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Bank Specific Determinants Of Profitability In Turkish Banks

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BANK SPECIFIC DETERMINANTS OF PROFITABILITY
IN TURKISH BANKS

being

A Thesis Presented to the Graduate Faculty
of the Fort Hays State University in
Partial Fulfillment of the Requirements for
The Degree of Master of Business Administration

by

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ABSTRACT

This paper examines the profitability of Turkish commercial banks during the period 2005 – 2014. We use bank – specific determinants to predict the following years’ profitability measured by return on assets (ROA). Among the performance measures, the amount of net interest income as a proportion of total operating income is positive related to profitability. It remains important for banks to loan money out at a rate higher than their cost of capital. Non-interest income as a proportion of total assets is strongly positively related to profitability. Consumer loans as a proportion of total loans is negatively related to profitability. Our findings indicate that while the traditional source of bank profits from lending remains crucial, diversifying away from consumer loans into earning income from non-interest sources is important for enhancing bank profitability.

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INTRODUCTION

In this paper, we will develop a model to predict the profitability of Turkish banks one – year ahead. We will use bank specific determinants constructed from financial statement accounts put into ratio form. This forward – looking approach enables us to develop findings that can be used to make recommendations to enhance future bank profitability. Many studies that examine bank profitability only use contemporaneous profitability measures, lessening the implications of the findings for understanding the determinants of future profitability. In this respect we follow Growe, DeBruine, Lee, and Maldonado (2014).

The importance of the banking sector in furthering economic development varies between countries. In some countries, where equity markets are highly developed, business capital comes from share offerings. In other countries, business capital comes more significantly from the banking sector. Turkey, is one such country (Turgutlu, 2014). The Turkish banking sector is seen as the most significant mechanism to promote national economic growth (Alper & Anbar, 2011). This adds importance to understanding the determinants of the profitability of commercial banks in Turkey.

In the year of 2008, the global crisis has affected the Turkish financial sector. However, due to regulations instituted after a previous crisis in 2002, Turkish banks weathered the storm of the global financial crisis remarkably well. The direction of the changes instituted in 2002 was to require Turkish banks to hold a greater proportion of equity capital than was typical for most banks worldwide. Thus, Turkish banks avoided huge losses and stayed safe in 2009 (Alp, Ban, Demirgunes, & Kilic, 2010). A major source of equity capital for banks is retained profits (Ali, Akhtar, & Ahmed, 2011).

Therefore, understanding the determinants of Turkish bank profitability enhances our understanding of how banks in that country can maintain a cushion against losses and reduce the level of risk.

In recent years, Turkish banking industry has become stronger than prior years. Compared to the prior year's financial data, the return on assets (ROA) of Turkish banks has increased by around 35%, and the return on equity (ROE) of Turkish banks has increased by around 20% (Cerci, Kandir, & Onal, 2012).

On the international economic stage, the emerging markets are more important than before. This means that bank performance in these areas will have more influence on global capital markets. However, studies of United States and European banks are more mature than those of developing countries such as Brazil, Mexico, India, Indonesia, and other countries. Among the emerging markets, the research findings of bank performance are relatively fewer than for banks in the developed countries (Ameur & Mhiri, 2013).

And environmental factors can affect profitability of banks. Managerial factors are those influenced by management decisions of banks, such as capital ratio, credit risk, and the productivity of bank operations. Environmental factors are those reflected conditions in the broader economy such as inflation, interest rate level, and various economic shocks such as currency rate fluctuations (Almumani, 2013).

Bank profitability can be examined from both the micro and macro perspectives. On the macro side, the overall growth of the economy, competition for funds from equity markets, and prevailing interest rates can all affect bank profitability. On the micro side we will examine several financial statement ratios developed from the accounts on individual banks.

Our study results broaden previous existing research on the determinants of profitability in the banking sector, particularly in Turkish banking. Our strongest finding is that non-interest income as a proportion of total assets is a strong determinant of bank profitability in Turkey. Non-interest income as a proportion of total banking income has been increasing worldwide (DeYoung & Rice, 2004). Net interest income in relation to total operating income is positively related to profitability. Consumer loans as a proportion of total loans was negatively related to profitability.

This research is organized by several sections. The next section reviews the literature about the determinants of bank profitability. We will introduce and analyze large numbers of prior research findings on the worldwide banking sector, especially Turkish banking. The section that follows the literature review lists and explains the methods of measuring bank profitability and various determinant variables we employ.

LITERATURE REVIEW

We review the literature on the determinants of bank profitability, including the literature on the profitability of Turkish and other countries' banks. The measure of bank profitability we use is return on assets (ROA).

Banking Profitability Studies in Different Countries

Bank profitability studies focus either on single or multiple countries. The single-country studies include India (Bhatia, Mahajan, & Chander, 2012; Bodla, Verma, & Richa, 2006; Karimzadeh, Akhtar, & Karimzadeh, 2013; Malhotra, & Singh, 2009; Punita, 2011; Seenayah, Rath, & Samantaraya, 2015; Sufian & Noor, 2012), Indonesia (Agustini, 2011; Mamduh, Fitri, & Fitri, 2013; Muhamad, & Warninda, 2014;

Sastrosuwito & Suzuki, 2012; Sufian, Habibullah, Fadzlan, & Muzafar, 2010), China (Garcia-Herrero, Gavila ´, & Santaba ´ rbara, 2009; Heffernan, & Fu, 2008; Hwa, & Yang, 2010; Lee, & Hsieh, 2013; Leung, Young, & Rigby, 2003.; Masood, Thapa, Bellalah, Levyne, Teulon, & Triki, 2012; Sufian, & Habibullah, 2009; Tan, & Floros, 2012; Tan, & Floros, 2014; Ye, Xu, & Fang, 2012), Japan (Hall, 2007; Liu & Wilson, 2010; William, & Michael, 2002), Korea (Lee, 2013; Lee & Kim, 2013; Shin, & Brian 2011; Sufian, 2011), Bangladesh (Limon, 2013; Samad, 2015; Sufian & Habibullah, 2009), Malaysia (Guru, Staunton, & Shanmugam, 2002; Kadir, Jaffar, Abdullah, & Harun, 2013; Sufian, 2009; Sufian, & Parman, 2009; Vejzagic, & Zarafat, 2014), Philippines (Abbas, Hunjra, Azam, Ijaz, & Zahid, 2014; Aliza, 2010; Sufian & Chong, 2008), Thailand (Chantapong, 2005; Cooper. 2012), Pakistan (Ali, Akhtar, & Ahmed, 2011; Jabbar, 2014; Javaid, Anwar, Zaman, & Gafoor, 2011; Muhammad, & Sana, 2012; Muhammad Ali, 2015; Muhammad, Adeela, Sehrish, Abdullah, & Khalid, 2012; Naseem, Saleem, Shah, & Shah, 2012; Raza, Jawaaid, & Shafqat, 2013; Riaz, 2013; Rehana, & Irum, 2011; Samina, & Ayub, 2013; Sehrish, Faiza, & Faiza, 2011; Sohail, Iqbal, Tariq, & Mumtaz, 2013), Jordan (Aladwan, 2015; Almumani, 2013; Khrawish, 2011; Ramadan, Kilani, & Kaddumi, 2011; Timewell, & Stephen, 2010), Greece (Alexiou & Sofoklis, 2009; Athanasoglou et al., 2005; Buck, 2014; Mamatzakis & Remoundos, 2003; Schiniotakis, 2012; Spathis, Kosmidou, & Doumpos, 2002; Vogiazas, & Alexiou, 2013), Spain (Trujillo-Ponce, 2013), Turkey (Alp, Ban, Demirgunes, & Kilic, 2010; Alper & Anbar, 2011; Ayaydin & Karakaya, 2014; Cerci, Kandır, & Onal, 2012; Delpachitra, & Lester, 2013.; Ellie, & Malcolm, 2000; Gul, Irshad, & Zaman, 2011; Hasan, & İbrahim, 2014; Macit, 2012; M. Sükrü Erdem, 2010;

Ozkan, Cakan, & Kayacan, 2014; Soylu, & Durmaz, 2013; Turgutlu, 2014), United Kingdom (Kosmidou, Tanna, & Pasiouras, 2005; Legorano, 2012; Ruiz, Garcia, & Revilla, 2016; Saeed, 2014), United States (Bourke, 1989; Chaudhry, Chatrath, & Kamath, 1995; Chronopoulos et al., 2012; Kanas, Vasiliou, & Eriotis, 2012; Saubert, 2003; Scholtens, Shehzad, & De, 2013; Soteriou, & Zenios, 1999; Tregenna, 2009; Wall, 1985; Zimmerman, 1996), Switzerland (Dietrich & Wanzenried, 2011; Hartwell, 2015), Australia (Delpachitra, & Lester, 2013).; Jain, Guo, & Chien - Ting, 2014; Mohammed, & Tony, 2006), Macedonia (Mitja Čok & Marko Košak, 2008; Poposka & Trpkoski, 2013), Kenya (Kiganda, 2014; Muiruri, Memba, & Njeru; Ongore & Kusa, 2013), South Africa (Maredza, 2014), Tunisia (Ameur & Mhiri, 2013; Ayadi & Boujelbene, 2012; Ben Naceur & Goaid, 2008; Bernard, Michelat, Raoul, Jean – Pierre, Delattre, & Giraudoux, 2010; Nessibi, 2016; Rachdi, 2013), Syria (Al-Jafari & Alchami, 2014), Nigeria (Aburime, 2008; Ugoani, 2016)

Many studies analyze the determinants of bank profitability in groups of countries. The multiple-country studies of bank profitability include 15 countries in North America, Europe and Australia (Alp, Ban, Demirgunes, & Kilic, 2010; Alper & Anbar, 2011; Alison, 2013; Bourke, 1989; Brownell, Lussier, Herson, Hagadorn, & Marinelli, 2014; Chronopoulos et al., 2012; Delpachitra, & Lester, 2013.; Ellie, & Malcolm, 2000; Gershman, 1996; Jain, Guo, & Chien - Ting, 2014; Kanas, Vasiliou, & Eriotis, 2012; M. Sükrü Erdem, 2010; Mohammed, & Tony, 2006; Spulbar, & Nitoi, 2014; Stančić, Čupić, & Obradović, 2014), 13 European Union countries (Antoniou, Guney, & Paudyal, 2008; Blacktone, & Gauthier - Villars, 2011; Ewing, 2010; Goddard, Molyneux, & Wilson,

2004; Molyneux & Thornton, 1992; Ozkan, Cakan, & Kayacan, 2014; Pasiouras & Kosmidou, 2007; Smith, & Blackstone, 2010.; Staikouras & Wood, 2004; Titko, Skvarciany, & Jurevičienė, 2015), 13 countries from West Europe (Antoniou, Guney, & Paudyal, 2008; Blackstone, & Gauthier - Villars, 2011; Van Ommeren, 2011), 6 countries from South Eastern Europe (Athanasoglou, Delis, & Staikouras, 2006; Legorano, 2012; Ruiz, Garcia, & Revilla, 2016), 2 countries from Latin America (Spulbar, & Nitoi, 2014), 17 countries including Korea, Japan, India, America, Canada, and some in Europe (Bodla, Verma, & Richa, 2006; Chronopoulos et al., 2012; Curley, 2000; Kanas, Vasiliou, & Eriotis, 2012; Milligan, 1991; Nichols, & Hendrickson, 1997; Seenayah, Rath, & Samantaraya, 2015; Shin, & Brian 2011; Saubert, 2003; Scholtens, Shehzad, & De, 2013; Short, 1979; Spulbar, & Nitoi, 2014, Tregenna, 2009; Wall, 1985William, & Michael, 2002;), 3 countries from South Asia (Abbas, Hunjra, Azam, Ijaz, & Zahid, 2014; Aliza, 2010; Perera, Skully, & Chaudhry, 2013; Reynolds, Ratanakomut, & Gander, 2000; Spulbar, & Nitoi, 2014.; Sufian, 2012), 11 countries from Middle East (Farazi, Feyen, & Rocha, 2013; Hancock, 2012; Mirzaei & Mirzaei, 2011; Muhammad, & Sana, 2012; Muhammad Ali, 2015; Muhammad, Adeela, Sehrish, Abdullah, & Khalid, 2012; Naseem, Saleem, Shah, & Shah, 2012; Raza, Jawaid, & Shafqat, 2013; Riaz, 2013; Rehana, & Irum, 2011; Samina, & Ayub, 2013; Sehrish, Faiza, & Faiza, 2011 Timewell, 2012), 26 countries from the Middle East and North Africa region (Farazi, Feyen, & Rocha, 2013; Muhammad, Adeela, Sehrish, Abdullah, & Khalid, 2012; Naseem, Saleem, Shah, & Shah, 2012; Olson & Zoubi, 2011), 43 countries from Sub-Saharan Africa (Bedman, & Owusu-Frimpong, 2011; Flamini, McDonald, & Schumacher, 2009; Francis, 2013; Marlar, 2010), 10 advanced economies

(Brownell, Lussier, Herson, Hagadorn, & Marinelli, 2014; Shen, Chen, Kao, & Yeh, 2009), 7 countries from the Association of Southeast Asian Nations (Alexander, 2011; Mahfudz, Abdullah, Abdul, Arman, & Osman, 2015; Wahidudin, Subramanian, & Kamaluddin, 2013), 85 industrial countries and developing countries (Abbas, Hunjra, Azam, Ijaz, & Zahid, 2014; Aliza, 2010; Bodla, Verma, & Richa, 2006; Demirguc-Kunt & Huizinga, 1999; Heffernan, & Fu, 2008; Hwa, & Yang, 2010; Kadir, Jaffar, Abdullah, & Harun, 2013; Klomp, & de Haan, 2014; Lee, & Hsieh, 2013; Leung, Young, & Rigby, 2003; Mamduh, Fitri, & Fitri, 2013; Masood, Thapa, Bellalah, Levyne, Teulon, & Triki, 2012; Muhamad, & Warninda, 2014; Punita, 2011; Seenayah, Rath, & Samantaraya, 2015; Sufian, 2009; Sufian & Noor, 2012; Sufian, & Parman, 2009).

Previous Studies of Determinants of Bank Profitability

In-depth study of bank profitability is extremely challenging, especially coordinating the findings across multiple predictors and several measures of bank profitability. The three measures of bank profitability commonly used are return on assets, return on equity, and net interest margin. Below I summarize the findings on studies on determinants of bank profitability.

Alp et al., (2010) in a study on the Turkish banking sector, suggests that the analysis of bank profitability can be divided into two aspects, the micro and the macro-economic perspective. In the macro aspect, a profitable banking sector could better deal with the negative financial turbulence and make the whole financial system stable. In the micro aspect, the most fundamental purpose of the bank is to achieve the profit maximization, because the profit is the essential factor for the banking institution, the easiest and cheapest source of funds, and the basic impetus for conducting normal

business. The profitability potential of the banking sector could encourage investors, strengthen the motion of economy and increase the global financial confidence in the banking industry.

Alper and Anbar (2011) examine the net interest margins and the determinants of bank profitability through many complex and comprehensive banking characteristics, taxation indicators, banking regulations, capital structure models, macroeconomic conditions hypotheses and the legal indicators for around 90 countries, including developed and developing countries. In the developed countries, the foreign banks have lower profitability than domestic banks, but the situation is exactly the opposite in developing countries, where the foreign banks have higher profitability than domestic banks. In addition, the well-capitalized banks have higher profitability and lower future bankruptcy costs. Their analysis also indicates that a higher ratio of loans to assets causes lower profitability. Equity to assets affect return on equity negatively but affect the return on assets ratio positively. Furthermore, the bank's total assets and national income have a positive relationship with the equity ratio, and the return on equity and return on assets have a negative relationship with the ratio of deposits to financial market capitalization.

Ayaydin and Karakaya (2014) find that there is not much difference between the function of capital in the banking sector and the function of capital in other for-profit institutions. Bank capital has four essential functions; it absorbs losses, increases depositor's confidence, informs bank owners about how much risk they are assuming, and indicates the degree to which this least expensive financing method has been used. The recent credit crisis has hinted that when the bank capital is low, more completely understanding the determinants of bank profitability and risk is more important. They

also find that the relationship between bank profitability and risk has become a reason for concern. In their paper, they analyze the determinants of bank profitability and also explain its relationship with capital and risks. For Turkey, the banks provide the most significant role in providing funds to companies.

Macit (2012) believes that the business cycle has a positive impact on profits, and the financial market structure has a significant impact on bank profitability. He investigates the macroeconomic determinants of bank profitability in Turkish banking sector. The ratio of equity to total assets has a positive relationship with return on assets, but it has a negative relationship with return on equity. Among the macroeconomic determinants of bank profitability, both foreign exchange rate and real interest rate have a positive influence on bank performance. In addition, the regulation of reserve requirements and capital-asset ratios have an important impact on the net interest margins of banks. Furthermore, he also concludes that bank size, business type, and ownership type could impact the profitability. The larger bank size, the more diversified its activities, and private ownership could give a rise to higher profitability.

Previous studies that find a positive correlation between the determinants of capital levels and bank profitability include: Aliza (2010), Ameer and Mhiri (2013), Ayadi and Boujelbene (2012), Ben Naceur and Goaid (2008), Bodla et al. (2006), Bourke (1989), Cooper (2012), Delpachitra & Lester (2013), Garcia-Herrero et al. (2009), Hwa & Yang (2010), Javaid et al. (2011), Kadir et al. (2013), Khrawish (2011), Lee and Hsieh (2013), Leung et al. (2003), Limon (2013), Malhotra & Singh (2009), Mamatzakis and Remoundos (2003), Masood et al. (2012), Muhamad & Warninda (2014), Muhammad Ali (2015), Ongore and Kusa (2013), Pasiouras and Kosmidou

(2007), Punita (2011), Rehana & Irum (2011), Samad (2015), Seenaiyah et al. (2015), Shehzad & De (2013), Shin & Brian (2011), Sufian (2009) Sufian and Chong (2008), Sufian & Parman (2009), Tan & Floros (2014), Timewell & Stephen (2010), Van Ommeren (2011), Vogiazas & Alexiou (2013), William & Michael (2002), Zimmerman (1996). Studies that show a negative correlation between capital levels and bank profitability include: Aladwan (2015), Bernard et al. (2010), Buck (2014), Chronopoulos et al. (2012), Delpachitra & Lester (2013), Ellie & Malcolm (2000), Guru et al. (2002), Hartwell (2015), Hasan & Ibrahim (2014), Kosmidou et al. (2005), Legorano (2012), M. Sükrü Erdem (2010), Macit, 2012, Maredza (2014), Mitja Čok & Marko Košak (2008), Mohammed & Tony (2006), Muhammad et al. (2012), Nessib (2016), Ozkan et al. (2014), Poposka & Trpkoski (2013), Ruiz et al. (2016), Saeed (2014), Samina & Ayub (2013), Saubert (2003), Schiniotakis (2012), Scholtens et al. (1999), Sehrish et al. (2011), Spathis et al. (2002), Soyly & Durmaz (2013), Turgutlu (2014), Ugoani (2016). In other studies that there is not obvious relationship between the determinants of capital levels and bank profitability. Studies with this finding include: Al-Jafari & Alchami (2014), Flamini et al. (2009), Francis (2013), Goddard et al. (2004), Heffernan & Fu (2008), Kanas et al. (2012), Lee & Hsieh (2013), Molyneux & Thornton (1992), Pasiouras & Kosmidou (2007), Mirzaei & Mirzaei (2011), Naseem et al. (2012), Perera (2013), Raza et al. (2013), Riaz (2013), Short (1979), Staikouras & Wood (2004), Tan & Floros (2012), Turgutlu (2014), Wahidudin et al. (2013).

Cerci et al. (2012) investigate many variables that affecting the determinants of Turkish commercial bank profitability. They find that the literatures of this area are kind of comprehensive, and these studies are expected to contribute to the literature through

the updated period and the frequency of the financial data. In their study, bank profitability and the net interest margin of Turkish commercial banks are analyzed and examined based on the analysis of credit risk, liquidity risk, banking service diversification and administrative activities. In terms of the factors affecting the Turkish bank profitability, they analyze a large number of collected financial data, and those data materials are from the reports of Banking Regulation and Supervision Agency (BTSA).

Al-Jafari & Alchami (2014) concentrate on analyzing the internal variables and external variables that affect commercial bank profitability in Syria. The internal determinants include management efficiency, liquidity risk, credit risk, capital size, risk control management and bank size, etc. The external determinants that influence bank profitability includes inflation, gross domestic product growth rate, ownership structure, and ownership, etc. These external determinants reflect the financial market environment, and the macro economic environment influences the performance of financial institutions, especially the banking sector.

There are many previous studies to explore the internal and external determinants of commercial bank profitability. These include Bourke (1989), Delpachitra & Lester (2013), Demirguc-Kunt & Huizinga (2000), Hwa & Yang (2010), Kadir et al. (2013), Leung et al. (2003), Limon (2013), Malhotra & Singh (2009), Masood et al. (2012), Molyneux & Thornton (1992), Muhamad & Warninda (2014), Muhammad Ali (2015), Punita (2011), Rehana & Irum (2011), Samad (2015), Seenaiyah et al. (2015), Shehzad & De (2013), Shin & Brian (2011), Short (1979), Sufian & Parman (2009), Tan & Floros (2014), Timewell & Stephen (2010), Vogiazas & Alexiou (2013), William & Michael

Antoniou (2008) concludes that the concentration ratio in Turkish banking system

was around 65% in 2010 (the result was from the calculation of six banks). And the same ratio increase to 89% when calculated for 12 banks. When the deposits increase in the banking sector of Turkey, the equity ratio has a positive impact on the bank profitability, but the asset size negatively influences the Turkish bank profitability. For these results, it can be seen that the traditional structure conduct-performance hypothesis is confirmed. The traditional structure hypothesis is that market concentration has a positive relationship with commercial bank profitability in Turkey.

In addition to other countries' banking sectors, the 2008 global financial crisis also affected the Turkish banking sector. Because of successful risk control management, the risk diversification of the banking sector, and the effective measures of bank supervisors, the Turkish banking sector largely avoided the crisis (Alexander, 2011).

Ayaydin and Karakaya (2014) analyze the determinants of Turkish bank profitability for the period of 2001-2010. Bank failures arise mainly from low levels of liquidity and poor asset quality. Particularly in the period of financial turbulence, in order to reduce and even avoid risks, the financial institutions may think about diversifying portfolios and increase their liquid holdings. A high accumulation of unpaid loans may produce lower returns to the banks. A large amount of equity may produce the low costs and eventually increase the expected returns.

In terms of the determinant of bank profitability, another vital factor is expenses. There are some arguments about expense factor. Some researchers (Bourke, 1990; Delpachitra & Lester, 2013; Hwa & Yang, 2010; Kadir et al., 2013; Khrawish, 2011; Lee and Hsieh, 2013; Limon, 2013; Malhotra & Singh, 2009; Masood et al., 2012; Muhamad & Warninda, 2014; Punita, 2011; Rehana & Irum, 2011; Samad, 2015; Shehzad & De,

2013; Shin & Brian, 2011; Sufian & Parman, 2009; Timewell & Stephen, 2010; Vogiazas & Alexiou, 2013; William & Michael, 2002) think the lower expenses in financial institutions could increase efficiency. However, others (Hartwell, 2015; Hasan & İbrahim, 2014; Kosmidou et al., 2005; Legorano, 2012; M. Sükrü Erdem, 2010; Macit, 2012, Maredza, 2014; Mitja Čok & Marko Košak, 2008; Mohammed & Tony, 2006; Molyneux & Thorton, 1992; Poposka & Trpkoski (2013), Ruiz et al., 2016; Saeed, 2014; Samina & Ayub, 2013; Saubert, 2003; Schiniotakis, 2012; Soylu & Durmaz, 2013; Turgutlu, 2014; Ugoani, 2016) disagree with this opinion. They think that the level of bank profitability depends more on human capital. The qualified staff could improve the efficiency more than other factors.

Hasan and İbrahim (2014) follow the research of Demergüç-Kunt and Huizingha (2001) and Demergüç-Kunt et al. (2004) in examining the determinants of commercial bank interest margin and profitability. Their research broadens the existing findings. First of all, they use bank data for Turkey in the period of 1895-2005 (they ignore the macroeconomic indicators in their research). They provide much statistical analysis on banks' net interest margin and profitability. Second, they use panel data regression analysis to test the potential the determinants of Turkish banking profitability. The result of this step is that a set of internal factors of banks' net interest margin and profitability are included. The internal factors they tested include overhead, interest-bearing assets, and equity. Third, when they analyze the influence of bank performance, they use two macroeconomic determinants, inflation & growth, and three financial structure determinants, market size, bank size, and concentration respectively. They intend to use these internal factors to constrain the influence of external factors on bank profitability. In

their research paper, they test several hypotheses. The hypotheses are relevant to the financial reform that influenced the Turkish banking profitability.

Heffernan & Fu (2008) broaden the range of study to analyze the determinants of bank profitability. They do not just focus on a single country. They think that the research could apply return on assets, return on equity, and interest margin to measure the determinants of bank performance. In their study, they assess the influence macroeconomic variables and bank financial ratios. Especially when testing the performance of European banks, they find a weak relationship between the profitability-measure return on equity and bank size. Only the banks of United Kingdom have a positive relationship between the profitability and aspects of the balance-sheets. Following Athanasoglou et al. (2005), they use return on assets or return on equity measures to analyze the profitability. They find a positive long-term correlation between industry concentration and bank profitability. The loan to assets ratio has a positive relationship with return on assets as well.

Demirguc-Kunt & Huizinga (1999) use ex ante and ex post spreads to examine the profitability of bank intermediation. They find that the ex ante spread is from the difference between the contractual rates and rates paid. But the ex post spread is from the difference between the actual interest revenues of the banking sector and the actual interest expenses of the banking sector. The ex ante spread is different from the ex post spread in the loan defaults. Compared to the ex ante spread, the ex post spread is better because it could reduce the probability of defaults. In addition, the data of ex ante spread are not totally consistent, because that data are generally from the aggregate industry and are collected from all kinds of sources. For these reasons mentioned above, they focus on

ex post interest spreads in their research rather than the ex ante interest spreads. In the end of the research, they describe a tendency of a bank that has a high equity ratio to have a high return on assets and low return on equity. Banks that have a low equity ratio will have a low return on assets and high return on equity.

Many previous studies (Delpachitra & Lester, 2013; Kadir et al., 2013; Khrawish, 2011; Lee and Hsieh, 2013; Limon, 2013; Malhotra & Singh, 2009; Muhamad & Warninda, 2014; Punita, 2011; Samad, 2015; Shin & Brian, 2011; Sufian & Parman, 2009; Vogiazas & Alexiou, 2013; William & Michael, 2002) analyze bank growth and bank profitability separately, but few studies identify the relationships between growth and profitability. In other words, few researchers directly test the correlation between the growth and bank profitability. In the research of Goddard et al. (2004), the researchers test the interactions between the growth and bank profitability. The data they used are from around 600 banks located in q major European Union countries. When they analyze the growth and dynamics of bank profitability, they also add two indicators, Structure-Conduct-Performance paradigm, and persistence of profit. At the end of the research, they use the dynamic panel regressions to assess the profit equations.

In the area of profitability and efficiency, an important ratio is cost and efficiency to income ratio. Compensation, administrative cost, property cost, and marketing cost are included in the non-interest expenses. If the numbers are high, they indicate the efficiency of the banking sector is less, and vice versa. The relationship between non-interest expenses and profitability is almost always negative (Almumani, 2013; Bhatia et al., 2012; Bodla et al, 2006; Bourke, 1989; Cerci et al., 2012; Dietrich & Wanzenried, 2011; Francis, 2013; Heffernan & Fu, 2008; Garcia-Herrero et al. 2009; Karimzadeh et al.,

2013; Kosmidou et al., 2005; Malhotra & Singh, 2009; Mamduh et al., 2013; Muhamad & Warninda, 2014; Olson & Zoubi, 2011; Pasiouras & Kosmidou, 2007; Punita, 2011; Rachdi, 2013; Rehana & Irum, 2011; Sastrosuwito & Suzuki, 2012; Trujillo-Ponce, 2013; Turgutlu, 2014; van Ommeren, 2011, William & Michael, 2002). Some studies (Ali et al., 2011; Flamini et al., 2009; Hall, 2007; Hwa & Yang, 2010; Lee, & Hsieh, 2013; Lee & Kim, 2013; Sufian & Chong, 2008; Sufian & Parman, 2009; Vong & Chan, 2009) fail to show that non-interest expenses are relevant to profitability. The results are mixed in some studies (Mamatzakis & Remoundos, 2003; Tregenna, 2009; Schiniotakis, 2012).

Loan-to-total assets ratio is a liquidity measure, and it is widely used to measure liquidity. Compared to other components of banks' asset portfolios, loans are relatively less liquid. Hence, the higher the values of this ratio, the less the liquidity will be. Loan-to-total assets ratio is positively related to the bank profitability because the loans get a higher rate of return than secure assets. The administrative costs of loans and transaction costs of loans could erode this advantage of high rate of return. When the banks' credits are under the standard or the situation of economy is not prosperous, large loans will default, and the loan portfolio could reduce the bank profitability. Through reducing the insolvency risk costs, high liquidity could increase bank profitability. There are many studies find that large amounts of loans increase bank profitability. These include Aliza (2010), Bodla et al. (2006), Delpachitra & Lester (2013), Francis (2013), Garcia-Herrero et al. (2009), Gul et al. (2011), Hwa & Yang (2010), Kadir et al. (2013), Karimzadeh et al. (2013), Lee (2012), Limon (2013), Malhotra & Singh (2009), Mamatzakis and Remoundos (2003), Masood et al. (2012), Olson and Zoubi (2011), Punita (2011), Ramadan et al. (2011), Rehana & Irum (2011), Sastrosuwito and Suzuki (2012), Shehzad

& De (2013), Shin & Brian (2011), Sufian and Habibullah (2009), Timewell & Stephen (2010), Trujillo-Ponce (2013), Vogiazas & Alexiou (2013), William & Michael (2002), and Zimmerman (1996). In other studies, the size of credit portfolio is negatively related to bank profitability (Aladwan, 2015; Aburime, 2008; Bernard et al., 2010; Buck, 2014; Chronopoulos et al., 2012; Demirguc-Kunt & Huizinga, 1999; Delpachitra & Lester, 2013; Ellie & Malcolm, 2000; Guru et al., 2002; Hartwell, 2015; Hasan & Ibrahim, 2014; Heffernan & Fu, 2008; Lee & Hsieh, 2013; Legorano, 2012; M. Sükrü Erdem, 2010; Maredza, 2014; Mirzaei & Mirzaei, 2011; Mitja Čok & Marko Košak, 2008; Mohammed & Tony, 2006; Naseem et al., 2012; Ozkan et al., 2014; Raza et al., 2013; Samina & Ayub 2013; Saubert, 2003; Schiniotakis, 2012; Sufian & Noor, 2012; Ugoani, 2016; Vong & Chan, 2009; Wahidudin et al., 2013). In addition, there are many studies report that there is no obvious relationship between the size of credit portfolio and the bank profitability (Al-Jafari & Alchami, 2014; Ali et al., 2011; Athanasoglou et al., 2006; Ayadi & Boujelbene, 2012; Ayaydin & Karakaya, 2014; Ben Naceur & Goaid, 2008; Cerci et al., 2012; Chantapong, 2005; Javaid et al., 2011; Kanas et al., 2012, Lee, 2012; Liu & Wilson, 2010; Rachdi, 2013; Ruiz et al., 2016; Saeed, 2014; Sehrish et al., 2011; Spathis et al., 2002; Soylu & Durmaz, 2013; Tan & Floros, 2012).

Economic growth is a vital factor influencing bank profitability. Through reducing loan default rates, increasing loans, and charging more bank service fees, it can increase bank profitability. More specifically, gross domestic product is positively related to bank profitability. This conclusion has been verified by a number of studies (Ali et al., 2011; Aliza, 2010; Bodla et al., 2006; Chronopoulos et al., 2012; Delpachitra & Lester, 2013; Dietrich & Wanzenried, 2011; Goddard, et al., 2004; Gul et al., 2011; Gul et al., 2011;

Karimzadeh et al., 2013; Lee & Kim, 2013; Limon, 2013; Rehana & Irum, 2011; Shen et al., 2009; Trujillo-Ponce, 2013; Van Ommeren, 2011; Vejzagic & Zarafat, 2014; Vogiazas & Alexiou, 2013; William & Michael, 2002). However, in some other studies, the relationship between gross domestic product and bank profitability is shown to be negative (Al-Jafari & Alchami, 2014; Aladwan, 2015; Ayaydin & Karakaya, 2014; Legorano, 2012; Liu & Wilson, 2010; M. Sükrü Erdem, 2010; Staikouras & Wood, 2004). However, few studies report that there is no relationship between gross domestic product and bank profitability (Ayadi & Boujelbene, 2012; Francis, 2013; Kiganda, 2014; Poposka & Trpkoski, 2013; Ramadan et al., 2011; Sufian & Habibullah, 2009; Sufian & Noor, 2012)

The aim of the Chaudhry et al. (1995)'s study is to test assess the determinants of bank profitability and analyze the relationship between capital and bank profitability. They use bank-specific and country-specific variables. They collect a large number of financial data from 28 Turkish banks and use Two-Step System Generalized Method of Moments technique to analyze the bank profitability and risk. In the process of investigation and analysis, they find that the influence of increasing bank capital on risk is both positive and negative. For these two influences, the positive influence supports the regulatory hypotheses and negative influence supports moral hazard hypotheses. At the end of their research, they put forward some suggestions for Turkish banking sector. The authorities of Turkey should know that by using just only one profitability factor they could develop a completely wrong policy. Second, the supervisors and regulators of Turkish banking sector should be mending the financial policies of banking sector profitability to improve the performance of Turkish banking system.

There are large literature researches in the macroeconomic variables such as real gross domestic product growth rate, inflation rate, etc. Antoniou et al. (2008) reports that inflation impact on bank profitability depends on whether the banks' management fully predict the inflation level. If the banks' management departments could fully predict the inflation rate, it means that the banks could properly adjust interest rates for increasing the revenues faster than costs to get more profits. Moreover, Bourke (1989) indicates that inflation rate is positively related to bank profitability. Through analyzing the determinants of bank profitability for the period of 1985 to 1990, Molyneux and Thornton (1992) also get the same conclusion that there is a positive relationship between inflations rate and bank profitability. However, in the study of Demirguc-Kunt and Huizinga (1999), they think that if the environment is inflationary, the profitability is less in developing countries, especially if the capital ratio is very high. In the developing countries, bank revenues increase slower than bank costs. In the later study of Demirguc-Kunt and Huizinga (2000), they find that inflation is positively related to profitability. It means that if the environment is inflationary, the banking sector could increase profits. Following the research of Demirguc-Kunt and Huizinga (1999), Abreu and Mendes (2000) indicate that in many European countries, the inflation rate is negatively correlated to bank profitability. In addition, Afanasieff, Lhacer, and Nakane (2002) find that macroeconomic factors are significant in determining bank profitability. But in Malhotra & Singh (2009)'s study, it shows there is no relationship between macroeconomic variables (especially inflation rate) and bank profitability. Another study conducted by Vong and Chan (2006) analyzed the influence of macroeconomic variables, bank characteristics, and capital structure on the performance of Asian banking sector.

They conclude that compare to macroeconomic variables, only the inflation rate has a great correlation with the bank profitability. Pasiouras and Kosmidou (2007) test many kinds of determinants of bank profitability, and the data source is from the period of 1995 to 2000 crossing 18 European countries. In their study, the return on assets is a dependent variable. They run regression separately for domestic and foreign commercial banks. They find that there is a positive relationship between inflation rate and bank profitability for domestic commercial banks, but the relationship is negative between inflation rate and bank profitability for foreign commercial banks, so they think that domestic commercial banks should adjust interest rates to anticipate level of inflation rate but the foreign commercial banks should not do it. Li (2007) analyze the influence of macroeconomic factors on the bank sector profitability in the United Kingdom. They find that the macroeconomic factors such as inflation rate, has no important influence on bank profitability. In the research of Ramadan et al. (2011), they analyze the relationship between bank performances of the Jordanian commercial banks and examine the characteristics of internal and external indicators. The conclusion indicates that the inflation rate has a positive but not significant influence on return on assets and return on equity. They think that the commercial banks could lose the opportunity to get benefits from an inflationary environment because those commercial banks do not have the ability to anticipate inflation levels. When excluding the variable of gross domestic product growth rate, Neely and Wheelock (1997) find that there is a positive relationship between the economic growth rate and bank performance. Similarly, in the study of Demirgüç-Kunt and Huizinga (1999), they indicate a positive correlation between the business cycle and bank performance. In contrast, in the study of Ben Naceur (2003), it shows that there

is no influence between the economic growth and banks profitability.

Soylu & Durmaz (2013) explore the determinants of the commercial bank profitability in Turkey. The results reveal that the performance of the domestic banks has been unstable within around two decades because of the negative profits. In their study, they also emphasize that the capital strength, non-interest income, non-income expense, inflations rate, net interest margin, return on assets, and money supply growth are all significant determinants of bank profitability. However, the size of the Turkish economy and loan loss provision do not have any important influence on Turkish bank profitability.

MEASURES OF BANK PROFITABILITY AND DETERMINANT VARIABLES

In this section, measures of bank profitability and a description of the independent variables will be described.

Dependent Variables: Measures of Profitability

Return on Assets

My *return on assets* measure is net income divided by total assets. The determinant ratios for each bank year t is paired with the return on assets for the succeeding year, $t + 1$. This is done so that our model reflects the determinant ratios relationship with the following year's profitability. This way our model provides a predictive, forward-looking perspective on the bank's performance. Knowledge of how a variable affects future profitability can be used to guide current decision-making to enhance future profitability.

Independent Variables: Determinants of Profitability

Equity/Assets

Equity to assets (EA) ratio is one of capital ratios I used in this thesis. It is used to assess a company's financial leverage and analyze what percentage of a firm's assets the investors have (Olson & Zoubi, 2011). Relative to the total assets, this ratio reflects a bank's capital strength and financial solvency. The higher the ratio, the lower the interest expenses are and the less leveraged the company is. According to the different stages of the business cycle, the relationship between this ratio and bank profitability may vary (Berger, 1995). For the investors, they expect that there is a positive relationship to profitability.

Total Deposit/Total Assets

The *total deposit to total assets* (TDTA) ratio is used to assess a bank's reliance upon depositor funds to provide its capital base. Depositor funds typically come with a lower cost to the bank than, say, funds borrowed in financial markets. Deposits are a low-cost source of funding. Thus, they should enhance a bank's profitability.

Total Loans and Receivables/Total Assets

The *loans and receivables to assets* (TLRTA) ratio is a risk ratio to measure the sum of the total loans and receivables as a percentage of total assets. Some economists regard this ratio as a measure of liquidity (Golin, 2001). The higher the ratio, the lower the liquidity of the bank is and the bank may have a high default risk, because the amount of loans and receivables are a lot.

Net Interest Income/Total Operating Income

Net interest income is the difference between interest revenue and expenses. The revenue is derived from the bank's lending activities and the expenses are associated with bank's liabilities on which it must pay interest. Operating income measures the amount of profit generated from the business's operations through subtracting operating expenses (Compustat, n.d.). The *net interest income to total operating income* (NIIOI) ratio is to be used to measure the net interest income as a percentage of total operating income.

Non-Interest Income/Total Assets

The non-interest income to total assets (NIITA) ratio is given as a percentage by non-interest income over total assets. In recent decade years, the non-interest income has been increasingly significant. To some extent, the interest income may be more stable than the non-interest income, but the non-interest income provides a diversification of income streams to bank's financial structure. We do not have a specific expectation of its correlation with the profitability of banking sector.

Provision for Loan Losses/Total Assets

This ratio, the provision for loan to total assets (PFLTA), reflects the expectation that certain loans have gone bad. Therefore, the decline in the value of such loans should be reflected in a charge against income during the accounting period in which the provision is made. To a certain degree, the provision for loan could cover some unexpected defaults on non-performing loans by borrowers (Olson & Zoubi, 2011). The use of the provision

for loan reduces net income and earnings per share. From this point of view, it would have a negative relationship with profitability.

Liquid Assets/Total Assets

Liquid assets to total assets (LATA) ratio is a crucial financial management tool to analyze that the extent the liquid assets constitute total assets. Some depository institutions hold little cash, and they are willing to put liquid assets into more productive use (Compustat, n.d., Golin & Delhaise, 2013). The greater the liquid asset holdings the more conservative the bank's financial position. Should a need for cash arise to meet obligations, the greater the likelihood of being able to meeting the need. However, liquid assets tend to earn a low rate of return. Therefore, a bank with a high level of liquid assets may find its profitability lessened.

Consumer Loans/Total Loans

The consumer loans such as student loans or auto loans are included in the commercial bank's total loans, and they are a type of commercial bank loans. The *consumer loans to total loans* (CLTLR) ratio indicate the extent of consumer loans in the total loan portfolio.

The following section examines and describes the financial data we collected and the methodology we used. The next section details our findings. The final section presents the discussion and conclusion of our findings.

Table 1. Definition of Variables.

Dependent Variables	Description
Net Profit to Total Assets	$\frac{\text{Net Profit}}{\text{Total Assets}}$
Independent Variables	
Total Equity to Total Assets	$\frac{\text{Total Equity}}{\text{Total Assets}}$
Total Deposit to Total Assets	$\frac{\text{Total Deposit}}{\text{Total Assets}}$
Total Loans and Receivables to Total Assets	$\frac{\text{Total Loans and Receivables}}{\text{Total Assets}}$
Net Interest Income to Total Operating Income	$\frac{\text{Net Interest Income}}{\text{Total Operating Income}}$
Non-Interest Income to Total Assets	$\frac{\text{Non – Interest Income}}{\text{Total Assets}}$
Provision for Loan to Total Assets	$\frac{\text{Provision for Loan}}{\text{Total Assets}}$
Liquidity Assets to Total Assets	$\frac{\text{Liquidity Assets}}{\text{Total Assets}}$
Customer Loans to Total Loans	$\frac{\text{Consumer Loans}}{\text{Total Loans}}$

METHODOLOGY AND DATA

The main goal of this paper is to find bank specific determinants of profitability among Turkish banks. We employ a number all predictor variables, some of which have not been employed in studying Turkish banks.

DATA

Our empirical investigations are based on bank-specific data, detailed balance sheet and income statement data from 29 commercial banks in Turkey from 2005 to 2015. We do not include investment and development banks because they derive significant revenues from non-banking operations. The data are obtained from The Banks Association of Turkey. Financial statement ratios based upon Banks Association data was generously provided to us by Serhat Yuksel.

Descriptive statistics for the variables used are presented in Table 2. For each variable, Table 2 shows observations, mean, standard deviation, minimum and maximum value. Values on our dependent variable, return on assets, are higher for Turkish banks than for those in other studies. While Turkish banks had a meeting return on assets of 1.22%, values in American, Swiss, and Spanish samples were .88%, .063%, and .99% (Grove, DeBruine, Lee, & Maldonado, 2014). Thus, Turkish banks enjoy a relatively high level profitability.

On another variable shared with other banking studies, the equity to assets ratio, the mean value for Turkish banks was much higher than for American banks. The mean value on this ratio for American banks was 9.09%. For Turkish banks, it was 16.57%. Following a banking crisis in 2002, Turkish regulators sharply raised required equity of Turkish banks.

This heightened equity level has been invoked to explain holiday made it through the 2008 – 2009 financial crisis relatively unscathed. It is interesting that both the equity to asset levels and return on assets of Turkish banks are especially elevated.

METHODOLOGY

To investigate the effects of bank-specific determinants of bank profitability we use a regression approach. We start with a fixed effects model which removes the effects of individual bank on relationships between our determinants and dependent variable. We then moved to an ordinary least squares regression and finally to a time and fixed-effects model. The results we report on are from this latter, most methodologically sophisticated regression. It controls for individual bank and individual year effects on our dependent variable.

The correlation matrix all our variables is in Table 3.

Table 2. Descriptive Statistics.

	Obs	Mean	Std. Dev.	Min.	Max
<i>Dependent Variable</i>					
NPTA	246	1.220	1.220	-2.660	8.027
<i>Independent Variables</i>					
TDTA	246	17.005	17.005	0.013	87.885
TLRTA	246	19.289	19.289	0.000	84.716
NIIOI	246	23.242	23.242	-97.389	137.701
NIITA	246	3.518	3.518	-2.560	43.979
PFLTA	246	1.571	1.571	0.000	21.736
LATA	246	20.399	20.399	1.388	94.305
CLTLR	246	18.482	18.482	0.000	69.675
EA	246	16.569	16.350	5.219	8.027

Table 3. Correlations

	EA	TDTA	TLRTA	NIIASPTOI	NIITA	PFLORLTA	LATA
EA	1.000						
TDTA	-0.724	1.000					
TLRTA	-0.666	0.547	1.000				
NIIOI	0.174	-0.185	-0.046	1.000			
NIITA	0.121	-0.057	-0.186	-0.795	1.000		
PFLTA	0.149	-0.026	-0.023	-0.096	0.007	1.000	
LATA	0.773	-0.558	-0.817	0.110	0.146	0.049	1.000
CLTLR	-0.293	0.372	0.276	0.050	-0.088	0.192	-0.166
NPTA	0.129	-0.132	-0.270	-0.140	0.339	0.116	0.148

RESULTS

Table 4 shows the regression results for our profitability measure, return on assets. Three of our predictor variables have a significant effect upon return on assets in the definitive time and fixed effects model. The ratio, net interest income scaled by total operating income, is positively related return on assets. This suggests that banks whose interest income outpaces interest expense by a significant margin are most profitable.

The strongest relationship found was between non-interest income scaled by total assets and profitability. This suggests that banks that break free from the traditional banking approach making money through lending activities are rewarded.

The third significant finding was that consumer loans scaled by total loans was negatively related to profitability. This suggests that focusing upon consumer loans can lower a bank's profitability. It may be that consumer loans are less profitable than other banking activities.

Table 4. Regression Results

	Fixed Effect Model	OLS	Time & Fixed Effect Model
Equity/Assets	-0.009 (-0.013)	-0.010 (-0.012)	-0.009 (-0.012)
Total Deposit/Total Assets	0.014* (-0.007)	-0.006 (-0.006)	0.011 (-0.006)
Total Loans and Receivables/Total Assets	-0.022** (-0.008)	-0.027*** (-0.006)	0.002 (-0.009)
Net Interest Income/Total Operating Income	0.026*** (-0.005)	0.019*** (-0.006)	0.023*** (-0.005)
Non-Interest Income/Total Assets	0.195*** (-0.036)	0.211*** (-0.038)	0.165*** (-0.036)
Provision for Loan/Total Assets	0.053 (-0.085)	0.125 (-0.093)	0.050 (-0.086)
Liquidity Assets/Total Assets	-0.018* (-0.009)	-0.013 (-0.007)	-0.011 (-0.009)
Consumer Loans/Total Loans	-0.026*** (-0.007)	0.008* (-0.004)	-0.031*** (-0.006)
Year Dummy			
2005			0.000 (.)
2006			0.520* (-0.221)
2007			-0.103 (-0.228)
2008			0.338 (-0.229)
2009			0.070 (-0.237)
2010			-0.243 (-0.253)
2011			0.167 (-0.254)
2012			-0.476 (-0.259)
2013			-0.400 (-0.262)
2014			-0.730** (-0.275)
_cons	0.758 -0.802	1.680* -0.704	0.026 (-0.782)

legend: * p<0.05; ** p<0.01; *** p<0.001

CONCLUSIONS

In this study of profitability among Turkish banks we found that three financial statement ratios using bank accounts are significantly related to profitability as measured by return on assets. The better the balance between interest income and interest expense scaled by total operating income, the greater is the bank's profitability. Income from non-traditional banking activities (non-interest income) strongly contributes to bank profitability. Consumer loans as a proportion of total loans are negatively related to bank profitability

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Appendix to the Report on EU Banking Structures

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