DETERMINANTS OF PROFIT ABILITY IN BANKING: AN INTERNATIONAL COMPARATIVE STUDY OF ISLAMIC, CONVENTIONAL AND SOCIALLY RESPONSIBLE BANKS

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Abstract

This study aims to find the determinants of profitability in Islamic, conventional, socially responsible banks covering the period 2005-2012. This paper applies profitability's indicators as the return on assets (ROA), return on equities (ROE) and net interest margin (NIM) ratios. The statistical approach to find factors of profitability is OLS. The highest ROA and ROE were attained by conventional banks, whereas, SRBs scored the lowest ROA and ROE. By contrast, the SRBs scored the highest NIM measures, while conventional banks have the minimum NIM ratios. Based on Islamic banks' results, Islamic banking was affected positively by size and z-score while, capital ratio, GDP and inflation decreased earnings significantly. Also, conventional banks were more profitable with higher size, capitalisation, loans and z-score. Finally, SRBs earnings have positive and significant relationships with z-score and market capitalisation growth. On the other side, foreign, domestic and public ownerships impacted the profits badly. According to industry-specific variables, market capitalisation development supported the profitability ratios whereas, GDP growth reduced the profits. This study helps managers and policy makers in banking sector to increase the profits with lower risks by concentrating on positive factors.

Keywords: Islamic Banks, Conventional Banks, Socially Responsible Banks, Bank's Profitability, Return on Assets, Return on Equity, Net Interest Margin

1. INTRODUCTION

Studying the profitability allows the policy makers to determine the financial performance. According to the recent literature review, most researchers have calculated the profitability through return on assets (ROA) or return on equities (ROE) or using both indicators such as Beck et al. (2013). However, banks' profits are attained through charging fees on their services and through interest. As a result, more profitable banks are more efficient, competitive and stable (Apergis, 2014). In fact, determinants of profitability can be internal (bank-specific variables) and external (macroeconomic variables). However, focusing on determinants of profitability simplifies knowing the reasons behind any loss or profits which lets the senior managements in banks to find alternative plans if there is any drop in returns. In case of rising in profits, banks are able to make more earnings by focusing on variables that increase profits. According to the literature review, there is no study concentrated on profitability's determinants comparing Islamic, conventional and socially responsible banks. This study finds the relationship between the profitability indictors (ROA and ROA which can be dependent variables) and the internal and external variables (determinants of profitability which can be independent variables) in the banking sector. However, the following section explains a brief about Islamic banking system.

There are two resources of the Sharia law according to Islamic Development Bank (2015) as follows:

1. The primary sources: these sources must be the holy Quran and Sunnah.
2. The secondary sources: these are the interpretations (Ijtihad). Islamic banks have to follow the rules of the above sources.

The operations in Islamic banks are based on Islamic law (Sharia). Chong and Liu (2009) concluded that Islamic banks can be defined banks as similar to conventional banks, but there are four principles that Islamic banks follow:

1. The prohibition of uncertainty (Gharar).
2. The prohibition of interest (Riba).
3. Money is not a commodity.
4. The prevalence of justice.

In fact, conventional banks do not follow all of the above principles.

To know more about Islamic banking, Islamic banking divided into ten forms based on New Horizon Magazine (published by the Institute of Islamic Banking and Insurance, 2015) as follows:

1. Mudharabah (profit sharing): this operation happens when a bank gives whole funds to the investors and shares the resulting profit and one partner (bank or customer) can be responsible for any potential losses. There is a fixed percentage to the bank written in the contract between the investor and the bank.
2. Mousharaka (joint venture): this operation happens when a bank represents a shareholder and the losses and profits can be shared between the borrower and the bank depends on the amount of equity of the company's assets.
3. Mourabaha (commercial funding with profit margin): this operation happens when a bank buys

certain merchandise to a customer then the bank can achieve a fixed margin profit determined in the contract or the bank can share the losses and profits with the client based on the investment. The payment can be in the future whether paying as instalments or paying the whole amount of money at once. The time of payment and goods have to be determined.

4. Ijar (rent): is a lease contract that allows customers of banks using bank's fixed assets or services for an agreed specific price and period under Sharia law conditions.

5. Wadeea'a (safe keeping): this occurs when a customer deposit amount of money in Islamic bank for safe keeping. There is no interest on this deposit operation.

6. Gardh Hassan (interest-free loans): this is a completely an interest-free loan. In this case, Islamic bank charge a certain amount of money called loan processing fees.

7. Bai muajjal: is a contract between bank and customer that required goods or services to be specified and following Sharia'a law. The payment is in advance and the goods or services can be reached in the future.

8. Ijar (leasing) that end with ownership: As an example of this case, when bank and customer sharing in buying a house, but bank pays the majority of money. Then, the customer pays rent to the bank for using the house. In this situation, the customer's share (equity) increase and the bank's share decrease. This process happen until the customer owns the property.

9. Sukuk (Islamic bonds): these are financial certificates that prove that the customer is involved in Islamic banking operations to save customers' rights and equity (operations mentioned above).

10. General loans: Islamic law prohibits that money can be borrowed and returned as money. So in this case, banks buy house or car for example to a customer under bank's ownership. The customer then pays to the bank instalments until paying the last amount of money to own the property by customer. In case customer is unable to pay, bank can invest or sell the item.

In conclusion, the Islamic banks operate with interest free rate compared to other types of banks. However, the majority of recent studies on profitability have been on conventional banks due to availability of information compared to the Islamic banks industry which is completely new with little data available. It will be observable that the commercial banks are more than Islamic banks in the sample analysed in this study. In fact, in any country with those two types of banks, the majority are always commercial banks rather than Islamic banks (Bankscope, 2015).

According to SRBs, there are many different names for SRBs: alternative, civic, sustainable, and socially responsible banks. The main concerns regarding socially responsible banks are related to social or environmental (green banks) issues. The following are some examples of the activities of socially responsible banks: to sponsor community events, provide local scholarships, encourage literacy, provide valuable prices for houses, and care about the environment (Global Alliance for Banking on Values, 2015). Many banks have recently followed the approaches adopted by socially responsible banks, so it is very important to focus on this type of bank. Kansal et al. (2014) concludes the corporate social responsibilities (CSR) in six main topics. First topic, corporate concerns community development such as summer or part-time employment for students, mass marriage programs, adopting old age homes. Second, human resources issues e.g. employee loan facilities, employee welfare fund, information about support. Third, product, services, safety and innovation like providing information about the safety of a firm's products. Fourth issue, corporate care about the environment through using recycled items or using environment friendly materials. Fifth, firms try to save energy saving; this can be employed through utilising the alternative resources of energy. Sixth, organisations reduce the emissions of carbon and harmful gases by setting Carbon emission targets. However, referring to socially responsible banks (SRBs) databases on the internet, we can summarise the responsibilities of SRBs as follows:

1. Sponsoring community events.
2. Providing local scholarships.
3. Encouraging literacy.
4. Providing valuable prices for houses.
5. Looking for energy saving.
6. Applying green building strategy.
7. Reducing pollution.
8. Supporting recycling.
9. Defending the human rights and dignity.
10. Launching green funds.

The SRBs characteristics can be as follows:

1. Caring about the environment such as reducing CO_2 emissions and paper consumption.
2. First priority is socially responsible investments; the second priority is profitability.
3. Informing the customers of the results of investments based on transparency.
4. Encouraging the organic agriculture.
5. Focusing on cultural and social issues.

This study displays the relationship between the profitability and its determinants, which was examined first by (Short, 1979). The statistical approach to find the factors of profitability is ordinary least square (OLS) model. In fact, this study makes several contributions to the current literature. Firstly, it is the first study that concerns socially responsible banking system. Secondly, this study contributes in methodology by comparing (foreign, domestic and public) ownership in banking sector, which is very limited in recent studies. Thirdly, according to macroeconomic variables, the global financial crisis's impact on profitability is rarely addressed in the previous researches. Fourthly, comparing Islamic, conventional and socially responsible banks is a contribution to the literature.

The study is organised as follows. Section 2 reviews the previous literature and hypotheses' formulation. Section 3 presents the data and methodology. Section 4 shows and discusses the empirical results. Finally, Section 5 concludes the study.

2. LITERATURE REVIEW AND HYPOTHESES' FORMULATION

2.1. Literature review

Historically, Short (1979) is the pioneer of examining the performance determinants in the banking sector. Short (1979) analysed the association between the banking profitability and banking concentration using a dataset of 12 countries through the period 1972-1974. The result suggests that greater

concentration leads to higher profit rates. Afterwards, Bourke (1989) conducted a study to find the internal and external determination of profitability in Europe, North America, and Australia over the period 1972-1981. Bourke (1989) concludes that a higher degree of market power increases profits.

There are comprehensive studies on financial performance in commercial banks but few comparing Islamic and commercial banks and no study comparing Islamic, conventional and socially responsible banks. There are three main performance indicators used by researchers: return of assets (ROA) used by Apergis (2014) on the US banking sector, return on equities which is utilised by Lee & Kim (2013) on commercial banks in Korea and net interest margin (NIM) employed by Tan & Floros (2012) that focused on the commercial banking sector in China. Some studies used ROA, ROE and NIM such as Liang et al. (2013) on European banking sector. Most studies found the determinants of profitability using statistical models such as OLS (Olson & Zoubi, 2011), fixed effect dummy (Sufian & Habibullah, 2010). This division is arranged as a literature review on profitability in commercial banks and literature review on profitability in Islamic and conventional banks, and then determinants of profitability (ratios) are explained. Based on the researcher knowledge, there is not any study focused on determinants of profitability in socially responsible banking sector hence, this thesis can cover this gap.

Olson and Zoubi (2011) analysed the performance of 83 Islamic and conventional banks in the Middle East and North Africa (MENA) region covering 10 countries. The period is from 2000 to 2008 using ROA and ROE as dependent variables. The statistical relationship between the profitability and its determinants has been found after running random effect regression. The results of the study show that loans intensity, capital ratio, credit risk and inflation impact the ROA. On the other side, the inefficiency ratio calculated as operating expenses to gross income was found to be affecting the ROA negatively. This study contributed that loans intensity and inflation raise the ROE, whereas inefficiency ratio, capital ratio and credit risk are reducing the ROE during the period in the examined MENA banks. Furthermore, foreign banks were found to be achieving more profits than government banks.

Beck et al. (2013) identify size decrease of ROA and ROE in 510 Islamic and conventional banks across 22 countries for the period 1995-2009. In other words, small banks achieve more profits referring to the significant and negative relationship between the size and ROA/ROE over the period. In contrast, the results suggest that an increase in fixed assets leads to a decline in ROE only. In general, the researchers proved that Islamic banks are affected less by financial crisis than conventional banks; also, Islamic banks financially performed and capitalised better than conventional banks during the period. In order to make this study more effective, more determinants could be covered in this study.

Ghosh (2015) examined the determinants of profitability using ROA and NIM as explained variables in 12 MENA countries through the period 2000-2012. The advantage of this study is that the researcher included the Arab Spring (revelations periods). The results confirmed that Arab spring affected ROA and NIM negatively. Regarding to ROA's results, capital ratio impacted ROA positively and significantly while, liquidity had a negative relationship with ROA. The other independent variables (size, capital ratio, ratio of liquid asset to total asset and diversification) were not important to the NIM in MENA countries. The competitive advantage of s Ghosh's (2015) study is including the Arab (revelations) spring, which contributes to the literature strongly. But, neglecting ROE (as a profitability indicator) and industry-specific factors can be disadvantages of this study.

2.2. Hypotheses' formulation

Based on the literature review on profitability, this study examines the determinants of profitability using the highest beneficial internal variables as bank size, capital ratio, loan intensity, credit risk, deposit ratio, age, z-score, foreign, domestic and public ownerships. On the other side, GDP, inflation, market capitalisation and global financial crisis can be examined as external variables.

2.2.1. Internal variables

1. Bank size. Most studies examined size of bank (total assets) as an indicator of profitability such as Petria et al. (2015) who examined the effect of size on performance in 27 European countries over the period 2004-2011. The results suggest that size impacts the ROA positively and significantly. This concludes that banks with higher total assets achieved better profits. The reason for this result could be due to larger banks being more likely to gain profits from economies of scale than smaller banks, with a higher degree of production differentiation and loan diversification. Many studies proposed that size of the bank influences the ROA positivley (e.g., Chronopoulos et al., 2015; Guillén et al., 2014; Bertay et al., 2013), also based on NIM, Liang et al. (2013) and Sufian and Habibullah (2009) found that more assets supported the interest revenues. On the other side, some studies suggested the opposite finding which is smaller sized banks were more profitable (see Căpraru & Ihnatov, 2014; Haan & Poghosyan, 2012; Barry et al., 2011). However, the size of the bank could be unimportant to the financial performance (Ghosh, 2015; Mollah & Zaman, 2015; Al-Musali & Ismail, 2014; Shah & Jan, 2014; Ćurak et al., 2012; Delis et al., 2012; Tan & Floros, 2012; Olson & Zoubi, 2011; Athanasoglou et al. 2008). Therefore, based on these arguments, the first hypothesis is:

H1. There is a significant relationship between bank size and profitability.

2. Capital ratio. A comprehensive number of studies have focused on the relationship between profitability in banking and capitalisation. As an example, Căpraru and Ihnatov (2014) examined the impact of capitalisation in 143 commercial banks for the period 2004-2011 in Romania, Hungary, Poland, Czech Republic and Bulgaria. The results show that the correlation between profitability ratios (ROA and ROE) is positive and significant. Banks with greater capital can invest effectively more than lower capital banks which leads to achieving better profits. This finding is supported by a large number of studies in the banking area (e.g. Ghosh, 2015; Mamatzakis et al., 2015; Apergis, 2014; Shehzad et al., 2013). In contrast, Chronopoulos, et al. (2015) pointed out that capitalisation influences the profitability

negatively and significantly in the US banking sector for more than 17,500 commercial banks over the period 1984-2010. In fact, a few articles found that lower capitalised banks are more profitable than higher capitalised banks (Mollah & Zaman, 2015). According to NIM, most studies went with the idea of higher capitalised banks were able to invest in interests (see, Căpraru & Ihnatov, 2014; Heffernan & Fu, 2010; Sufian & Habibullah, 2009; Claeys & Vennet, 2008; Lanine & Vennet, 2007) while, few studies disagreed with this concept and underlined that increasing capital forced banks to pay more interest expenses (Zhou & Wong, 2008). Based on the recent studies, the second hypothesis can be:

H2. There is a significant relationship between capitalisation and profitability.

3. Loan intensity. Lin and Zhang (2009) investigated the loans impact on financial performance examining 322 Chinese banks through the period 1997-2004. The statistical results indicate that providing more loans leads to higher profits. On the other side, Manlagnit (2011) recommended banks to reduce loans due to increasing profits in Philippines for the period 1990 to 2006. Chronopoulos et al. (2015) agreed with this point of view. Referring to the NIM determinants, not many studies considered loan intensity as a determinant, Sufian and Habibullah (2009), Claeys and Vennet (2008) and Lanine and Vennet (2007) mentioned that involving in lending activities supported the net interest margin positively and significantly. This result occurred due to providing more loans can raise the lending interests (earnings) from clients. Consistent to the majority, the third hypothesis can be formulated as:

H3. There is a significant relationship between lending activities and profitability.

4. Credit risk. Chitan (2012) considered loans to deposits ratio as a negative sign to the ROE ratio for Romanian commercial banks during the period 2004-2011. This means that the growth in lending leads to better ROE ratios (similar to Altunbas & Marques, 2008). In this case banks could find strategies that can link between deposits and loans such as providing more loans with higher interest rates due to intensifying the earnings. Liang et al. (2013) concluded the opposite relationship between NIM and credit risk after examine 194 European commercial banks for the period 2000-2007. In this case, banks had to reduce loans due to achieving better NIM. According to the debate above, the fourth hypothesis can be conducted as:

H4. There is a significant relationship between credit risk and profitability.

5. Deposit ratio: This variable allows policy makers in the banking sector to accept more or fewer deposits. A few studies examined deposit ratio as an independent variable to the profitability such as García-Herrero et al. (2009) who investigated the impact of deposits in China. This study examined 87 commercial banks for the period 1997-2004. The statistical empirical results proposed that deposits intensity could increase the profitability significantly. This result is in line with Claeys and Vennet (2008) who encouraged accepting more deposits due to strengthen the NIM. The banks can provide more deposit interests to attract clients in this case. By contrast, Barry et al. (2011) confirmed that deposits affected the earnings negatively and significantly in the 16 West European countries in the period 1999-2005 for the commercial banking sector. After the discussion above, the fifth hypothesis is:

H5. There is a significant relationship between deposits and profitability.

6. Age of bank. Mirzaei et al. (2013) examined the correlation between age profits for 1929 banks over 1999-2008. They divided their sample into emerging and advanced economies including 40 countries. The fixed effects model underlines that old banks attained more returns in countries with emerging economies. This could be due to older banks having more experience in banking operations than new banks; also, time could allow banks to generate more capitalization which leads to profits. In comparison, new banks had better profitability in advanced economies countries (negative relationship between profitability ratios and age which is consistent with Beck et al., 2005 study). Dietrich and Wanzenried (2011) focused on the Swiss banking sector using data of 372 commercial banks. This study used age as a dummy variable and found that older banks were more profitable (ROA and NIM) than new banks. According to new banks, they increased the return on assets significantly. According to return on equity ratio, older banks (insignificant with ROE) were also found to be more profitable than new banks (significantly increase the ROE). However, Dedu and Chitan (2013) found no impact of age on profitability in Romania for the period 2004-2011. Depending on the arguments above, the sixth hypothesis can be examined as:

H6. There is a significant relationship between age of bank and profitability.

7. Z-score. Mollah and Zaman (2015) consider the Islamic and commercial banking sector in their study examining the determinants of profitability including z-score in 25 countries including 172 banks (86 Islamic and 86 commercial banks) for the period 2005-2011. The association between profitability and z-score was positive and significant in Islamic and commercial banks (similar to Mamatzakis et al., 2015 outcome). This demonstrates that more stability and less default risk encourage banks to achieve more returns. Thus, banks seek to increase capitalisation and profits simultaneously. So, the seventh hypothesis is:

H7. There is a significant relationship between stability of bank and profitability.

8. Foreign ownership. Focusing on foreign ownership, Lin and Zhang (2009), Micco et al. (2007) and Demirguc-Kunt and Huizinga (1999) confirmed that foreign banking concentration improves profits in their studies. On the other side, Dedu and Chitan (2013), Lee and Kim (2013), Dietrich and Wanzenried (2011) and Manlagnit (2011) pointed out that the relationship between profitability ratios and foreign ownership was negative and significant. However, Mirzaei et al. (2013) had a mixed point of view which confirms that foreign ownership could increase (in emerging economies) and decrease (in advanced economies) profits. The ninth hypothesis can be concluded as:

H8. There is a significant relationship between foreign ownership and profitability.

9. Domestic ownership. Regarding domestic ownership, some studies conclude that domestic banks increase the profitability such as Athanasoglou et al. (2008). This contradicts with Flamini et al. (2009) who estimated that domestic ownership decreases the earnings. Hence, the eighth hypothesis can be tested as:

H9. There is a significant relationship between domestic ownership and profitability.

10. Public ownership. Mirzaei et al. (2013) had a mixed point of view which confirms that foreign ownership could increase (in emerging economies) and decrease (in advanced economies) profits. Concerning public ownership, Rumler and Waschiczek (2014) proved that public ownership increases the profitability of Austrian commercial banks for the period 1995-2010. Lee and Kim (2013) and Olson and Zoubi (2011) disagree with this point of view (negative relationship between profitability and public ownership). In general, the relationship between ownership and profitability can encourage or discourage banks' shareholders to invest more or less in banking such as buying or selling shares. In addition, shareholders can operate more branches locally or abroad based on the relationship between ownership and profitability. Based on the recent studies above, the tenth hypothesis summarised as:

H10. There is a significant relationship between public ownership and profitability.

2.2.2. External variables

1. Gross Domestic Production (GDP). Mostly all banks focus on countries with developed economies to achieve economies of scale and scope. Recent studies have underlined that GDP growth enhances ROA/ROE (e.g., Chronopoulos et al., 2015; Guillén et al., 2014; Rumler & Waschiczek, 2014; Bertay et al., 2013; Dedu & Chitan, 2013; Lee & Kim, 2013; Mirzaei et al., 2013; Chitan, 2012; Kutan et al., 2012; Dietrich & Wanzenried, 2011; Houston et al., 2010; Flamini et al. 2009; Pasiouras & Kosmidou, 2007; Boubakri et al., 2005). A few studies have the opposite point of view that GDP development reduces ROA/ROE (see Bertay et al., 2013; Shehzad et al., 2013; Delis et al., 2012; Sufian & Habibullah, 2010; Boubakri et al., 2005). However, Ewijk and Arnold (2014), Houston et al. (2010) and Claeys and Vennet (2008) supported that investing in interests is better in countries with higher GDP growth as the relationship between NIM and GDP were significant and positive. Hence, the eleventh hypothesis is:

H11. There is a significant relationship between GDP and profitability.

2. Inflation. In the literature, many studies indicate that banks in countries with higher inflation rates financially perform better than banks in countries with lower inflation rates as the relationship between inflation and profitability ratios were positive and significant. Examples that support this point of view include the studies of Căpraru and Ihnatov (2014), Rumler and Waschiczek (2014), Bertay et al. (2013) who considered ROA and ROE. Dietrich and Wanzenried (2014), Hussain (2014) and Tan and Floros (2012) found also that countries with higher inflation rates have better environment for interests investment (positive relationship with NIM). However, a few studies went against this result in terms of ROA and ROE such as Lee and Kim (2013), Mirzaei et al. (2013), Shehzad et al. (2013) and Kanas et al. (2012) who found that higher inflation rates led to lower earnings. Considering NIM, Liang et al. (2013) and Sufian and Habibullah (2009) found a negative and significant correlation between NIM and inflation. This point of view is more logical due to inflation causing decrement in an individual's wealth (purchasing power or cash flow) which negatively affects the deposits of banks. As a result of reduction in deposits, loans reduce which leads to less profit. Although inflation is a very important variable to the economy, Petria et al. (2015) and Mirzaei et al. (2013) could not find any evidence of inflation impact on profitability in their studies. Based on the debate above, the twelfth hypothesis can be formed as:

H12. There is a significant relationship between inflation and profitability.

3. Market capitalisation. Pasiouras and Kosmidou (2007) investigated the determinants of profitability in 15 European countries using data of 584 banks over the period 1995-2001. The stock market expansion was found to be very important for banks to maximise their profits as the relationship between market capitalisation and profitability was highly correlated at the 1% level. However, Demirguc-Kunt and Huizinga (1999) found that stock market index was insignificant in their study over the period 1988-1995. Dietrich and Wanzenried (2014) found that stock market growth did not affect NIM in their study. As a result, hypothesis thirteenth is:

H13. There is a significant relationship between stock market development and profitability.

4. Global financial crisis (GFC). Al-Musali and Ismail (2014) proved that the profits of Saudi commercial banks were increased in the period of the global financial crisis. Apergis (2014) found the same result on American commercial and investment banks. By contrast, Haan and Poghosyan (2012) confirmed that global financial crisis affected the financial performance of the American commercial, savings and cooperative banks. Dietrich and Wanzenried (2014) underlined that the global financial crisis badly decreased the net interest margins and banks at that time suffered from high costs (expenses). The fourteenth and final hypothesis is:

H14. There is a significant relationship between GFC and profitability.

According to the literature, recent studies ignored the social activities that can be provided by banks. In addition, ownership and financial crisis found to be rarely analysed in the recent studies. This limitation can be filled by including socially responsible banks and compare it with Islamic and conventional banking sector to find which type of banks perform better and considering the ownership and global financial crisis. As a result, this study is following the recent studies on determinants of profitability in banking sector but with new contributions.

3. METHODOLOGY

3.1. Data of the study

The data in this study was extracted from two main sources: Bankscope and World Bank databases. For Bankscope, the data was extracted from balance sheets and income statements of 323 banks being 43 Islamic banks (13.31% of used banks), 242 conventional banks (74.92%), and 38 socially responsible banks (11.76%) across the world covering 37 countries available in the Bankscope and World Bank databases from 2005 -2012. The data has been gathered from Middle Eastern and North African (MENA) regions including Islamic, conventional and socially responsible banks. Regarding the banks, data has been collected from

20 countries namely, Algeria, Egypt, Iran, Iraq, Lebanon, Libya, Malta, Morocco, Israel, Jordan, Palestine, Syria, Tunisia and Yemen, as well as the Gulf Cooperation Council (GCC) countries, which are considered to be oil exporter countries in the Middle Eastern region namely, Bahrain, Kuwait, Oman, Qatar, the kingdom of Saudi Arabia and United Arab Emirates which include Islamic and conventional banks in this study (Bankscope, 2015). Furthermore, we have banks from the United Kingdom, which is one of the strongest industrial countries in the world according to World Banks records. In addition, the UK has several Islamic banks such as the Islamic Bank of Britain (IBB), which was the first Islamic bank in the UK (it was established in 2004) (Islamic Bank of Britain, 2014). Currently, the name of IBB is Al Rayan Bank which formally changed its name in December 2014. Actually, Al Rayan Bank in the UK is owned by Qatari Maraf Al Rayan Bank. According to Al Rayan Bank, the bank is following a socially responsible banking scheme under an Islamic, socially responsible finance programme (Al Rayan Bank, 2015). Therefore, this study compares banks in the MENA region and the UK, as they both have Islamic, conventional and socially responsible banks and due to availability of data in Bankscope. In addition, there are some socially responsible banks in the UK (e.g. Charity Bank and Cooperative Banks) that can link to this study, which can lead to the comparison of Islamic, conventional, and socially responsible banks from completely different regions. However, socially responsible banks spread globally, so we gathered them from some MENA countries and 17 different countries around the world ordered alphabetically: Australia, Austria, Bangladesh, Bolivia, Canada, Denmark, France, Germany, Mongolia, Nepal, Netherlands, New Zealand, Norway, Spain, Switzerland, the United Kingdom and the United States of America. According to data gathered from World Bank database, macroeconomic variables e.g. inflation rates have been collected for the 20 countries. In fact, all data has a unified currency of US Dollars in millions. In Table 1, we conclude the number of banks in each country based on the GDP ranking.

Table 1. Number of banks in each country

N	*Countries*	*GDP (million US$) in 2014*	*World Rank*	*SRBs*	*Conventional Bank*	*Islamic Banks*	*Total*
1	USA	17,416,253	1	1	0	0	1
2	Germany	3,820,464	4	3	0	0	3
3	UK	3,002.95	5	6	74	3	84
4	France	2,935.36	6	1	0	0	1
5	Canada	1,793,797	11	1	0	0	1
6	Australia	1,482,539	12	1	0	0	1
7	Spain	1,400,483	14	1	0	0	1
8	Netherlands	880,394	17	2	0	0	2
9	Saudi Arabia	777,870	20	0	9	3	12
10	Switzerland	679,028	21	1	0	0	1
11	Norway	511,602	26	1	0	0	1
12	Austria	436,069	27	1	0	0	1
13	UAE	402,340	28	0	17	6	23
14	Iran	367,098	31	1	0	7	8
15	Denmark	330,614	33	5	0	0	5
16	Israel	290,643	36	0	8	0	8
17	Egypt	271,427	39	0	21	2	23
18	Iraq	229,327	45	0	2	0	2
19	Algeria	212.453	48	3	9	1	13
20	Qatar	202,450	49	0	6	3	9
21	New Zealand	181,574	53	1	0	0	1
22	Kuwait	175,787	55	0	6	2	8
23	Bangladesh	161,763	57	1	0	0	1
24	Morocco	103,824	60	1	8	0	9
25	Oman	77,116	63	0	7	0	7
26	Syria	71,998	65	0	5	0	5
27	Libya	65,516	69	0	5	0	5
28	Tunisia	46,995	82	2	8	1	11
29	Lebanon	45,019	85	0	28	0	28
30	Yemen	40,415	89	0	1	4	5
31	Jordan	33,858	90	0	7	1	8
32	Bahrain	32,791	92	0	15	9	24
33	Bolivia	30,824	95	2	0	0	2
34	Nepal	19,341	106	1	0	0	1
35	Mongolia	11,516	128	1	0	0	1
36	Malta	9,545	135	1	4	0	5
37	Palestine (Gaza)	6,641	148	0	2	1	3
Total				38	242	43	323

Source: International Monetary Fund (2015)

3.2. Independent variables

The bank-specific variables in this study are size of banks, loan intensity, capital ratio, credit risk, deposit ratio, age of banks, z-score, domestic, foreign and public ownerships. On the other side, four main country indicators are examined as GDP, inflation, market capitalisation and global financial crisis. In Table 2, we can conclude the descriptive statistics for the independent variables for socially responsible, conventional and Islamic banks for the period 2005-2012.

3.3. Dependent variables

This study uses ratios of return on assets (ROA), return on equities (ROE) and net interest margin (NIM) as explained variables to represent profitability. Table 2 explains the data statistics of explained factors. Based on Table 2 results, we can conclude that the conventional banks were found to be the most profitable banks. This could be due to charging more interest than Islamic and socially responsible banks. The calculation of ROA is net income over total assets and ROA represents a dependant variable following Apergis' (2014) approach. According to ROE, return on equity ratio is calculated as net income to total shareholders' equity. The ROE is also dealt with as a dependent variable in different equations (Lee and Kim, 2013). The mean ROA for conventional banks is equal to 1%, whereas the average ROE is 7%. However, Islamic banks achieved moderate profitability ratios (mean ROA = 0.90% and mean ROE = 5.80%). Furthermore, socially responsible banks scored the lowest average ROA (0.50%) and ROE (2.50%) over the period 2005-2012 as Flammer (2005) states that socially responsible corporations seek to support social issues more than profitability. According to NIM ratios in Table 6.1 above, Islamic banks attained the highest NIM (3.862) due to generating their income by not pay interest expenses and through interest-free investment. Following by socially responsible banks which they scored mean NIM equal to 3.484. After that, conventional banks found to be the least profitable in terms of NIM (2.789), which can be explained as conventional banks anticipated to pay the greatest interest expenses compared to Islamic and socially responsible banks or conventional banks could gain less interest income than Islamic and socially responsible banks.

3.3.1. ROA

ROA is an indicator that shows how efficiently the resources (total assets) of firms are used by the management to generate profits (Short, 1979). This ratio can be measured as follows:

$$ROA = Net\ Income / Total\ Assets \quad (1)$$

Table 2. Variable definitions and summary statistics

Variables	*Definition*	*Islamic Banks*			*Conventional Banks*			*Socially Responsible Banks*			*All Banks*		
		Obs	*Mean*	*S.D.*	*Obs*	*Mean*	*S.D.*	*Obs*	*Mean*	*S.D.*	*Obs*	*Mean*	*S.D.*
Dependent variables													
ROA	Return on assets = net income/total assets	312	0.009	0.15	1827	0.01	0.035	284	0.005	0.011	2423	0.008	0.062
ROE	Return on assets = net income/Equity	312	0.058	0.172	1827	0.070	0.309	284	0.025	0.682	2423	0.051	0.361
NIM	Net interest income / total earning assets	312	3.862	6.511	1827	2.789	1.845	284	3.484	3.063	2423	2.994	2.953
Independent variables													
Bank-specific variables													
Size	Log (total assets)	312	7.732	1.843	1827	8.161	2.119	284	7.858	2.251	2423	8.07	2.107
Capital ratio	Capital/total assets	312	0.249	0.309	1827	0.14	0.18	284	0.305	0.326	2423	0.173	0.229
Loan intensity	Loans/total assets	312	0.469	0.27	1827	0.439	0.352	284	0.424	0.286	2423	0.441	0.336
Credit risk	Loans/deposits	312	2.559	23.805	1827	0.937	12.2	284	0.748	0.264	2423	1.124	13.6
Deposit ratio	Deposits/total assets	312	0.667	0.327	1827	0.8	0.473	284	0.823	0.191	2423	0.786	0.434
Age	Log (years since establishment)	312	3.053	0.628	1827	3.717	0.724	284	3.613	0.808	2423	3.619	0.756
Z-score	Log (z-score), where z-score = (ROA + capital ratio)/S.D. (ROA)	312	2.648	1.002	1827	2.982	1.085	284	3.897	1.165	2423	3.176	1.134
Foreign ownership	Dummy = 1 if a bank owned by foreign, else zero	312	0.321	0.467	1827	0.467	0.499	284	0.271	0.445	2423	0.426	0.495
Domestic ownership	Dummy = 1 if a bank owned by local, else zero	312	0.426	0.495	1827	0.4	0.49	284	0.588	0.493	2423	0.426	0.495
Government ownership	Dummy = 1 if a bank owned by government, else zero	312	0.253	0.436	1827	0.137	0.344	284	0.225	0.419	2423	0.162	0.369
Country-specific variables													
GDP	Log (GDP)	312	25.426	1.442	1827	26.098	1.831	284	26.589	1.879	2423	26.069	1.815
Inflation	Inflation rates	312	0.099	0.099	1827	0.057	0.086	284	1.266	3.449	2423	0.204	1.243
Market capitalisation	Market capitalisation to GDP	312	0.613	0.515	1827	0.891	1.908	284	0.554	0.565	2423	0.816	1.684
Global Financial Crisis	Dummy = 1 for the period 2007-2009, otherwise zero	312	0.397	0.49	1827	0.391	0.488	284	0.387	0.487	2423	0.392	0.488

3.3.2. ROE

The ROE reflects the abilities of management to use the shareholders' funds effectively. On the other words, more ROE means that the management in utilising the shareholders capital is efficient (Guillén et al., 2014). The ROE ratio can be calculated as:

$$ROE = Net\ Income/\ Total\ Equity \quad (2)$$

3.3.3. NIM

This ratio represents the effectiveness of interests' investment. Higher NIM ratio means that the interest revenue is better and the investment is valuable (Demirguc-Kunt & Huizinga, 1999).

$$NIM = Net\ Interest\ Income\ /\ Total\ Earning\ Assets \quad (3)$$

3.4. Main model

The main model of the study that obtained from OLS (through STATA 14) can be as follows:

$$Pro_{it} = \alpha + \beta_1 LTA_{it} + \beta_2 EQTA_{it} + \beta_3 LOANSTA_{it} + \beta_4 LOANSDEPO_{it} + \beta_5 DEPOSITSTA_{it} + \beta_6 LAGE_i + \beta_7 LOGZ_{it} + \beta_8 FORE_i + \beta_9 DOM_i + \beta_{10} GOV_i + \beta_{11} LGDP_t + \beta_{12} INFLATION_t + \beta_{13} MCAP_t + \beta_{14} GFC_t + \varepsilon_{it} \quad (4)$$
$$i = 1....n;\ t = 1....n$$

Where: *Pro* represents the dependent variables of profitability ratios (ROA, ROE and NIM); α denotes the constant; β is the regression coefficient; LTA is the natural logarithm of total assets (proxy of size); *EQTA* is the capital ratio (leverage intensity); *LOANSTA* is a measure of a bank's loan intensity; *LOANSDEPO indicates credit risk; DEPOSITSTA measures deposit ratio; LAGE* is the natural logarithm of age (time since establishment); *LOGZ* represents the natural logarithm of z-score; *FORE, DOM, and GOV* represent foreign, domestic and public ownerships, respectively; *LGDP* denotes log (GDP); *INFLATION* is the percentage of inflation that was announced from the various countries; MCAP is the market capitalisation over GDP ratio; *GFC* is the global financial crisis; ε_{it} is the error term; *i* denotes banks; *t* represents time.

However, before examining the relationship between the dependent and independent variables, we need to conduct a correlation matrix to insure that there is no multicollinearity. As a result, Table 3 indicates that the maximum amount is 0.649 (the correlation between deposit ratio and loan intensity) which is less than 80% (Studenmund, 2005). This means that there is no potential multicollinearity problem existed.

4. DATA ANALYSIS AND RESULTS

The OLS results can be shown in Table 4 below. The findings suggest that the hypotheses which support profitability in Islamic banks are *H1, H2, H3, H5, H7, H11, H12* and *H13*. According to conventional banks, *H1, H2, H3, H4, H5, H7, H11* and *H13* fond to be significant. Regarding the socially responsible banks, *H1, H2, H4, H5, H7, H8, H9, H10, H11* and *H13* confirmed a significant relationship with earnings.

Table 3. Correlation matrix for variables

	Bank size	***(1)***	***(2)***	***(3)***	***(4)***	***(5)***	***(6)***	***(7)***	***(8)***	***(9)***	***(10***	***11)***	***(12)***
(1) Capital ratio	-0.180												
(2) Loan intensity	0.141	0.171											
(3) Credit risk	-0.022	0.122	-0.004										
(4) Deposit ratio	-0.019	0.240	0.649	-0.071									
(5) Age	0.374	-0.240	0.085	-0.049	0.112								
(6) Z-score	-0.034	0.153	-0.026	0.010	0.048	0.044							
(7) Foreign ownership	-0.153	0.095	-0.132	-0.003	-0.073	-0.205	-0.075						
(8) Domestic ownership	0.025	-0.175	0.023	-0.028	0.002	0.180	0.030	-0.691					
(9) Public ownership	0.182	0.166	0.125	0.041	0.092	0.041	0.074	-0.324	-0.361				
(10) GDP	0.174	-0.153	0.069	-0.021	0.037	0.162	-0.147	-0.015	0.059	-0.078			
(11) Inflation	-0.134	-0.010	0.042	0.000	0.033	0.027	0.006	-0.043	-0.044	0.112	0.012		
(12) Market capitalisation	-0.042	-0.029	0.047	0.002	-0.003	0.067	-0.093	-0.026	0.098	-0.103	0.199	-0.023	
Global financial crisis	-0.010	-0.004	-0.009	-0.016	-0.005	-0.010	-0.019	0.020	-0.004	-0.023	0.002	-0.001	-0.007

H1. In Islamic banks, the larger sized banks are more profitable (ROE) than smaller sized banks over the period. The reason of this result could be due to larger banks are more likely to gain profits from economies of scale than smaller banks, which it may have a higher degree of production differentiation and loan diversification. Many studies proposed that size of banks influence the profitability (e.g., Chronopoulos et al., 2015; Guillén et al., 2014). On the other side, some studies suggested the opposite finding which is smaller sized banks were more profitable (see Căpraru & Ihnatov, 2014). Based on the NIM's results, due to the prohibition in dealing with interests in Islamic banking systems, the ratio of NIM can be calculated as investment (such as trade in stock market) over total earning assets. According to NIM determinants, as expected, larger sized banks attained more effective investment than smaller sized banks. Liang et al. (2013) and Sufian and Habibullah (2009) agreed that banks needed to have huge amount of assets to build interest earnings. The size of bank also supports conventional bank profitability positively (ROA). The NIM found to be affected significantly and negatively in conventional and socially responsible banks.

H2. The empirical findings confirm that capital ratio impacts the ROA in Islamic banks negatively at a 0.1% level, which means lowering capitalisation leads to an increase in profitability. These results are linked to the arguments of a few articles (Chronopoulos et al., 2015; Mollah & Zaman, 2015; Shehzad et al., 2013) but the majority goes to confirm that higher capital strengthen financial performance (see Ghosh, 2015; Mamatzakis et al., 2015; Apergis, 2014; ; Mirzaei et al., 2013). The association between the capitalisation and NIM in Islamic banking sector is significant and positive at level of 5% as predicted. Higher capital allows banks

to invest more in stock market. This finding is consistent with several studies (e.g., Căpraru & Ihnatov, 2014; Dietrich & Wanzenried, 2014; Ewijk & Arnold, 2014). Few studies explained the negative correlation between NIM and capital ratio (Zhou & Wong, 2008). Focusing on conventional banking sector, the findings encourage banks to increase equity to maximise profits. However, the coefficient of ROE in socially responsible banks underline that greater capitalisation led to reduce earnings. On the other side, capital supported the net interest margin positively and significantly.

H3. The loan intensity has a negative sign and is statistically significant at a 5% level with ROA referring to the OLS model. This proves that providing more loans that are generated from total assets could raise the risk of lowering ROA. This strongly linked to Chronopoulos et al. (2015) finding on US commercial banking system. The result is in contrast with Olson and Zoubi (2011) who claimed that providing loans maximises the profits of the MENA banking sector. However, based on conventional banks' findings, the loans raise the ROA ratio referring to loan intensity coefficients which are highly and positively. Apergis (2014) estimated the same results in the US banking sector. In addition, loan intensity found to be improving the NIM. In this case, banks achieved their incomes through lending interests which motivated conventional banks to supply more loans. Hence, covering the interest costs could be easier for banks. This outcome is in line with Sufian and Habibullah (2009).

H4. According to credit risk ratio in conventional banking sector, achieving more returns decrease the risk of credit which means that the growth in lending leads to score better ROA ratio. Referring to the literature review, Chitan (2012) and Altunbas and Marques (2008) found the same finding in their studies. The results encourage the SRBs to reduce the lending activities due to the correlation between the NIM and the credit risk (positive sign).

Table 4. Determinants of profitability - OLS results

Banking	*Islamic banks*			*Conventional banks*			*Socially responsible banks*			*All banks*		
Profitability	*ROA*	*ROE*	*NIM*	*ROA*	*ROE*	*NIM*	*ROA*	*ROE*	*NIM*	*ROA*	*ROE*	*NIM*
Bank-specific variables												
(H1) LTA	-0.0018	0.0273***	0.890**	0.00219***	0.00606	-0.335***	0.00038	0.0196	-0.296***	0.00135*	0.00653	-0.192***
	(-0.27)	-3.95	-2.64	-6.36	-1.52	(-15.13)	-1.04	-0.8	(-3.96)	-2	-1.66	(-6.01)
(H2) EQTA	-0.141***	-0.0318	8.611*	0.0833***	-0.0251	-0.332	-0.0047	-0.668*	1.406**	0.0026	-0.103**	0.533***
	(-4.04)	(-0.90)	-2.58	-20.09	(-0.52)	(-1.24)	(-1.04)	(-2.15)	-3.07	-0.43	(-2.89)	-3.86
(H3) LOANSTA	-0.0891*	-0.0043	-3.162	0.0108***	0.0441	3.107***	-0.0095	-0.494	-0.0287	0.0169***	0.0587*	0.00451
	(-2.15)	(-0.10)	(-1.33)	-4.12	-1.46	-16.78	(-1.91)	(-1.45)	(-1.72)	-3.4	-2.02	-0.16
(H4) LOANSDEPO	-6E-05	0.00029	0.00442	-0.00011*	-0.0004	-0.0001	0.00601	0.291	1.408**	-0.0001	-0.0001	0.00482
	(-0.17)	-0.82	-0.28	(-2.38)	(-0.74)	(-0.05)	-1.45	-1.04	-3.19	(-1.35)	(-0.26)	-1.16
(H5) DEPOSITSTA	-0.0638*	0.00189	-1.262	0.0183***	-0.0064	-1.559***	-0.0044	0.114	-1.392**	0.0176***	-0.0047	-0.524***
	(-2.12)	-0.06	(-0.51)	-9.83	(-0.30)	(-12.35)	(-0.94)	-0.36	(-3.04)	-4.56	(-0.21)	(-3.78)
(H6) LAGE	-0.009	0.0248	-0.0106	0.0007	0.00572	-0.0013	-0.0004	-0.0229	0.0138	-0.0022	-0.0038	-0.266**
	(-0.49)	-1.34	(-0.01)	-0.74	-0.52	(-0.02)	(-0.40)	(-0.34)	-0.08	(-1.21)	(-0.35)	(-3.01)
(H7) LOGZ	0.0266**	0.0496***	0.383	0.00477***	0.0716***	0.182***	0.0007	0.0558	-0.291*	0.00677***	0.0596***	0.114*
	-2.92	-5.39	-0.73	-8.25	-10.73	-4.88	-0.96	-1.13	(-2.29)	-6.09	-9.21	-2.13
(H8) FORE				-0.007	-0.135	-0.845	-0.0055	-0.420*	-1.657**	-0.0167	-0.480***	-1.968***
				(-0.74)	(-1.24)	(-1.43)	(-1.87)	(-2.08)	(-3.15)	(-1.46)	(-7.24)	(-3.34)
(H9) DOM	-0.0159	-0.0079	0.216	-0.0068	-0.111	-0.701	-0.00817*	-0.484	-1.639*	-0.0188	-0.455***	-1.720**
	(-0.78)	(-0.38)	-0.21	(-0.73)	(-1.03)	(-1.20)	(-2.08)	(-1.81)	(-2.42)	(-1.64)	(-6.81)	(-2.89)
(H10) GOV	-0.0109	-0.041	-1.772	-0.0049	-0.0904	-0.412	-0.012***	-0.555**	-3.568***	-0.0128	-0.451***	-1.637**
	(-0.38)	(-1.42)	(-1.27)	(-0.52)	(-0.85)	(-0.71)	(-4.43)	(-2.84)	(-6.32)	(-1.16)	(-7.00)	(-2.86)
Macroeconomic variables												
(H11) LGDP	0.0147*	-0.0147*	-0.492	-0.0013***	-0.0078	-0.0700***	-0.00126*	-0.0285	-0.417***	-0.0011	-0.0114**	-0.121***
	-2.1	(-2.08)	(-1.39)	(-3.65)	(-1.84)	(-3.89)	(-2.14)	(-0.71)	(-4.13)	(-1.58)	(-2.74)	(-4.30)
(H12) INFLATION	-0.239**	-0.487***	-7.001	0.00601	0.0734	0.0702	0.0004	0.00932	0.0199	-0.001	-0.0033	0.0205
	(-2.69)	(-5.40)	(-1.63)	-0.64	-0.68	-0.12	-1.45	-0.5	-0.43	(-1.03)	(-0.57)	-0.44
(H13) MCAP	0.0275	0.016	-2.735**	-3E-05	4.8E-05	-0.0908***	0.00189	0.0481	-0.905***	0.00051	0.00312	-0.0692*
	-1.48	-0.85	(-2.95)	(-0.06)	-0.01	(-3.48)	-1.38	-0.52	(-3.83)	-0.68	-0.71	(-2.01)
(H14) GFC	-0.0044	0.0111	0.2	-0.0023	-0.023	0.152	-0.0014	0.0729	-0.008	-0.004	-0.0086	0.0326
	(-0.27)	-0.67	-0.25	(-1.84)	(-1.61)	-1.9	(-1.18)	-0.89	(-0.04)	(-1.60)	(-0.59)	-0.27
Sigma	-0.252	0.0744	11.25	-0.0129	0.103	7.496***	0.0471*	1.052	19.79***	0.0125	0.608***	10.43***
_cons	(-1.40)	-0.41	-1.3	(-0.90)	-0.62	-9.24	-2.51	-0.82	-6.98	-0.56	-4.65	-10.74
R^2	0.1745	0.3565	0.124	0.4594	0.0791	0.2495	0.184	0.0819	0.7266	0.0643	0.0683	0.1284
No. of banks	43	43	37	242	242	229	38	38	35	323	323	301
Obs	312	312	255	1827	1827	1700	284	284	260	2423	2423	2215

*Notes: LTA: bank size, EQTA: capital ratio, LOANSTA: loans intensity, LOANSDEPO: credit risk, DEPOSITSTA: deposit ratio, LAGE: bank age, LOGZ: z-score, FORE: dummy equal 1 if foreign bank and 0 otherwise, DOM: dummy equal 1 if domestic bank and 0 otherwise, GOV: dummy equal 1 if government bank and 0 otherwise, LGDP: gross domestic production, INFLATION: inflation rate, MCAP: market capitalisation to GDP, GFC: Global financial crisis; dummy equal 1 if the study period falls within year 2007-2009 and 0 otherwise. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, t statistics in parentheses.*

H5. Deposits ratio impacted the ROA in Islamic banking system significantly and negatively in this study which is in line with Barry et al. (2011) finding. By the contrary, García-Herrero et al. (2009) employed the deposit ratio as an explanatory variable and he found the opposite (positive) relationship between deposit ratio and profitability ratio (ROA) in the Chinese banking sector. In conventional banks, more deposits improved ROA but reduced NIM. In socially responsible banks, NIM has a negative and significant association with deposits.

H7. The z-score was found to be highly correlated with profitability ratios (ROA and ROE) in Islamic banking at a 0.1% level. This demonstrates that profits increase the stability and reduce the risk of bankruptcy (similar to Mamatzakis et al., 2015; Mollah & Zaman, 2015). Concentrating on conventional banks' findings, all profitability indicators (ROA, ROE and NIM) are strongly supporting the financial stability. Conversely, NIM exposed SRBs to face more default risks over the period.

H8. The relationship between profitability ratios (ROE and NIM) in SRBs found to be negative and significant. This discourages foreign banks to invest more and force banks to reduce their operations and branches. Referring to literature, Dedu and Chitan (2013), Lee and Kim (2013), Dietrich and Wanzenried (2011) and Manlagnit (2011) have the same conclusion. In contrast, Lin and Zhang (2009), Micco et al. (2007) and Demirguc-Kunt and Huizinga (1999) confirmed that foreign banking concentration improves profits in their studies.

H9. In SRBs, the concentration of domestic banks led to impact the profits (ROA and NIM) negatively and significantly. This result is in line with Flamini et al. (2009) who estimated that domestic ownership decreases the earnings. Some studies conclude that domestic banks increase the profitability such as Athanasoglou et al. (2008).

H10. The public ownership influenced all profitability ratios (ROA, ROE and NIM) badly. This could be due to public sector always engage in providing services to nationals rather than seeking for profits. This finding can be seen in Lee and Kim's (2013) and Olson and Zoubi's (2011) studies But, Rumler and Waschiczek (2014) proved that public ownership increases the profitability of Austrian commercial banks for the period 1995-2010.

H11. The Islamic banks in developed economic countries achieved more ROA but less ROE. Chronopoulos et al. (2015) and Guillén et al. (2014) Rumler and Waschiczek (2014) claim that GDP enhances earnings while, Bertay *et al.* (2013) Shehzad *et al.* (2013) go against this point of view. Based on conventional and socially responsible banks, banks in growing economic countries found hurdles to attain ROA and NIM over the period.

H12. Inflation warned Islamic banking sector as coefficients of ROA, ROE and NIM found to be negative. Shehzad's et al. (2013) results suggest the same conclusion. On the other side, Rumler and Waschiczek (2014) claim that greater inflation rates led to higher profitability in the Austrian banking sector.

H13. An inverse and significant correlation attained between NIM and stock market growth in Islamic, conventional and socially responsible banks. Pasiouras and Kosmidou (2007) investigated that the development in stock market was very important for banks to maximise their earnings. However, Demirguc-Kunt and Huizinga (1999) and Dietrich and Wanzenried (2014) found insignificant association between market capitalisation and profits in banking sector.

According to bank-specific factors, age of banks found to be insignificant with profitability for all type of banking. Furthermore, the global financial crisis did not impact the banks significantly.

To provide a robust test, we can analyse the data through fixed effects model (FEM) as in Table 5 below. For Islamic banks, it can be seen that few main differences occurred compared to OLS findings. The relationship between size of banks and ROA became positive and significant (in line with Petria et al., 2015). Furthermore, FEM analysis approved that lower capitlaised Islamic banks could efficiently invest their equities (Mollah & Zaman, 2015). With regards to deposits, FEM confirmed that accepting more deposits allowed Islamic banks to attain better ROE (Saghi-Zedek & Tarazi, 2015). Finally, the Islamic banks in wealthier banks achieved less profitability (ROA, ROE and NIM). For Islamic banks, Table 5 shows that R^2 values improved efficiently, which means that FEM can be more effective than OLS.

Focusing on conventional banks, there are some differences between OLS's and FEM's outcomes such as, FEM estimates that larger conventional banks have greater ROE ratios compared to OLS, which has insignificant correlation between size of banks and ROE. Moreover, FEM model pointed that conventional banks in countries with higher growth of financial markets have better ROA and ROE (significant associations compared insignificant correlation of OLS model). However, the FEM suggests that the interest earnings of conventional banks are significantly increased over the global financial crisis period. Al-Musali and Ismail (2014) have approved the same outcome for Saudi Arabian conventional banks. Overall, OLS have more R^2 indicators than FEM, which means that the consistency between the independent and the dependent variables is better in OLS estimations.

Regarding the socially responsible banks, there are three main differences between OLS's and FEM's findings. First, FEM estimates that the association between the ROA and the financial stability found to be significant and positive compared to insignificant correlation between ROA and z-score in OLS. This result is consistent with Mamatzakis et al. (2015) Mollah and Zaman (2015) who approved also that stable banks could be more profitable than instable banks. Second, FEM reveals that financial markets' indices are highly important to socially responsible banks to operate better and then to attain more profits. The third and last difference can be seen in R^2 rates. The OLS model includes greater percentages compared to FEM.

5. CONCLUSION, LIMITATION AND FUTURE RESEARCH

This study aimed to find the determinants of profitability in Islamic, conventional, socially responsible banks covering the period 2005-2012 using ROA, ROE and NIM. In conclusion, for the whole sample, ROA was influenced positively and significantly by size of bank, loans, deposits and financial stability. Moreover, ROE was supported positively by loans and financial stability. In

contrast, inverse relationships found to be between ROE and capitalisation, ownerships and GDP. According to NIM, capitalisation and z-score significantly and positively impacted interest profits. On the other side, size, deposits, age, (foreign, domestic and public) ownerships, GDP and market capitalisation significantly decreased the interest earnings over the period 2005-2012.

Table 5. Determinants of profitability - FEM results

Banking	*Islamic banks*			*Conventional banks*			*Socially responsible banks*			*All banks*		
Profitability	*ROA*	*ROE*	*NIM*	*ROA*	*ROE*	*NIM*	*ROA*	*ROE*	*NIM*	*ROA*	*ROE*	*NIM*
Bank-specific variables												
(H1) LTA	0.0617**	0.0700**	2.798*	0.0202***	0.0702**	-0.526***	-0.00188	-0.00976	-0.899**	0.0366***	0.0741**	-0.377**
	(3.03)	(3.12)	(2.43)	(10.60)	(2.95)	(-8.08)	(-0.98)	(-0.07)	(-3.03)	(9.30)	(3.06)	(-2.81)
(H2) EQTA	-0.46***	-0.198**	-15.42	0.0941***	-0.0725	-0.0234	-0.0316	-2.076	0.103	-0.0263*	-0.0872	0.303
	(-6.91)	(-2.70)	(-1.61)	(15.12)	(-0.93)	(-0.09)	(-1.61)	(-1.39)	(0.18)	(-2.04)	(-1.10)	(1.07)
(H3) LOANSTA	0.0590	-0.111	-3.506	0.0178***	0.0868	0.705*	0.00145	0.172	-0.0200	0.0171	0.0803	-0.0218
	(1.01)	(-1.72)	(-1.06)	(3.83)	(1.49)	(2.49)	(0.18)	(0.28)	(-1.37)	(1.67)	(1.28)	(-0.86)
(H4) LOANSDEPO	-0.0002	0.0000434	-0.038*	-0.000011	-0.00006	0.0000830	-0.00771	-0.0273	1.064	-0.00015	-0.000183	-0.0148***
	(-0.90)	(0.13)	(-2.54)	(-0.23)	(-0.11)	(0.04)	(-1.39)	(-0.06)	(1.79)	(-1.69)	(-0.32)	(-4.08)
(H5) DEPOSITSTA	0.0232	0.178**	0.794	0.0209***	-0.0706	-0.657***	-0.0109	0.138	-0.107	0.0120	-0.0656	-0.311
	(0.44)	(3.04)	(0.20)	(5.47)	(-1.48)	(-3.34)	(-1.88)	(0.31)	(-0.19)	(1.43)	(-1.28)	(-1.10)
(H6) LAGE												
(H7) LOGZ	0.328***	0.196***	6.698***	0.0142***	0.0986***	0.276***	0.0139***	0.218	-0.710	0.0680***	0.113***	0.656***
	(14.13)	(7.65)	(3.98)	(7.18)	(3.98)	(3.50)	(3.77)	(0.78)	(-1.71)	(15.95)	(4.32)	(4.22)
(H8) FORE	-0.0099	0.114				0.418				0.0113	0.129	
	(-0.13)	(1.41)				(1.55)				(0.75)	(1.38)	
(H9) DOM	-0.0043	0.0853	2.185	-0.00293	0.00247	0.201				0.0108	0.134	0.0467
	(-0.06)	(1.14)	(0.97)	(-0.63)	(0.04)	(0.88)				(0.82)	(1.65)	(0.12)
(H10) GOV			3.354	-0.00963	-0.135							-0.360
			(0.76)	(-1.42)	(-1.60)							(-0.60)
Macroeconomic variables												
(H11) LGDP	-0.088*	-0.145***	-10.6***	-0.018***	-0.0406	0.0100	0.00703	0.621	1.055	-0.049***	-0.00678	-0.0224
	(-2.37)	(-3.54)	(-5.36)	(-5.27)	(-0.95)	(0.60)	(1.44)	(1.68)	(1.42)	(-6.79)	(-0.15)	(-0.56)
(H12) INFLATION	-0.0480	-0.371***	3.587	0.00625	0.00290	-0.911*	-0.0262	-0.996	-3.274	-0.0535**	-0.115	-2.129**
	(-0.61)	(-4.25)	(0.81)	(0.65)	(0.02)	(-2.35)	(-1.52)	(-0.76)	(-1.38)	(-2.70)	(-0.94)	(-2.68)
(H13) MCAP	-0.0211	0.0146	-7.61***	0.00847***	0.0802*	-0.386***	0.00850**	0.552*	0.0827	-0.00480	0.115***	-0.899***
	(-0.74)	(0.46)	(-5.06)	(3.38)	(2.56)	(-4.35)	(2.76)	(2.36)	(0.18)	(-0.89)	(3.45)	(-4.67)
(H14) GFC	-0.0051	0.00735	-0.0886	-0.00156	-0.0196	0.157***	-0.00096	0.103	0.183	-0.00173	-0.00355	0.0992
	(-0.41)	(0.53)	(-0.13)	(-1.40)	(-1.41)	(3.44)	(-0.85)	(1.20)	(1.11)	(-0.74)	(-0.24)	(1.03)
Sigma	1.043	2.651**	240.2***	0.231**	0.243	6.298***	-0.169	-15.87	-10.89	0.796***	-0.853	6.042***
_cons	(1.15)	(2.66)	(5.16)	(2.84)	(0.24)	(8.23)	(-1.48)	(-1.84)	(-0.64)	(4.54)	(-0.79)	(3.69)
R^2	0.5340	0.3729	0.2489	0.4474	0.0757	0.1006	0.1600	0.0501	0.0859	0.1435	0.0421	0.0404
No. of banks	43	43	37	242	242	229	38	38	35	323	323	301
Obs	312	312	255	1827	1827	1700	284	284	260	2423	2423	2215

*Notes: LTA: bank size, EQTA: capital ratio, LOANSTA: loans intensity, LOANSDEPO: credit risk, DEPOSITSTA: deposit ratio, LAGE: bank age, LOGZ: z-score, FORE: dummy equal 1 if foreign bank and 0 otherwise, DOM: dummy equal 1 if domestic bank and 0 otherwise, GOV: dummy equal 1 if government bank and 0 otherwise, LGDP: gross domestic production, INFLATION: inflation rate, MCAP: market capitalisation to GDP, GFC: Global financial crisis; dummy equal 1 if the study period falls within year 2007-2009 and 0 otherwise. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, t statistics in parentheses*

One of the most important limitations is the availability of data, which force the researcher to reduce the sample of banks especially, in Islamic banking systems. Evermore, the contact with banks sometimes is hard to get more data.

The future research can cover more periods and can include the Arab spring period which potentially can add more to the literature review. Additionally, more regions can be covered such as South American area.

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