"Profit persistency in the insurance sector: the case of Turkey"

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Profit persistency in the insurance sector: the case of Turkey

Abstract

Although there is a vast sum of scientific work on the profit persistency of the non-financial sector, there is a paucity of studies on the financial services especially on the insurance sector. Turkish insurance sector is indicating a growing trend, however, its contribution to the economy and the finance sector is very low. Moreover, it is observed that in last few years there is a direct foreign investment input to the sector enabling its growth rate to rise. In this study, different profitability measures are used to analyze the Turkish insurance Sector's profit persistency. The measures of profitability, ROA and ROE are also used for 58 insurance companies for the years between 2002-2012. The persistence of profit is examined by using the dynamic panel model. Although the results of analysis indicate that the profit shows persistency in the short run it is not persistent in the long run.

Keywords: profit persistency, insurance companies, and dynamic panel data models.

Introduction

Since 1970s there has been lots of empirical studies and researches done on the persistence of profitability of firms. It is possible to find a vast number in the literature. However, there is a limited number of works on the persistence of profitability on financial intermediaries. The related samples are on commercial banks due to the data availability as well as the dominance in the market. On the other hand, there is a scarcity of such work done on the insurance companies although the sector has one of the most important intermediaries in the financial market.

Although, in this area the empirical studies analyzed if there is a persistence of profitability, the current studies concentrated on the market entrance, abolition of barriers, and the advantages of being the first in the market or the effects of external shocks that cause variance of profits from the averages in the long run. It can be seen that the recent studies are based on the factors that influence the direction of persistence of profitability either positively or negatively.

Recently, there are many studies on non-financial firms such as Mueller (1977, 1986), Geroski and Jacquemin (1988), Waring (1996), Bourlakis (1997), Goddard and Wilson (1996, 1999), McGahan and Porter (1999 and 2003), Glen et al. (2001 and 2003), Maruyama and Odagiri (2002), Yurtoğlu (2004), Goddard et al. (2006), Bou and Sattora (2007), Tarzijan et al. (2008), Gschwandtner and Hauser (2008), McMillan and Wohar (2011).

On the other hand, it can be seen that there is a limited number of empirical studies done on the persistence of profitability on the financial intermediaries that play an important role in the economy. In this field, most studies are done on commercial banks due to their dominance in the sector as well as their data availability. Levonian (1993, 1994), Berg-

er et al (2000), Goddard et. al (2004), Agostino et. al. (2005), Bektaş (2007), Kaplan and Çelik (2008), Shehzad et al. (2009), Flamini et al. (2009), Goddard et al. (2011), Francis (2011), Garza-Garcia (2011), Aslan et al. (2011), Kontsevoy (2013) are the studies on the persistence of bank profitability.

However, there is a paucity of studies done on the profit persistency on the insurance companies, which are considered as one of the most important intermediaries in the finance sector. Ferruz et al. (2007) and Pervan et al. (2013) studies are the examples. In their studies Perva et al. (2013) focused on the persistence of profitability of the insurance companies` directly. Ferrus et al. (2007), investigated the persistence of income through the equity pension funds for the period of 1999-2006 in Spain. With the contingency table approach, their study shows that the performance of pension funds indicates persistence in the short-run. In regard to this, it can be seen that the persistence of income depends on the quality of management of the fund. Moreover, the research proves that the funds do not indicate a persistence in the long run as only small part of the funds provides a constant income and huge part of it shows bad performance due to mismanagement.

In regard to our study, the work of Pervan et al. (2013) is more significant. In this study the persistence of profit of Croatian non-life insurance companies is investigated. In order to analyze the profit persistence of profitability of insurance companies Markov chain's stochastic period is applied to the ROA of companies for the period of 2002-2011. The empirical results show that the moderate changes on the profit of insurance companies indicate persistence of profitability. Pervan et al. (2013), pointed out that companies experienced a sharp decline on their profitability (ROA) during the global crises of 2007-2008. It is observed that the high ratios of profitability showed extremely high or low profitability with the crises and then followed with a general decline.

The studies are important as their pioneers in this area. However, the empirical results are not adequate to come up with a general approach on the persistence of profitability of insurance companies. The studies include either part of the insurance sector (Ferruz et al., 2007) or a small economy of a developing economy (Pervan et al. 2013).

In regard to the previous studies, this study will contribute to the literature significantly. As Turkey is a growing economy, it is important to investigate the persistence of profit of the insurance companies both in long and short run. The share of the insurance sector within the whole financial sector is 5% and it is showing a stable growth. As of the beginning of 2013, there are 40 property and casualty insurance companies (non-life) and 25 life insurance companies and pension funds and also 2 reinsurance companies in Turkey. The amount of premiums that are produced was 715.5 million $ and the total asset size of the sector is 30.2 billion $ as of 2012.

Moreover, in recent years there is a considerable amount of foreign capital entrance to the sector. The reputable global insurance companies entered to the Turkish insurance sector as partners, through takeovers or by founding new ones. These are important signals for the future development. As a result, it is worth making analysis on the insurance companies profit persistence.

In the study, the persistence of profitability is analyzed by using dynamic panel data methodology that are currently used by Shehzad et al. (2009), Goodard et al. (2011). The insurance sector is analyzed as a whole as well as property and casualty insurance companies, life and pension funds are analysed separately. With the estimated parameters, it is tried to find out if there is persistence of profitability or not.

1. Research methodology

Since the well-known work of Mueller (1986), the dynamics of profit in firms are defined as first order autoregressive process. In regard to this, , Glen et al. (2001, 2003), Maruyama and Odagiri (2002), Yurtoğlu (2004), Bektaş (2007), Cuaresma and Gschwandtner (2008), McMillan and Wohar (2011), Goddard et al. (2011) also used the model as basis given below:

$$\pi_{i,t} = \alpha_i + \lambda_i \pi_{i,t-1} + \varepsilon_{i,t} \tag{1}$$

where $\lambda_i - 1 < \lambda_i < 1$ is the short run persistence parameter and $\varepsilon_{i,t}$ is the white noise disturbance term. According to this, a firm for a t period with the profit ratio of ($\pi_{i,t}$), for the same period is defined as the percentage deviation from the average of the whole

sector. On the other hand, $\pi_{i,t}$'s unconditional expectation for a firm reflect its long-term profit ratio, which is given below:

$$\pi_i^* = \frac{\alpha_i}{(1 - \lambda_i)}. \tag{2}$$

One of the basic theories of the persistence of profitability is the competitive environment hypothesis implies that in the long run profit ratio will be zero. It can be said that in empirical studies where the profit ratios are modelled, among the firms different π_i^* values tried to be investigated. In this study, in both in short run (λ_i) and in the long run (π_i^*) the persistence of profit valuation and competitive hypothesis basic assumption will also be tested. In the equation numbered as (2), when (1-λ_i) value is lowered, the previous profit is transferred to the current year and it will be higher. Due to this, the sector's process convergence speed will considerably be low. Where there are competitive dynamics and the sector's λ_i is expected to have lower values. The reason is that λ_i's convergence speed will indicate abnormal sticky profits that can also be evaluated.

As profitability measures both ROE, which is return on equity, and ROA, which is return on average assets, are used. ROE is calculated by using net profit after tax divided by total equity. Whereas ROA is calculated as profit after tax payment divided by total assets.

In the related literature, the analysis of persistence is based on time series analysis especially on panel unit root test. Shehzad et al. (2009) and Goddard et al (2011) used dynamic panel data methodology. In regard to this, in the model (1), the short run persistence of profitability of persistence is estimated separately both by the dynamic panel data model which is developed by Arelanno and Bond (1991) and system dynamic panel data model which is developed by Blundell and Bond (1998). The systemic dynamic panel data model, with finite samples, diminish potential biases among the alternatives, it is accepted as the superior method, which is also applied by Goddard et al. (2011). The application of this model is needed to prove the instruments validity as well as the second-order autocorrelation. To make the proof, primarily Hansen (1982) test and null test (Roodman, 2006, 2008) for the second – order autocorrelation is applied.

2. Data set

The data set is complied from the Insurance Regulatory Board's Reports from the web site of Republic of Turkey, Prime Ministry Under secretariat of Treasury's. 35 property and casualty insurance companies and 23 life insurance and pension funds

in total 58 companies' ROA and ROE are used between the years of 2002-2011. In total, there are 580 observations. In the analysis property and casualty insurance companies and life insurance and pension funds are analyzed separately. There are 350 and 230 observations respectively.

3. The results

The basic data set are the ROA and ROE ratios of the insurance companies. In regard to these the descriptive statistics are given in Table 1. The descriptive statistics present samples and also subsamples of the insurance sector.

Table 1. Descriptive statistics

	Obs	Mean	Std. Dev.	Min	Max
All sector					
ROA	580	-0.0071	0.1156	-1.1742	0.4469
ROE	580	-0.1039	2.3189	-44.5625	14.4052
Property and casuality firms					
ROA	350	-0.0146	0.1241	-1.1742	0.4469
ROE	350	-0.2395	2.9078	-44.5625	14.4052
Life insurance and pension fund firms					
ROA	230	0.0043	0.1005	-0.7645	0.2435
ROE	230	0.1025	0.7995	-2.5484	10.4386

For the model (1) ROA and ROE profitability measures are estimated and both Arellano-Bond estimator and Arellano-Bover and Blundell-Bond estimator dynamic panel data estimators are applied. The results are given in Table 2 (see Appendix).

When the Table 2 results are analyzed it can be seen that dynamic panel data estimations are statistically significant. Moreover, all the models are significant at 1% level. The Hansen test results indicate that the control variable data set is significant. In all the models Arellano-Bond test result where ROE is used as dependent variable the residuals show auto regression problem. Therefore, these models cannot be accepted and are not used in the evaluation. The λ_i parameter which shows the persistence in the short run are negative almost in all the models. In models where ROA is used as dependent variable, the parameters indicate short run persistence and are positive between 0.2013 and 0.7256. In general, it is observed that in the models where Arellano-Bond estimators are used, λ_i parameters are lower.

On the other hand, it can be said that life insurance companies and pension funds' persistence of profitability is higher than property and casualty insurance companies' and also from the whole sector. The results are significant with the development of the sector in last ten years. In those years, the life insurance companies' and pension funds' premium production as well as their profitability have risen to a great extent. The role of government should be considered as great extent as new tax policies are

applied as tax deductions on pension funds and policies. However, the similar steps are not taken for the property and casualty insurance companies. The fall in premium production, serious amount of losses and takeovers are observed in those companies. Therefore, the decline in the persistence of profit in those companies is expected. This fall causes a decline in the overall profitability in the sector. For this reason the persistence of profitability of the sector is between these sub-sectors'.

Table 3. Long-run profit persistence

	All Sector		Property and casualty firms		Life insurance and pension fund firms	
Estimator:	AB	ABBB	AB	ABBB	AB	ABBB
$(1-\lambda_i)$	0.6935	0.5908	0.7987	0.6906	0.3919	0.2744
$\alpha_i / (1-\lambda_i)$	-0.0137	-0.0172	-0.0247	-0.0240	-0.0130	-0.0189

Table 3 presents the λ_i estimations that indicate the long-run persistence that are taken from the equation numbered (2). It can easily be seen that for all the models the π_i^* values are all negative. The results can be interpreted, as there is no persistence of profitability in the insurance companies in Turkey. On the other hand, such case is the same in all the models due to α parameter which is negative. Moreover, $(1-\lambda)$ parameter that shows the transfer of past years profit on the current year is lower in life insurance and pension funds but higher in property and casualty insurance companies. In property and casualty insurance companies, higher ratio is the indication of the transfer of their previous year's profit to current account in few amounts. However, the case for life insurance companies and pension funds is just the opposite. It can be seen in Table 2 with the $\lambda_{i\ estimators}$ that the competitive powers are stronger in life insurance companies and pension funds where the profitability ratios are higher compared to casualty companies.

Conclusion

Although insurance companies themselves and especially in the developed countries are one of the most important intermediaries, they have a limited share both in developed and developing economies. The basic reason for this is low GDP and unjust income distribution that provides unfair socio-economic structural factors and low understanding of insurance concept. However, in the developing economies insurance sector is showing a fast development trend and a potential for profitable job opportunities. In recent years Turkey is showing a promising development on its economy and managed to overcome the 2007-2008 global crises proving to have a safe and sound financial system. The Turkish insurance sector parallel with the performance of the Turkish economy showed a consi-

derable level of development. Although the share of the sector is very limited among the whole sector it started to attract foreign direct investment showing a potential for the growth.

In this study, the Turkish insurance sector and its two sub-sectors are analyzed by using dynamic panel data models. The results can be grouped into 4. First, the significant results for ROA measure may not be significant for ROE. Second, all the significant models prove that all the companies in short run show a persistence of profit. This ratio for the life insurance companies and pension funds are high with parameter values between 0.60 and 0.72. Whereas low for property and casualty companies with the parameter values between 0.20 and 0.30. With effect of the property and casualty insurance com-

panies the parameter values for the whole sector is between 0.30 and 0.40. Third, in the long run the sector does not indicate a persistence of profitability. In regard to this, it can be said that the Turkish insurance sector is having a growth problem by being not adequately developed in the sale of policies thus premium production. In the future the current situation can be changed with the development of the sector. Last, in general the value $(1-\lambda)$ that shows the transfer of past year's profit on current year is high for the sector. The competitive effects are observed in life insurance companies and pension fund that have relatively higher profits. Due to the low competitive effects on the property and casualty insurance companies, the whole sector is influenced by this negative effect.

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Table 2. Dynamic panel data estimations

	All sector				Property and casualty firms				Life insurance and pension fund firms			
	ROA		ROE		ROA		ROE		ROA		ROE	
Estimator:	AB[1]	ABBB[2]	AB	ABBB	AB	ABBB	AB	ABBB	AB	ABBB	AB	ABBB
ROA(t-1)	0.3065	0.4092	--	--	0.2013	0.3094	--	--	0.6081	0.7256	--	--
	(103.850*)	(311.620*)			(84.281*)	(136.150*)			(139.53*)	(147.67*)		
ROE(t-1)	--	--	-0.3732	-0.3290	--	--	-0.3987	-0.3542	--	--	0.2051	0.2454
			(120.041*)	(-140.040*)			(-190.04*)	(-540.04*)			(66.830*)	(453.82*)
Constant	-0.0095	-0.0102	-0.083	-0.1628	-0.0198	-0.0166	-0.3092	-0.3605	-0.0051	-0.0052	0.0714	0.0555
	(-3.021*)	(-11.440*)	(-3.462*)	(-201.511*)	(-6.380*)	(-18.370*)	(-11.350*)	(-796.06*)	(-1.410)	(-6.480*)	(7.740*)	(10.790*)
Num. of observation	464	522	464	522	280	315	280	315	184	207	184	207
Num. of insurance companies	58	58	58	58	35	35	35	35	23	23	23	23
Num. of instruments	37	45	37	45	37	45	37	45	37	45	37	45
Arrelano-Bond test												
AR(1)	-2.1911	-2.2823	-1.1711	-1.1717	-2.0229	-2.1196	-1.1586	-1.1571	-2.2322	-2.4634	-1.0736	-1.0738
Prob.	0.0285	0.0225	0.2416	0.2413	0.0431	0.034	0.2466	0.2472	0.0256	0.0138	0.2830	0.2829
AR(2)	0.9143	1.0422	-1.4206	-1.4963	0.8845	1.094	-1.3484	-1.4022	-1.3873	-1.4201	0.9993	1.0041
Prob.	0.3605	0.2973	0.1554	0.1346	0.3764	0.2739	0.1775	0.1609	0.1654	0.1556	0.3176	0.3153
Hansen test												
Chi square	35.9409	45.6897	39.4837	54.6906	27.4027	32.4473	28.9679	34.3249	17.3591	21.5415	18.6727	18.4759
Prob.	0.4242	0.361	0.2764	0.1089	0.8165	0.8797	0.7537	0.8248	0.9945	0.9974	0.9892	0.9996
Wald test												
Chi square	10784.58	97110	13308.11	20600.8	7103.65	18536.2	35600.8	29100.09	19469.98	21807.11	4465.96	205956.9
Prob.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

(1) Arellano-Bond (1991) estimator; (2) Arellano-Bover (1995) and Blundell-Bond (1998) estimator
* represents significance at 1%, while ** represents significance at 5% and *** represents significance at 10% z tests.