislative and regulatory changes have prompted favourable climate for the Islamic banks in Turkey. However, their effects on the market structure are not empirically explored. Given the need for such an analytical appraisal of the topic, this paper attempts to investigate this question empirically.

Model and Estimation

The Panzar-Rosse Model

Measurement of competition generally follows two approaches in the literature: the structural and the non-structural methods. The structural approach in measuring competition which underpins the structural-conduct-performance (SCP) paradigm links market power to the degree of market concentration. This approach presumes lower/higher competition in concentrated/less-concentrated markets. Concentration based measures of competition are subject to criticism on the ground that concentration can be resulted from a greater efficiency, or competition eliminates less efficient ones (Demsetz, 1973). On the other hand, non-structural models of competitive behaviour within the context of the New Empirical Industrial Organization (NEIO) approach derive the measures on competition from

market behaviour. Bresnahan (1982) and Lau (1982) suggest a procedure that comprises the estimation of a simultaneous equations model based on industry-level data where a parameter representing the degree of market power of firms is incorporated. An alternative method within NEIO approach that has the advantage of using bank-level data involves the estimation of the P-R model.

The P-R model popularized by Rosse and Panzar (1977) and Panzar and Rosse (1987) is an approach that measures competition by relying on a reduced-form revenue equation. Panzar-Rosse (1977, 1987) proposed a formal method to assess the degree of competition in a market, solely by observing the individual firms' behaviour. According to the model, the level of competition in the market can be obtained from the sum of input price elasticities (the so called *H*-statistic). The intuition behind this method is fairly straightforward. A firm's monopoly power is observable by its pricing decisions. With a reduced form revenue equation including the prices of inputs, the ability of the firms to pass the effects of a change in its input prices to the output price reveals its monopoly power. The choice of P-R model in measuring the competition is based on three virtues. First, aside from the long-run equilibrium assumption, it has no *a priori* assumption. Second, it has strong theoretical background and formal proof. Third, the data employed in estimating the revenue and profit functions are highly standard and easily accessible bank-level data.

P-R model assumes that banks have revenue and cost functions, given as $R_i(y_i, n, z_i)$ and $C_i(y_i, w_i, t_i)$ respectively where R_i and C_i are respectively the revenue and cost of bank i ; y_i is the output of bank i ; w_i is a vector of input prices for bank i ; n is the number of banks; and z_i and t_i are vectors of relevant exogenous variables with respect to the revenue and cost functions. The first order profit maximization condition requires that marginal revenue is equal to marginal cost, $R'_i(y_i, n, z_i) = C'_i(y_i, w_i, t_i)$, where R'_i and C'_i are respectively marginal revenue and marginal cost of bank i . Long-run equilibrium in the product market imposes a zero profit constraint, that is $R_i^*(y_i^*, n^*, z_i) = C_i^*(y_i^*, w_i, t_i)$, where the asterisked values are the equilibrium values of the first order condition which is previously defined.

The *H*-statistic is, then, derived as the sum of factor price elasticities, that is $\sum_{k=1}^m \frac{\partial R_i^*}{\partial w_{ki}} \frac{w_{ki}}{R_i^*}$, where $\frac{\partial R_i^*}{\partial w_{ki}}$ is the derivative of total revenue with respect to the price of the input. According to the value of *H*-statistic there exist three scenarios: monopoly, monopolistic competition, and perfect competition.

- i) The case of monopoly refers to H -statistic that is zero or negative ($H \leq 0$), implying that an increase in factor prices leads to a fall in revenue. This is particularly the case since the monopolist operates at the price elastic portion of the demand curve where an increase in product price in response to an increase in input price(s) leads to a more than a proportional fall in units sold that causes revenue fall.
- ii) The case of monopolistic competition refers to H -statistic that is between zero and one ($0 < H < 1$). Here, an increase in factor prices increases average and marginal costs. This causes some banks to fail and subsequently lead to an increase in revenue.
- iii) In the case of perfect competition, an increase in factor prices causes revenue to increase proportionally. Thus, $H=1$ implies perfect competition.

It must be underlined that the P-R model relies on the assumption that banks are at their long-run equilibrium. Long-run equilibrium further requires that (risk-adjusted) returns are not statistically significantly correlated with input prices (Shafer, 1982). The application of the model to the banking sector further assumes that banks can be treated as single-product firms offering intermediation services (De Bandt and Davis, 2000).

Starting from Shafer (1982), the P-R model has been extensively applied to the banking industries. Earlier studies employed cross section data sets to examine the market structure in banking sector. Using a sample of US banking data for the period 1979, Shafer (1982) identifies a monopolistic competitive banking behaviour. Other earlier applications of the model were for the Canadian banks (Nathan and Neave, 1989), European banks (Molyneux et al., 1994) and Japanese banks (Molyneux et al., 1996). Nathan and Neave (1989) find monopolistic competition in the Canadian banking sector for the period 1983 and 1984 but perfect competition in the period 1982. Recent studies employ panel data to explore the time series properties of banking data. These include Al-Muharrami et al. (2006) for the Arab Gulf Cooperation Council's (GCC) banking system; Bikker and Haaf (2002) for 23 European Union and non-European Union countries; Coccorese (2004) for the Italian banking system; De Bandt and Davis (2000) for a sample of French, German, Italian and US banks;

Hondroyannis et al. (1999) for the Greek banking system; Mamatzakis et al. (2005) for a sample of South East European countries; and Perera et al. (2006) for South Asian banking sectors. The results of the above studies are mostly consistent with the monopolistic competition, where H -statistic lies between zero and one.

Estimation

In order to decide the degree of competition, we estimate the following reduced form revenue model:

$$\ln Rev_{it} = \alpha + \sum_{j=1}^3 \beta_j \ln W_{j,i,t} + \sum_{k=1}^3 \delta_k \ln W_{k,i,t} \text{Reform}_t + \sum_{l=1}^m \sigma_l X_{l,i,t} + \varepsilon_{i,t} \quad (1)$$

where subscripts i and t refer to bank i at time t ; Rev_{it} is total revenue of bank at time t ; W_k and W_j are a three-dimensional vector of input prices, namely, the unit price of fund (PF), unit price of labour (PL) and the unit price of capital (PC); X_l is a vector of bank specific explanatory factors which may shift the revenue and cost functions; and $\varepsilon_{i,t}$ is the i.i.d. error term with mean 0 and variance $\sigma_{i,t}^2$.

Following the present literature, PF is measured as the ratio of total interest expenses⁵ to total deposits PL ; is measured as the ratio of personnel expenses to number of personnel; and PC is proxied by the ratio of other operating expenses to fixed assets. Bank-specific explanatory variables that are selected in relevance to the literature include *Liquidity Risk* measured as (total assets-total credits-fixed assets)/deposits to account for banks' credit risk exposure. *Solvency Risk* is measured as shareholders' equity/total assets to proxy solvency risk, i.e. banks' leverage. *Relationship banking* variable is calculated as the ratio of total number of bank personnel to total assets. *Bank age* is the natural logarithm of the number of months the bank exists to proxy the maturity of institution. *Bank branch* is the natural logarithm of the number of bank branches. *Reform* is the dummy that takes 1 for the months starting from 2006 and onwards, 0 otherwise to capture the impact of the legislative and regulatory changes on market power.

We expect the sign of the *Liquidity Risk* to be negative since staying on liquid assets pulls back the revenues especially generated from extended credits. Higher *Solvency Risk* value reflects a lower risk in the sense that the bank in question is not highly leveraged, i.e. asset portfolio is affordable in terms of capital adequacy. Therefore, we expect a positive sign for this

variable. Calculated as the total number of bank personnel to total assets, *Relationship banking* is expected to enter into the equations with negative sign. We justify this expectation with banks' on-going motivation to grow in personnel size that puts increasing cost pressures to the institution during the last decade. *Bank age* is associated with the maturity of institution and thus reflects the trust toward the institution. The expected sign for this variable is positive, since mature banks are expected to attract more customers. The coefficient of *Bank branch* should be positive since banks with higher number of branches are expected to earn higher revenues.

To test for the long-run equilibrium, the equation (1) is estimated with the return on asset (*ROA*) as the dependent variable:

$$\ln ROA_{it} = \alpha + \sum_{j=1}^3 \beta_j \ln W_{j,i,t} + \sum_{k=1}^3 \delta_k \ln W_{k,i,t} \text{Reform}_t + \sum_{l=1}^m \sigma_l X_{l,i,t} + \varepsilon_{i,t} \quad (2)$$

Following to the estimation of the equation (1), P-R *H*-statistic is obtained for *pre-reform* period as the sum of the coefficients of factor prices as follows:

$$H = \sum_{j=1}^3 \beta_j$$

The P-R *H*-statistic for *post-reform* period is obtained by including the sum of the coefficients of interaction terms as:

$$H = \sum_{j=1}^3 \beta_j + \sum_{k=1}^3 \delta_k$$

Data and Estimation Results

Data

The novel database used in this study is composed of information from monthly balance sheet and income statement of all Islamic banks in Turkey from January 2001 to January 2013. We employ a balanced panel date set of four Islamic banks. Actually, the number of Islamic banks before 2005 was five. Yet, *Anadolu Finance* and *Family Finance* in the system had

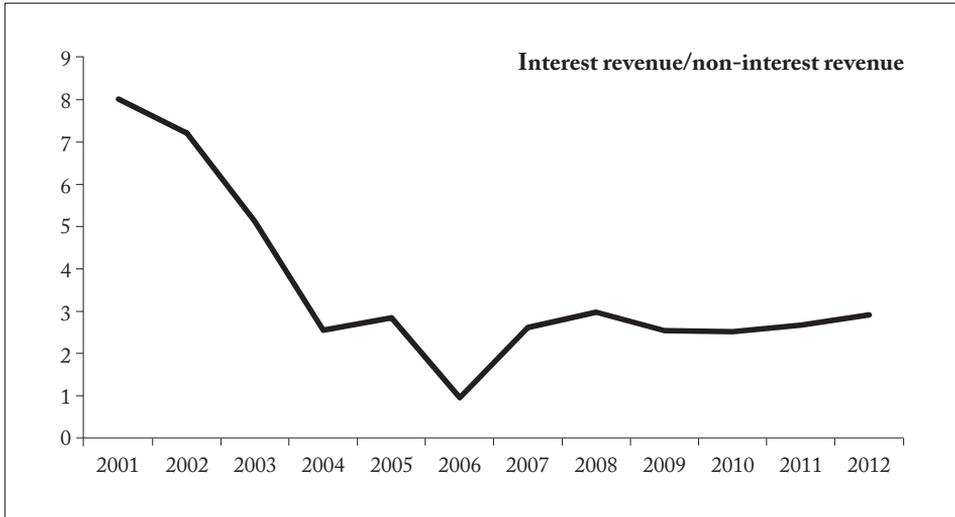
decided to merge. Therefore, the financial accounts of these two institutions which have merged during our sample period were added up and reported as a single bank. The rationale behind following this procedure is that the merger date coincides exactly with the date of the dummy which takes 1 after November 2005. Our methodological approach is designed (i) to infer the market structure of Islamic banking before the legislative and regulatory changes has taken place, and (ii) to address the competitive changes after the introduction of these changes in the banking sector. Ahead of using the raw data, we winsorize the dependent variables, bank risk variables, and the input prices at the 2% level in both tails to moderate the distortive influence of extreme values.

Estimation Results

Following the existing literature, we estimate the models using bank fixed effects to control for the unobserved heterogeneity across banks. To control for potentially heteroscedastic and potentially correlated error terms within a cross section, we estimate heteroscedastic and autocorrelation consistent standard errors. Furthermore, we consider yearly time fixed effects in a separate estimation to account for the macroeconomic fluctuations and possible trends that might influence the revenue indicators. By doing so, the potential effects of 2008 crisis on banks' revenue are captured.

Table-1 reports the estimation results both for *pre-reform* and *post-reform* period. The first column presents results for the fixed effect estimator for only bank dummies, whereas the second column takes into account time dummies as well. The results for the re-estimation of the models with non-interest revenues as the dependent variable are presented in the third and fourth columns respectively. The investigation of the market structure over non-interest revenues is justified by the fact that Islamic banks increased their non-interest revenues during the sample period. Throughout the years, by scanning through the banks' financial statements, we observe a positive turn towards the diversification in sources of a bank's revenues. This is evident in Figure-1 where increasing volume of non-interest revenue over total revenue is visible on a bank's balance sheet.

Figure-1. The share of interest revenue in non-interest revenue (2001-2012)



It is seen from Table-1 that the sign of the coefficient estimates for PF is always positive and statistically significant at various significance levels, while the coefficient estimates of PK and PL are always insignificant with changing signs. The coefficient estimate of *Liquidity Risk* is negative as expected but mostly insignificant. Then, its negative sign suggests that the banks that have much liquid assets fall short of generating high revenues. The models capture positive relationship between *Solvency Risk* and dependent variables, although the coefficient estimates are mostly insignificant. This result is consistent with the fact that both liquidity and solvency risk in the Turkish banking sector remained at very low levels during the sample period. Low level of variation in the risk indicators is also responsible for the insignificant coefficient estimates of these variables.

Relationship banking enters into equations with negative signs as expected. The coefficient estimates are all significant at different significance levels, either 5 percent or 10 percent. Finally, *Bank age* is estimated to have positive impact on the bank revenue as expected, showing that older banks are able to attract more customers, yet *Bank age* is insignificant for the models where non-interest revenue is the dependent variable. This result is also plausible, since for non-interest revenues maturity of bank does not necessarily make any contribution. Finally, the coefficient estimate of *Bank branch* is positive in all estimations at varying levels of significance.

Table-2 presents the P-R *H*-statistics and Wald test results. In the

Table-1. Estimation results of competitive conditions for Turkish Islamic banks (2001–2013)

Dependent Variable	FE without time dummies	FE with year dummies	FE without time dummies	FE with year dummies
	Total Revenue	Total Revenue	Total Non-Interest Revenue	Total Non-Interest Revenue
PF	0.3575** (3.676)	0.3569* (2.720)	0.4467** (3.719)	0.2975 (1.575)
PL	-0.0100 (-0.081)	0.0110 (0.206)	0.9005* (2.581)	-0.0885 (-0.733)
PK	-0.0183 (-0.159)	0.0823 (0.659)	-0.0360 (-0.289)	0.0017 (0.012)
PFxReform	-0.1879* (-2.657)	-0.0214 (-0.133)	-0.5748 (-2.223)	-0.3156* (-2.455)
PLxReform	0.1160 (0.551)	-0.1623*** (-6.147)	-1.2710** (-3.511)	-0.1489 (-0.501)
PKxReform	-0.1008 (-0.565)	-0.1763 (-0.931)	-0.1408*** (-10.465)	-0.2044 (-1.760)
Reform	-1.0307 (-1.569)	0.3608 (0.414)	-1.2149 (-0.912)	-0.5371 (-0.999)
Liquidity Risk	-0.2863 (-1.219)	-0.0020 (-0.006)	-0.7332* (-2.535)	-0.2254 (-0.690)
Solvency Risk	0.5254 (0.612)	-1.0635 (-0.593)	1.1817 (0.271)	0.8591 (0.188)
Relationship Banking	-0.6046* (-3.047)	-0.4251** (-3.430)	-0.5511* (-3.002)	-0.6139** (-3.927)
Bank Age	1.2881** (3.591)	1.6321** (3.248)	0.9566 (0.937)	0.3133 (0.299)
Bank Branch	0.5225*** (8.169)	0.4072** (4.748)	0.6290* (2.522)	0.3132* (2.382)
Year 2001				-1.2645 (-1.226)
Year 2002		0.0738 (0.799)		-1.0220 (-1.017)
Year 2003		0.2895 (2.057)		-0.3801 (-0.428)
Year 2004		0.2295 (1.220)		0.0443 (0.039)
Year 2005		-0.1437 (-1.692)		-0.0575 (-0.074)
Year 2006		-0.3236 (-0.933)		-0.3972 (-0.630)
Year 2007		-0.2782 (-0.737)		-0.6130 (-1.119)
Year 2008		-0.1225 (-0.331)		-0.4429 (-0.975)
Year 2009		-0.0961 (-0.271)		-0.4023 (-1.022)
Year 2010		-0.1122 (-0.305)		-0.3812 (-1.255)
Year 2011		-0.0338 (-0.096)		-0.2673 (-1.442)
Year 2012		0.0812 (0.233)		-0.0809 (-0.823)
Year 2013		0.0962 (0.301)		
Constant	3.5119 (1.795)	2.2247 (0.914)	-1.2149 (-0.912)	7.8065 (1.177)
Observations	562	562	550	550
R-squared	0.933	0.942	0.883	0.900
Number of bankid	4	4	4	4

Robust t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

first and second columns of Table-2, we find evidence that in the *pre-reform* period the sector operated under monopolistic competition when total revenue is the dependent variable in the models. The estimated values of the H -statistic are always highly significantly different from both zero and one at the *pre-reform* period. The finding of $0 < H < 1$ appears to be robust to different specifications regarding the inclusion of time dummies. At *post-reform* period the market structure changes to monopoly since the estimated values of the H -statistics are always highly significantly different from one but not from zero. The results are also robust to different specifications.

When non-interest revenue is the dependent variable in the models, the results indicate a perfect competition. The estimated value of the H -statistic is highly significantly different from zero but not different from one at the *pre-reform* period (test results reject $H = 0$ but cannot reject $H = 1$). Yet, at the *post-reform* period, the market condition turns out to be monopolistic competition, since estimated value of H -statistic is always highly significantly different from both zero and one. The results totally change when time effects are considered (fourth column). However, the results do not contradict with the basic finding of this study that is the increasing monopoly power of the Islamic banks during the sample period.

Table-2. Wald test results for P-R H -statistics

Pre-reform Post-reform	Monopolistic competition Monopol	Monopolistic competition Monopol	Perfect competitor Monopolistic competition	Monopol Monopol
F-Statistic for testing the coefficients of factor prices ($\beta_1 + \beta_2 + \beta_3 = 0$)	18.99**	66.72***	11.65**	1.21
F-Statistic for testing the coefficients of factor prices ($\beta_1 + \beta_2 + \beta_3 = 1$)	78.84***	99.49***	0.66	16.98**
F-Statistic for testing the coefficients of factor prices ($\beta_1 + \beta_2 + \beta_3 + \delta_1 + \delta_2 + \delta_3 = 0$)	1.13	0.72	14.94**	5.24
F-Statistic for testing the coefficients of factor prices ($\beta_1 + \beta_2 + \beta_3 + \delta_1 + \delta_2 + \delta_3 = 1$)	32.93**	73.07***	91.94***	53.06***

The long-run equilibrium test for the value of H is performed by using ROA as the dependent variable (see Table-3 and Table-4). In all regressions, the null hypothesis, that cannot be rejected even at the 10 percent level. Therefore, the data for Islamic banks appear to be in long-run equilibrium supporting the evidences of market condition in the Islamic banking sector.

Table-3. Estimation results of long-run equilibrium condition for Islamic banks (2001–2013)

Dependent Variable	FE without time dummies	FE with year dummies
	Return on Asset	Return on Asset
PF	0.0026 (0.457)	0.0032 (0.432)
PL	0.0001 (0.011)	-0.0182*** (-7.591)
PK	0.0042* (3.025)	0.0048** (3.215)
PFxReform	0.0010 (0.133)	-0.0090 (-0.964)
PLxReform	-0.0152** (-3.484)	0.0099 (1.516)
PKxReform	-0.0034 (-2.300)	-0.0049 (-2.022)
Reform	0.0184 (0.512)	-0.0536 (-1.135)
Liquidity Risk	-0.0218** (-4.088)	-0.0183** (-4.909)
Solvency Risk	0.0659 (1.969)	0.0453 (1.757)
Relationship Banking	-0.0292* (-2.910)	-0.0232* (-2.619)
Bank Age	-0.0386 (-1.413)	-0.0257 (-0.790)
Bank Branch	0.0100 (1.698)	0.0085 (1.334)
Year 2001		0.0061 (0.735)
Year 2002		0.0208 (1.735)
Year 2003		0.0270 (2.056)
Year 2004		0.0235 (1.533)
Year 2005		0.0272* (2.841)
Year 2006		0.0199* (2.490)
Year 2007		0.0183* (3.093)
Year 2008		0.0176** (3.396)
Year 2009		0.0151** (4.719)
Year 2010		0.0110** (4.021)
Year 2011		0.0081** (3.402)
Year 2012		0.0095*** (6.135)
Year 2013		0.0962 (0.301)
Constant	3.5119 (1.795)	2.2247 (0.914)
Observations	0.2088	0.1430
R-squared	(1.531)	(0.810)
Number of bankid	4	4

Robust t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table-4. Wald test results for long-run equilibrium condition

Pre-reform Post-reform	Monopolistic competition Monopol	Monopolistic competition Monopol
F-Statistic for testing the coefficients of factor prices ($\beta_1+\beta_2+\beta_3= 0$)	0.87	3.34
F-Statistic for testing the coefficients of factor prices ($\beta_1+\beta_2+\beta_3+\delta_1+\delta_2+\delta_3= 0$)	3.28	3.69

Summary and Conclusion

This study investigated the competitive conditions in the Turkish Islamic banking sector by employing the Panzar-Rosse methodology over 2001-2013 periods. The results indicate that during 2001-2013, the market structure in the Turkish Islamic (participation) banking gains more monopolistic outlook after the introduction of various legislative and regulatory amendments. When the dependent variable is total revenue, the results suggest the existence of monopolistic competition across Islamic banks in Turkey in the *pre-reform* period. The structure, however, changes to monopoly in the *post-reform* period. When the dependent variable is changed to the non-interest revenue, the results suggest slightly different market structures yet without deviation from the basic finding of increasing monopoly power.

The findings provide evidence for an evolving market structure towards more monopoly power for the Islamic banks in Turkey which suggest a number of key recommendations concerning policies. First of all, increasing monopoly power could enable these banks to grow further in the banking system. Yet, the growth should be maintained without jeopardizing the customer welfare. For this purpose rigorous monitoring need to be done by the regulatory authorities.

ENDNOTES

- 1 See Gambacorta (2009) for the discussion about the relationship between risk-taking channel and monetary policy.
- 2 The discussions here are based on the overviews of principles and practices of Islamic banking and finance; see Iqbal (2001), Zaher and Hassan (2001) and Ahmad (1994).

- 3 The literal meaning of sukuk that emanates from the Arabic word of sakk is certificate. Sukuk quite resembles the conventional bonds. However, as opposed to the conventional bonds, which merely transfer ownership of a debt, sukuk grants the investor a share of an asset, along with the periodic cash flows.
- 4 The tax incentives with the amendments are as follows: (i) Any income received from the transfer of assets to and from the special purpose vehicle (SPV) is exempt from corporate taxes. (ii) Transaction parties will not pay the so-called stamp duty tax in leasing certificate transactions. (iii) The withholding tax on income decreases as the duration increases (for example a 0% tax is applied for issuances with a maturity over 5 years).
- 5 Although interest is strictly forbidden in Islamic banking, we try to find a baseline P-R model for the Islamic banks. Interest expenses can be assessed as the capital expenditures for the Islamic banks.

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