



Iran's post-war financial system

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Abstract

Purpose – The purpose of this study is to provide solid examination of Iran's Islamic financial system and its development after the end of the Iran-Iraq war in 1988.

Design/methodology/approach – The analysis is conducted by using financial data over the period 1993-2007 as solid data aren't available for the period 1988-1992. Parallel, 39 other countries are analyzed as well in order to have a solid international basis of comparison. The data are provided by the World Bank's financial dataset. **The paper computes three key-indices referring to the activity, efficiency, and size of Iran's financial sectors.** A fourth measure is calculated as an aggregated index of the three key-indices in order to allow a vivid comparison with other countries.

Findings – **Iran's financial system is apparently highly bank-based.** The paper can confirm that Iran has been struggling for a less bank-based financial system during this period. Although Iran still shows up a mainly bank-based financial system, its financial market has been growing by considerable rates during the examined period. When referring to the international comparison, Iran shows up an underdeveloped and weak financial system, especially in regard to its stock market.

Originality/value – There haven't been any similar research for this time period using this kind of indices. Especially, Iranian economists haven't used this very comprehensive approach in order to confirm the widely made assumption of a bank-based Iranian financial system. This study sheds light on the topic and at the same time offers a comprehensive picture of Iran's financial system.

Keywords Bank-based, Market-based, Financial system, Finance, Financial structure, Iran, Banks

Paper type Research paper

1. Introduction

In 1984 Iran (as one of the first Islamic countries worldwide) decided to replace its conventional banking system with an Islamic banking system. Since, according to the Quran, the practice of usury is prohibited, banks and markets in an Islamic financial system cannot generate profit the way conventional financial systems can. Nevertheless, their goal remains profit maximization and growth but in accordance to Islamic values.

To which extend a financial system is either bank- or market-based has been examined for many countries so far. One major reason for this has been the ongoing debate whether any significant relation between a country's financial system and economic growth exists.

According to Luintel *et al.* (2008, p. 181): "The debate on the relative merits of bank-based versus market-based financial systems has a long history of over a century". In this context, Luintel *et al.* (2008) refer to Gerschenkron (1962), Allen and Gale (2000) and Levine (2002).



Vitols (2001) presents detailed examination of historical origins of bank- and market-based financial systems in Germany, Japan, and the USA. Furthermore, recent studies, for instance Ergungor (2003) and Luintel *et al.* (2008), show up that the financial system of a country matters for economic growth. Furthermore, Cuadro-Saez and Garcia-Herrero (2007) demonstrate a complementary role of both systems in promoting economic growth.

Referring to this ongoing debate, it is obvious that in order to be able to analyze this relation, a solid examination of the financial system is crucial. Moreover, Islamic financial systems as present in Iran provide an interesting and rarely explored case to be analyzed since they are exceptions among the majority of countries. It may be pointed out that Iranian economist (at least verbally) uniformly assume the Iranian financial system to be bank-based. However, detailed examinations of this assumption are rarely found. Demirgüç-Kunt and Levine (1999) show up a bank-based financial system for Iran by using financial data averaged over the period 1990-1995.

The aim of this study is to provide a detailed examination for the post-war period from 1993 to 2007 which sheds light on the current status of the financial system in Iran as well as its development during this period. It may also be pointed out that during the first Gulf war Iran's stock market was closed and all banks were completely governmental controlled. After the war ended in 1988, the government focused on rebuilding the infrastructure and supporting the economy's recovery from years of destruction and isolation. Since 2001 privatization of banks has begun and the political consensus is to continue privatization of banks and strengthening Iran's capital market.

Moreover, our research shall provide the solid base of further research, especially in regard to the linkage between Iran's financial system and economic growth. Section 2 of this study describes the data and method used. Section 3 sets out our findings. A final conclusion is drawn in Section 4.

2. Data and method

Our data is provided by the "Financial Structure Dataset" (data through 2007, updated: January 2009) released by the World Bank (the dataset is available via the World Bank's web site; see also Beck *et al.* (2000)). Unfortunately, Iran's Central Bank dataset does not provide such a complete source for research yet. On the other hand, data announced by the Central Bank refers to the Persian calendar and not the Gregorian calendar, making data comparison with other countries difficult.

We gathered data for the period 1993-2007 as this is the period with most reliable data available for Iran. For comparison purpose, we analyze 39 other countries in addition to Iran. We can classify between high income, upper middle income, lower middle income, and low income countries as listed in Table I.

Iran is classified as a lower-middle income country. In this regard, we have chosen ten countries of each income group in order to guarantee an equally distributed base of comparison. Among the high income countries we have two market-based countries, namely the USA and UK, and two bank-based countries, namely Germany and Japan. Although the financial systems of these countries have been confirmed by various economists (Demirgüç-Kunt and Levine, 1999; Levine, 2002, 2004), we calculate all measures for this period as well in order to have a solid base for our analysis.

In order to examine the financial system, we refer to four measures introduced by Demirgüç-Kunt and Levine (1999) and Levine (2002). For detailed explanation of calculation procedures refer to Levine (2002).

Table I.
Examined countries
listed in regard to World
Bank income
classification

	High income		Upper middle income		Lower middle income		Low income	
1	Canada	CAN	Bulgaria	BGR	Colombia	COL	Bangladesh	BGD
2	Germany	DEU	Chile	CHL	Ecuador	ECU	Côte d'Ivoire	CIV
3	Japan	JPN	Croatia	HRV	Egypt	EGY	Ghana	GHA
4	Korea	KOR	Malaysia	MYS	India	IND	Kenya	KEN
5	Kuwait	KWT	Mexico	MEX	Indonesia	IDN	Kyrgyz	KGZ
6	Norway	NOR	Poland	POL	Iran	IRN	Nigeria	NGA
7	Saudi Arabia	SAU	Russia	RUS	Jordan	JOR	Nepal	NPL
8	Singapore	SGP	South Africa	ZAF	Morocco	MAR	Pakistan	PAK
9	UK	GBR	Turkey	TUR	Philippines	PHL	Zambia	ZMB
10	United States	USA	Venezuela	VEN	Thailand	THA	Zimbabwe	ZWE

Source: Classification and Country Code taken from the financial structure dataset (updated: January 2009) provided by the World Bank

First we compute three key-measures: structure-activity, structure-size, and structure-efficiency. These indices are utilized later on to calculate a fourth measure, namely *structure-aggregate*, also referring to Demirgüç-Kunt and Levine (1999) and Levine (2002).

When observing the *structure-activity*, we calculate the total equity value traded ratio to GDP divided by the bank credit ratio to GDP and take the log afterwards. For all measures we use real GDP with base year 2000.

In order to calculate all three indices, taking the log of the fractions is not really necessary but it provides a major advantage: the values obtained clearly imply the direction of dominance as negative numbers denote a dominating banking sector while positive numbers denote the case of market-dominance. Thus, handier numbers are provided for instance when it comes to graphical descriptions and analysis as it will be seen in Figure 4 later on. This study sticks to this method as introduced by Demirgüç-Kunt and Levine (1999).

Getting back to the structure-activity index, a bank-dominated financial system features a value less than zero. The larger the negative index, the less bank activity dominates market activity while a positive value reflects a higher market activity. Therefore, this measure helps us to identify whether the banking- or the market-sector is dominating the other. In a perfectly balanced situation the indicator would equal zero or log of one, respectively. However, the closer to zero the index value, the more balanced the financial system is in terms of activity of its two sectors.

In regard to *structure-size*, we compute the fraction of market capitalization ratio to GDP and bank credit ratio to GDP. Bank credit reflects the value of private credit by deposit money banks. Following, we take the log of this fraction as well. This indicator reflects the size of stock markets relative to that of banks. Larger values indicate a more market-based financial system while lower values show up the opposite. If its value is zero, both markets are equal in size and thus balanced. Negative index values indicate a rather bank- than market-based system and vice versa.

We measure *structure-efficiency* by computing the efficiency of stock markets relative to that of banks. Hereto, we multiply the total value (of equities) traded ratio to GDP (hereafter, TVT) by overhead costs (hereafter, OC) and take the log of it. OC equal the overhead costs of the banking system relative to its assets. Thus, large OC indicate an

inefficient banking system and vice versa while large TVT indicate an efficient stock market and vice versa. The larger the value of this index, the more efficient are markets relative to banks. According to Levine (2002), negative scores are the result of relatively higher bank efficiency and for this reason a sign for bank dominance. In a market-based financial system the positive index value is the higher the more dominant the market is.

The *structure-aggregate* is computed by aggregating these three key-measures via principal component analysis (PCA). PCA delivers a single measure which is used as a “[...] conglomerate indicator of the size, activity, and efficiency of stock markets relative to banks” (Demirgüç-Kunt and Levine, 2001, p. 197). We compute this index for Iran and all other 39 countries in order to examine Iran's international position in regard to the three key indices.

In the following section main findings are discussed.

3. Findings

Structure-activity

For 1993 the index shows up a value of about -3.63 which clearly shows up a highly dominating bank activity. In this year relative market activity was very close to zero. A closer look at Table II unveils that Iran has been struggling for an increase in its market activity, indicating a noticeable growth rate in its market capitalization. We can witness several years (1996, 1999, 2003, and 2004) of remarkable growth in market activity while other years (1997, 2000, 2005, and 2006) are marked by noticeable slow-down. Interestingly, some years are marked by growth in both sectors but in other years we can observe opposite growth directions. While the market shows up a striking average yearly growth rate of over 33 percent, the bank-sector reaches a yearly average of about 4 percent. Therefore, the post-war area is characterized by a much more growing market than bank activity. The index has been growing in average by around

Year	TVT	Change in percent	Bank credit	Change in percent	TVT/bank credit	Change in percent	Index value
1993	0.0052		0.1955		0.0265		-3.6314
1994	0.0063	22.04	0.1944	-0.53	0.0325	22.68	-3.4270
1995	0.0082	29.16	0.1759	-9.54	0.0464	42.78	-3.0708
1996	0.0237	190.11	0.1522	-13.48	0.1555	235.30	-1.8610
1997	0.0115	-51.29	0.1620	6.48	0.0711	-54.25	-2.6431
1998	0.0135	17.36	0.1791	10.54	0.0755	6.17	-2.5832
1999	0.0217	60.32	0.1733	-3.24	0.1251	65.68	-2.0783
2000	0.0106	-50.91	0.1717	-0.95	0.0620	-50.44	-2.7804
2001	0.0095	-10.78	0.1994	16.17	0.0476	-23.20	-3.0444
2002	0.0164	73.06	0.1965	-1.48	0.0837	75.67	-2.4810
2003	0.0391	137.69	0.2261	15.06	0.1728	106.59	-1.7554
2004	0.0815	108.60	0.2488	10.05	0.3276	89.55	-1.1159
2005	0.0431	-47.07	0.2758	10.87	0.1564	-52.26	-1.8553
2006	0.0219	-49.19	0.2924	6.01	0.0750	-52.07	-2.5907
2007	0.0304	38.71	0.3339	14.17	0.0911	21.49	-2.3960
Mean	0.0228	33.41	0.2118	4.30	0.1033	30.98	-2.4876

Source: Own calculation, data taken from the financial structure dataset (updated: January 2009) provided by the World Bank

Table II.
Iran's structure-activity,
1993-2007

31 percent per year which implies shrinking bank dominance. However, bank activity is still superior even though market activity has significantly increased. The average index of about 2.49 is far away from denoting a balanced activity of both sectors.

In order to examine the development in both sectors more specifically, we extract the total values for domestic equities traded on domestic exchanges and private credit to deposit money banks out of the initial ratios presented in the dataset. Figures 1 and 2 reflect the development of both sectors and clearly imply that the stock market has faced a much more volatile development during these years. In contrast, the banking sector has been facing a stable overall development. In regard to absolute values, again the dominance of banks is obvious.

In regard to the international comparison, listed in Table III, with its average index value Iran ranks eighth place among the ten examined lower-middle income countries.

Value of Domestic Equities Traded on Domestic Exchanges

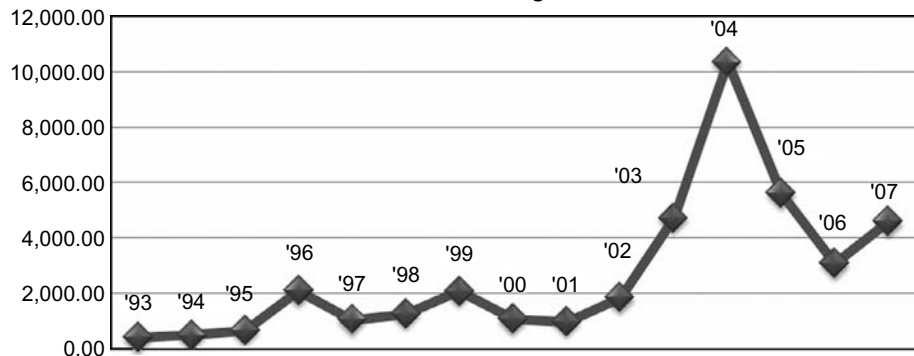


Figure 1.
Trade volume of domestically traded equities, in millions of USD (base year: 2000)

Private Credit by Deposit Money Banks

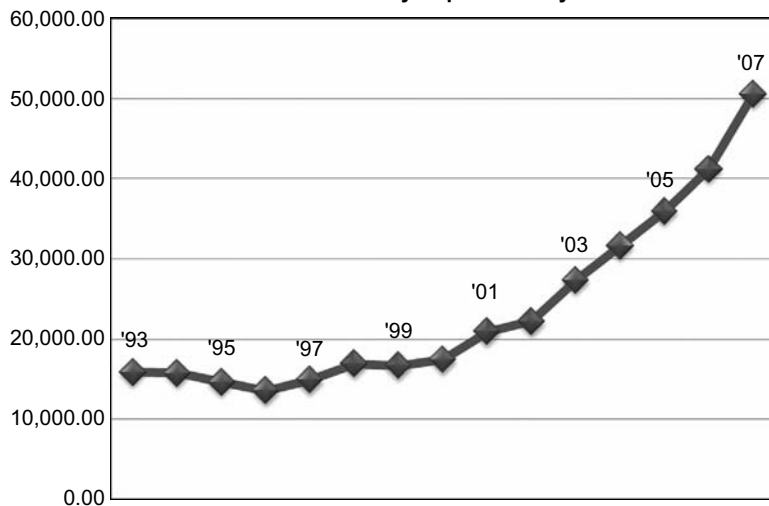


Figure 2.
Private credit volume by domestic banks, in millions of USD (base year: 2000)

CC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Mean
1 USA	0.11	0.13	0.42	0.68	0.98	1.16	1.44	1.90	1.72	1.55	1.00	1.13	1.14	1.47	1.63	1.10
2 KOR	0.21	0.35	-0.28	-0.44	-0.49	-0.42	1.03	1.06	0.61	0.54	0.21	0.05	0.53	0.47	0.70	0.28
3 KWT	-0.36	-0.92	-0.07	0.71	1.03	-0.46	-0.97	-1.38	-0.48	0.02	0.72	0.46	0.97	0.20	-0.04	-0.04
4 SGP	0.58	0.37	-0.17	-0.68	-0.36	-0.56	0.08	-0.32	-0.42	-0.57	-0.13	-0.29	0.06	0.38	0.99	-0.05
5 SAU	-1.70	-1.47	-1.64	-1.58	-0.73	-1.06	-1.06	-0.94	-0.77	-0.38	1.01	1.88	2.42	2.42	1.58	-0.13
6 GBR	-0.90	-0.87	-0.89	-0.85	-0.62	-0.34	-0.20	0.04	-0.01	-0.10	-0.13	0.18	0.21	0.09	0.76	-0.24
7 CAN	-1.10	-0.95	-0.86	-0.57	-0.54	-0.41	-0.37	0.18	-0.43	-0.78	-0.76	-0.54	-0.46	-0.25	-0.05	-0.52
8 NOR	-1.98	-2.01	-1.18	-0.88	-0.69	-0.85	-0.67	-0.54	-0.78	-1.03	-0.87	-0.33	-0.14	0.26	-0.83	-0.83
9 DEU	-1.83	-1.50	-1.46	-1.18	-1.47	-1.17	-1.10	-0.72	-0.44	-0.65	-0.90	-0.79	-0.57	-0.24	-0.03	-0.94
10 JPN	-2.09	-2.04	-2.04	-1.89	-1.84	-2.08	-1.55	-1.22	-1.24	-1.01	-0.66	-0.27	0.12	0.38	0.43	-1.13
1 TUR	-0.06	0.22	0.87	0.25	0.54	0.59	0.84	1.57	1.02	0.91	0.96	0.98	0.84	0.67	0.57	0.72
2 ZAF	-1.67	-1.54	-1.59	-1.10	-0.69	-0.38	-0.17	-0.11	-0.17	0.11	0.03	0.19	0.24	0.55	0.69	-0.37
3 MYS	0.83	0.52	-0.24	0.33	0.09	-1.32	0.85	-0.68	-1.74	-1.47	-0.92	-0.81	-1.08	-0.90	-0.19	-0.56
4 MEX	-0.61	-0.53	-0.99	-0.48	-0.43	-0.99	-0.95	-0.76	-0.86	-1.21	-1.39	-0.81	-0.76	-0.57	-0.27	-0.77
5 RUS	-4.61	-4.25	-4.25	-2.32	-0.81	-1.06	-2.05	-0.33	-0.61	-0.41	0.05	0.09	-0.09	0.69	0.61	-1.08
6 POL	-2.00	-1.16	-2.01	-1.54	-1.29	-1.38	-1.24	-1.07	-1.91	-2.21	-1.94	-1.38	-0.97	-0.62	-0.56	-1.42
7 CHL	-1.98	-1.51	-1.04	-1.48	-1.74	-2.27	-1.80	-1.97	-2.30	-2.63	-1.96	-1.62	-1.36	-1.15	-0.89	-1.71
8 VEN	-1.55	-1.82	-2.35	-1.23	-0.67	-1.93	-2.62	-2.78	-3.49	-4.45	-3.86	-3.02	-4.08	-3.55	-2.67	-2.67
9 HRV	-1.55	-2.67	-4.74	-3.23	-2.91	-4.37	-4.64	-3.56	-4.17	-4.24	-4.10	-3.63	-3.31	-2.66	-2.13	-3.60
10 BGR			-7.04	-11.65		-4.55	-3.27	-3.23	-3.23	-2.72	-3.12	-2.67	-2.01	-2.06	-1.34	-3.91
1 IND	-1.06	-0.97	-1.26	0.13	0.54	0.45	0.97	1.43	0.63	0.26	0.43	0.51	0.41	0.56	0.78	0.25
2 PHL	-0.59	-0.12	-0.46	-0.27	-0.68	-1.15	-0.46	-1.24	-2.10	-2.09	-2.22	-1.90	-1.32	-0.93	-0.14	-1.04
3 IDN	-2.04	-1.96	-1.93	-1.29	-0.99	-1.55	-0.87	-0.71	-1.03	-0.96	-1.10	-0.70	-0.44	-0.53	0.14	-1.06

(continued)

Table III.
International
structure-activity
development, 1993-2007

Table III.

CC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Mean
4 THA	-0.36	-0.71	-1.31	-1.73	-2.26	-2.15	-1.44	-1.82	-1.18	-0.94	-0.32	-0.28	-0.58	-0.66	-0.63	-1.09
5 JOR	-0.83	-1.80	-2.10	-2.76	-2.28	-2.08	-2.32	-2.66	-1.93	-1.64	-1.00	-0.39	0.90	0.48	0.17	-1.35
6 EGY	-4.10	-2.81	-3.24	-2.20	-1.60	-1.95	-1.57	-1.49	-2.57	-2.91	-2.57	-1.97	-0.57	-0.06	-0.06	-1.98
7 MAR	-2.57	-2.22	-1.32	-3.14	-2.49	-2.48	-1.95	-2.80	-2.91	-3.49	-3.52	-2.78	-1.97	-0.94	-0.53	-2.34
8 IRN	-3.63	-3.43	-3.07	-1.86	-2.64	-2.58	-2.08	-2.78	-3.04	-2.48	-1.76	-1.12	-1.86	-2.59	-2.40	-2.49
9 COL	-2.23	-1.68	-2.47	-2.51	-2.37	-2.64	-3.28	-3.67	-3.76	-4.03	-3.60	-2.51	-1.31	-0.98	-1.79	-2.59
10 ECU	-4.04	-3.95	-3.08	-3.85	-3.58	-3.89	-5.84	-6.22	-6.35	-5.67	-4.97	-4.11	-3.94	-3.27	-3.59	-4.42
1 PAK	-1.86	-1.29	-1.43	-0.87	-0.24	-0.49	0.33	0.75	-0.20	0.53	1.29	1.11	1.56	1.31	0.95	0.09
2 KGZ							-2.35	0.87	-1.11	-0.98	-1.98	-0.62	-2.63	-0.92	-1.05	-1.39
3 ZWE	-3.08	-2.00	-2.34	-1.89	-1.25	-1.99	-1.58	-1.47	0.25	-2.97	-3.82	-2.98	-2.96	-3.01	-1.58	-1.71
4 BGD		-3.87			-3.17	-2.51	-2.54	-2.63	-2.76	-2.76	-2.29	-1.90	-1.81	-1.36	-0.53	-2.90
5 NGA	-5.60	-5.09	-5.22	-3.72	-3.28	-3.17	-3.40	-2.90	-2.67	-2.76	-2.76	-2.75	-3.47	-3.62	-3.62	-3.05
6 GHA	-3.96	-1.16	-2.58	-2.97	-2.26	-2.34	-3.47	-4.05	-3.80	-4.05	-2.91	-2.75	-2.75	-3.47	-3.62	-3.10
7 KEN	-4.38	-3.07	-3.40	-3.56	-3.30	-3.73	-3.77	-4.23	-4.36	-4.42	-2.78	-2.39	-2.20	-1.34	-1.61	-3.24
8 ZMB				-4.41	-3.57	-4.38	-2.78	-3.30	-1.52	-4.68	-3.11	-3.97	-3.59	-3.60	-2.77	-3.47
9 CIV	-6.35	-5.03	-5.00	-4.74	-4.36	-3.94	-3.09	-3.84	-5.24	-4.64	-4.37	-3.81	-4.26	-3.04	-2.86	-4.30
10 NPL		-3.80	-3.87	-5.27	-5.35	-5.71	-4.03	-3.87	-4.38	-4.34	-5.32	-3.35	-4.81	-3.86	-2.98	-4.35
Mean	-1.90	-1.81	-2.04	-2.00	-1.52	-1.85	-1.64	-1.57	-1.74	-1.87	-1.61	-1.21	-1.11	-0.84	-0.51	

Source: Own calculation, data taken from the financial structure dataset (updated: January 2009) provided by the World Bank

Compared to all analyzed countries, Iran ranks 28th. The observed values strengthen the assumption that in terms of balance of its bank and market activities, Iran ranks far behind developed countries. Interestingly, a low income and Islamic country like Pakistan shows up a higher activity-index and thus a higher balance of both sector-activities. Nevertheless, it also may be pointed out that we cannot identify absolutely balanced activity-indexes for developed countries. Rather, we can confirm a less bank-dominated activity-index for developed countries with a bank-based financial system, like Germany and Japan.

Structure-efficiency

As OC data is only available from 1997 to 2006, we are only able to analyse the relative efficiency of both sectors for a shorter period of time than in the case of the other two indexes. Referring to Table IV, this time period is still sufficient to identify an averagely notable increase in market efficiency by 16.5 percent. From 2002 to 2004, we can observe remarkable index growth rates (before taking the log) of up to almost 105 percent in 2003 and 2004. While the market's efficiency in terms of TVT has been growing by on average more than 33 percent per year, OC has been falling by averagely about 2 percent per year which implies an increase in bank efficiency as well. Nevertheless, we can witness overall lower market efficiency. The average index value of about -7.83 suggests that in terms of efficiency Iran's financial system can be considered as highly bank-dominated. The main reason is the higher TVT compared to (on average) much lower OC value. In accordance to the development of structure-activity, this index shows up remarkable growth rates for the years 1999, 2002, 2003, and 2004. Contrariwise, other years (except in 1998) are marked by noticeable slow-down rates. In regard to Figure 1, the increase in TVT has been affecting structure-efficiency positively but, in terms of absolute value, it still has been much lower than total bank assets. The increasing bank efficiency is either caused by

Year	TVT	% change	OC	% change	TVT * OC	% change	Index value
1993	0.0052						
1994	0.0063	22.04					
1995	0.0082	29.16					
1996	0.0237	190.11					
1997	0.0115	-51.29	0.0230		0.000265		-8.2346
1998	0.0135	17.36	0.0195	-15.24	0.000264	-0.52	-8.2398
1999	0.0217	60.32	0.0158	-18.93	0.000343	29.96	-7.9777
2000	0.0106	-50.91	0.0258	63.39	0.000275	-19.80	-8.1984
2001	0.0095	-10.78	0.0223	-13.81	0.000212	-23.10	-8.4611
2002	0.0164	73.06	0.0197	-11.36	0.000325	53.40	-8.0332
2003	0.0391	137.69	0.0170	-13.87	0.000664	104.73	-7.3166
2004	0.0815	108.60	0.0167	-2.07	0.001357	104.29	-6.6022
2005	0.0431	-47.07	0.0160	-3.88	0.000691	-49.13	-7.2780
2006	0.0219	-49.19	0.0153	-4.31	0.000336	-51.38	-7.9992
2007	0.0304	38.71					
Mean	0.0228	33.41	0.0191	-2.23	0.000473	16.50	-7.8340

Source: Own calculation, data taken from the financial structure dataset (updated: January 2009) provided by the World Bank

Table IV.
Iran's
structure-efficiency,
1997-2006

increasing banking system assets or/and decreasing overhead costs. Unfortunately, the dataset provided by the World Bank does not enable any extraction of these values. Therefore, we are not able to present a more precise analysis.

Although market efficiency has in average been increasing by notable and higher rates, bank efficiency still dominates. Hence, this index confirms the assumption of a bank-based financial system.

Table V points out to Iran's international rank, namely 33rd. Among lower middle-income countries Iran ranks ninth. Even though, available data for the years 1993-1996 could affect Iran's rank positively, it appears very likely that Iran still would rank among countries with highly bank-dominated structure-efficiency index. Compared to high income countries, Iran shows up a very weak efficiency while upper middle income countries like Venezuela, Croatia, and Bulgaria show very similar values.

Structure-size

Table VI lists structure-size trend from 1993 to 2007. The index average implies a size advantage of the banking sector in comparison to its counterpart. On average, market capitalization relative to GDP shows up a yearly growth rate of more than 20 percent. Banking sector growth rate has on average been 4.3 percent per year. Therefore, the size difference has been declining significantly over this period. Interestingly, in 1999 and 2004 both sectors were almost balanced in size. Still, it remains obvious that bank size dominates market size. Although the index value (before taking the log) has been growing by about 18.6 percent per year, the average index score per year is still in a bank-based range of -0.51 . Nevertheless, this is the most balanced index and its development from 1993 to 2007 shows up how impressively fast market has grown in size.

Compared to the structure-size of all other observed low income countries, presented in Table VII, Iran ranks eighth while it ranks 29th compared to all countries examined. Another striking aspect is that Iran's index value is very close to that of South Korea, while Norway, Japan, and Germany show up lower values.

Figure 3 demonstrates how volatile the trend of market capitalization has been during this period. Since bank credit has been growing moderately but continuously, as seen in Figure 2, there has not been the chance of catching up with the banking sector. In terms of total value, bank credit is significantly higher than market capitalization. Thus, a significant size gap between both sectors is evident.

Overall, the dominating role of the banking sector over the market sector can be confirmed for all three observed indexes.

Structure-aggregate

PCA delivers three (so called) principal components (for detailed explanations refer to Shlens (2009)) of which we only utilize the first one as this component incorporates the highest variance of aggregated data, in our case it is over 77 percent:

Note, however, that an economy can be classified as market-based or bank-based only relative to the other countries in the sample, since there is no absolute measure of market or bank-based financial systems (Demirgüç-Kunt and Levine, 2001, p. 197).

Therefore, this measure gives us an overall view of the financial structure as it reflects all three structure indices of activity, size, and efficiency at once. When referring to Table VIII, Iran shows up a value of about -0.85 which indicates a highly bank-based

CC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Mean
1 USA	-3.90	-3.91	-3.64	-3.40	-3.10	-2.86	-2.65	-2.18	-2.31	-2.47	-2.99	-2.85	-2.81	-2.44	-2.23	-2.92
2 GBR	-4.47	-4.61	-4.36	-4.31	-3.94	-3.76	-3.66	-2.86	-3.11	-3.12	-2.95	-2.67	-2.32	-3.52	-2.40	-3.47
3 KOR	-4.12	-4.03	-4.65	-4.80	-4.72	-4.10	-3.41	-2.95	-3.81	-3.86	-4.14	-4.26	-3.76	-3.80	-3.37	-3.99
4 CAN	-5.37	-5.14	-4.89	-4.29	-4.32	-4.08	-4.07	-3.41	-3.37	-3.44	-3.79	-3.69	-3.67	-3.47	-3.44	-4.03
5 DEU	-5.41	-4.93	-4.85	-4.54	-4.86	-4.34	-4.22	-3.71	-3.44	-3.63	-3.89	-3.65	-3.65	-3.53	-2.88	-4.10
6 SGP	-3.87	-4.14	-4.91	-5.55	-5.02	-4.69	-4.23	-3.97	-3.80	-6.00	-5.05	-4.14	-4.19	-4.41	-3.73	-4.51
7 JPN	-5.75	-5.69	-5.69	-5.50	-5.42	-5.64	-4.72	-4.46	-4.55	-4.62	-4.58	-4.30	-3.85	-3.86	-3.84	-4.83
8 NOR	-6.30	-6.29	-5.51	-4.60	-4.31	-4.43	-4.55	-4.58	-4.53	-5.26	-5.07	-4.62	-4.53	-4.24	-4.19	-4.87
9 KWT	-6.78	-6.96	-5.75	-5.19	-4.37	-5.58	-5.91	-6.64	-5.63	-5.26	-4.56	-4.83	-4.34	-5.03	-5.49	-5.49
10 SAU	-7.55	-7.17	-7.33	-7.30	-6.47	-6.53	-6.47	-6.51	-6.20	-5.78	-4.43	-3.55	-2.91	-2.72	-3.59	-5.63
1 TUR	-5.13	-3.91	-3.80	-4.38	-3.91	-3.59	-3.40	-2.67	-3.51	-3.72	-3.61	-3.50	-3.53	-3.77	-3.98	-3.76
2 ZAF	-5.52	-5.49	-5.49	-4.77	-4.55	-4.08	-4.09	-3.81	-3.70	-3.04	-3.23	-3.26	-3.01	-2.76	-2.65	-3.96
3 MYS	-3.35	-3.68	-4.26	-3.70	-3.85	-4.99	-4.61	-4.55	-5.57	-5.44	-5.14	-5.13	-5.42	-5.31	-4.24	-4.62
4 MEX	-5.04	-4.90	-5.27	-5.20	-4.78	-5.08	-5.38	-4.98	-5.61	-5.98	-6.15	-5.62	-5.23	-5.40	-4.16	-5.25
5 CHL	-6.13	-5.51	-5.03	-5.40	-5.59	-6.10	-5.61	-5.73	-6.05	-6.26	-5.62	-5.26	-4.95	-4.86	-4.70	-5.52
6 RUS	-	-10.15	-8.84	-7.10	-5.66	-5.79	-6.51	-5.07	-5.29	-5.11	-4.61	-4.02	-4.13	-3.19	-3.11	-5.61
7 POL	-6.93	-5.94	-6.95	-6.16	-6.03	-5.86	-5.76	-5.46	-6.28	-6.57	-6.52	-5.95	-5.60	-5.41	-5.14	-6.04
8 VEN	-5.97	-6.87	-7.51	-6.60	-5.72	-6.32	-6.89	-7.36	-7.98	-9.01	-8.71	-8.10	-9.24	-8.70	-7.50	-7.50
9 HRV	-	-6.87	-8.81	-7.42	-6.97	-8.02	-8.42	-7.59	-8.29	-8.34	-7.97	-7.53	-7.24	-6.75	-6.04	-7.59
10 BGR	-	-	-10.48	-16.05	-	-9.16	-8.21	-8.07	-8.20	-7.49	-7.64	-7.05	-6.29	-6.36	-5.67	-8.39
1 IND	-6.13	-6.14	-6.35	-5.03	-4.61	-4.60	-4.13	-3.56	-4.39	-4.71	-4.52	-4.40	-4.43	-4.32	-4.09	-4.76
2 THA	-4.34	-4.51	-5.03	-5.45	-5.60	-5.10	-4.74	-5.44	-5.00	-4.95	-4.16	-4.19	-4.69	-4.53	-4.62	-4.82
3 PHL	-5.15	-4.59	-4.89	-4.48	-4.66	-4.99	-4.46	-5.49	-6.30	-6.32	-6.58	-6.34	-5.68	-5.80	-4.89	-5.37
4 JOR	-4.97	-5.94	-6.12	-6.75	-6.31	-6.13	-6.37	-6.74	-5.95	-5.55	-4.90	-4.44	-3.17	-3.62	-3.81	-5.39
5 IDN	-6.30	-6.18	-6.16	-5.60	-5.06	-4.97	-5.13	-5.99	-6.32	-6.09	-6.20	-5.62	-5.36	-5.53	-4.87	-5.69
6 COL	-6.61	-6.15	-6.76	-6.67	-6.51	-6.42	-7.09	-7.37	-7.63	-8.17	-7.88	-6.82	-5.73	-5.46	-5.76	-6.73

(continued)

Table V.
International
structure-efficiency
development, 1993-2007

Table V.

CC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Mean
7 EGY	-9.56	-8.09	-8.39	-7.36	-6.66	-6.84	-6.32	-6.22	-7.26	-7.57	-7.29	-6.64	-5.28	-4.87	-4.72	-6.87
8 MAR	-8.06	-7.48	-6.38	-7.87	-7.01	-7.08	-6.27	-7.11	-7.23	-7.81	-7.90	-7.22	-6.36	-5.50	-5.18	-6.96
9 IRN					-8.23	-8.24	-7.98	-8.20	-8.46	-8.03	-7.32	-6.60	-7.28	-8.00		-7.83
10 ECU					-7.47	-7.80	-9.39	-9.42	-10.17	-9.45	-8.94	-8.40	-8.31	-7.33	-7.80	-8.59
1 PAK	-6.91	-6.44	-6.49	-5.83	-5.10	-5.41	-4.62	-4.45	-5.29	-4.73	-3.90	-4.07	-3.47	-3.49	-4.03	-4.95
2 ZWE			-6.72	-6.53	-5.91	-6.30	-5.63	-5.62	-4.41	-4.86	-4.20	-5.57	-4.43	-4.25		-5.37
3 KGZ								-5.82	-6.67	-6.79	-7.78	-6.42	-8.07	-6.02	-6.23	-6.73
4 KEN			-8.18	-8.34	-7.98	-8.20	-8.13	-8.47	-8.60	-8.67	-7.11	-6.66	-6.47	-5.59	-6.04	-7.57
5 NGA	-10.08	-9.75	-9.93	-8.55	-8.01	-7.76	-8.07	-7.66	-6.96	-6.99	-6.61	-6.33	-6.83	-6.50	-5.42	-7.70
6 GHA		-7.21	-8.36	-8.77	-7.59	-7.37	-8.02	-8.64	-8.49	-8.97	-7.63	-7.45	-7.77	-8.03	-7.64	-7.99
7 BGD	-11.51	-9.58	-9.40	-7.92	-8.51	-7.77	-8.12	-8.01	-8.00	-8.17	-8.88	-7.92	-7.93	-7.83	-6.37	-8.39
8 ZMB				-9.35	-8.62	-9.30	-7.68	-8.26	-6.44	-9.97	-8.40	-9.19	-8.55	-8.66	-7.74	-8.51
9 CIV	-10.74	-9.56	-9.59	-9.53	-9.17	-8.76	-7.96	-8.64	-9.96	-9.35	-9.07	-8.36	-8.76	-7.56	-7.26	-8.95
10 NPL		-9.38	-9.16	-10.48	-10.63	-10.84	-9.18	-9.12	-9.75	-9.58	-10.17	-8.46	-9.85	-8.98	-7.85	-9.53
Mean	-6.27	-6.28	-6.55	-6.51	-5.98	-6.13	-5.95	-5.92	-6.11	-6.28	-6.00	-5.63	-5.48	-5.28	-4.82	

Source: Own calculation, data taken from the financial structure dataset (updated: January 2009) provided by the World Bank

Year	Market capitalization	Change in percent	Bank credit	Change in percent	Market cap./bank credit	Change in percent	Index value
1993	0.0296		0.1955		0.1515		-1.8869
1994	0.0303	2.20	0.1944	-0.53	0.1557	2.74	-1.8598
1995	0.0513	69.55	0.1759	-9.54	0.2918	87.42	-1.2316
1996	0.1064	107.31	0.1522	-13.48	0.6992	139.60	-0.3578
1997	0.1534	44.21	0.1620	6.48	0.9470	35.44	-0.0545
1998	0.1467	-4.40	0.1791	10.54	0.8190	-13.51	-0.1997
1999	0.1756	19.71	0.1733	-3.24	1.0132	23.71	0.0131
2000	0.1463	-16.69	0.1717	-0.95	0.8522	-15.89	-0.1600
2001	0.0745	-49.07	0.1994	16.17	0.3736	-56.16	-0.9846
2002	0.1037	39.15	0.1965	-1.48	0.5277	41.24	-0.6393
2003	0.1808	74.38	0.2261	15.06	0.7998	51.56	-0.2234
2004	0.2510	38.83	0.2488	10.05	1.0089	26.15	0.0089
2005	0.2278	-9.27	0.2758	10.87	0.8257	-18.16	-0.1916
2006	0.1740	-23.59	0.2924	6.01	0.5951	-27.92	-0.5190
2007	0.1551	-10.87	0.3339	14.17	0.4646	-21.93	-0.7667
Mean	0.1412	20.10	0.2118	4.30	0.7259	18.16	-0.5119

Source: Own calculation, data taken from the financial structure dataset (updated: January 2009) provided by the World Bank

Table VI.
Iran's structure-size,
1993-2007

Table VII.
International
structure-size
development, 1993-2007

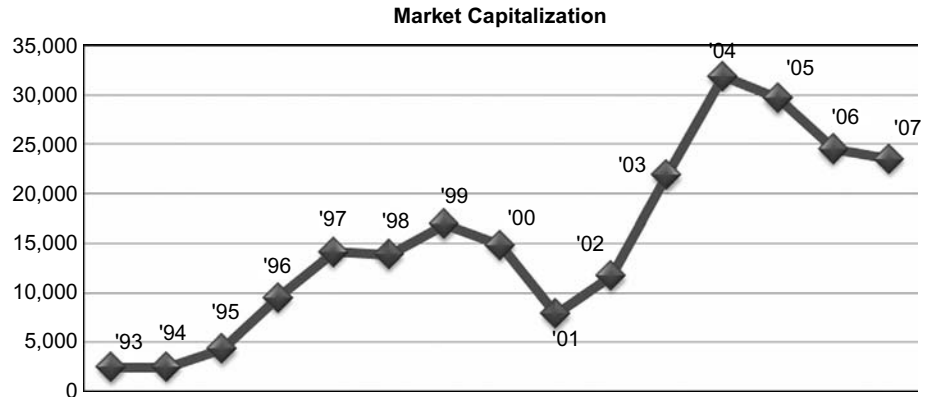
CC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Mean
1 USA	0.48	0.49	0.58	0.76	0.95	1.10	1.23	1.21	1.04	0.84	0.80	0.90	0.89	0.88	0.87	0.87
2 SAU	0.76	0.47	0.22	0.28	0.43	0.26	0.18	0.37	0.39	0.35	0.70	1.17	1.58	1.38	1.11	0.64
3 KWT		0.76	0.61	0.66	0.67	0.40	0.14	0.17	0.19	0.24	0.57	0.75	1.03	1.05		0.56
4 SGP	0.69	0.87	0.69	0.57	0.34	0.12	0.48	0.68	0.35	0.11	0.22	0.39	0.53	0.87	0.80	0.51
5 GBR	0.00	0.06	0.06	0.16	0.20	0.29	0.45	0.45	0.24	-0.04	-0.14	-0.15	-0.14	-0.12	-0.22	0.07
6 CAN	-0.40	-0.25	-0.24	-0.09	0.05	0.11	0.28	0.44	0.10	-0.32	-0.30	-0.08	0.00	-0.03	0.12	-0.04
7 KOR	-0.33	-0.19	-0.26	-0.54	-1.10	-0.98	-0.14	-0.26	-0.66	-0.67	-0.64	-0.46	-0.21	-0.07	0.01	-0.43
8 NOR	-1.03	-0.73	-0.67	-0.53	-0.39	-0.56	-0.64	-0.46	-0.52	-0.69	-0.72	-0.47	-0.29	-0.13	0.01	-0.56
9 JPN	-1.05	-0.94	-0.94	-0.89	-1.08	-1.17	-0.91	-0.85	-0.84	-0.67	-0.52	-0.29	-0.05	0.12	0.09	-0.67
10 DEU	-1.53	-1.48	-1.55	-1.39	-1.13	-0.94	-0.66	-0.48	-0.63	-0.97	-1.15	-0.99	-0.94	-0.78	-0.61	-1.02
1 ZAF	0.69	1.01	1.11	1.16	0.98	0.86	0.91	1.00	0.75	0.83	0.83	0.99	1.18	1.27	1.29	0.99
2 CHL	0.61	0.87	0.82	0.64	0.49	0.38	0.37	0.40	0.33	0.19	0.37	0.56	0.55	0.55	0.58	0.51
3 MEX	0.39	0.17	0.19	0.36	0.49	0.31	0.28	0.37	0.29	0.21	0.19	0.43	0.61	0.74	0.91	0.39
4 TUR	-0.04	0.54	-0.01	-0.12	0.28	0.22	0.73	0.90	0.74	0.37	0.29	0.41	0.40	0.34	0.28	0.36
5 MYS	0.85	1.03	0.77	0.75	0.37	-0.15	0.08	0.14	0.01	0.02	0.15	0.29	0.25	0.25	0.44	0.35
6 RUS		-5.77	-1.41	-0.13	0.82	0.91	0.74	0.69	0.32	0.61	0.84	0.74	0.85	1.29	1.15	0.12
7 VEN	-0.11	0.05	-0.31	0.45	0.49	0.05	-0.34	-0.34	-0.58	-0.58	-0.58	-0.62	-0.97	-1.25	1.15	-0.33
8 POL	-2.40	-1.74	-1.69	-1.38	-1.03	-0.77	-0.43	-0.33	-0.56	-0.66	-0.57	-0.20	0.04	0.18	0.19	-0.76
9 HRV			-2.28	-1.18	-0.55	-0.78	-0.98	-0.91	-0.91	1.02	1.04	-0.77	-0.60	-0.24	0.32	-0.84
10 BGR				-4.60	-6.20	-0.83	-0.50	-0.79	-1.14	1.43	-1.27	-1.17	-0.96	-0.56	-0.27	-1.64
1 PHL	0.82	1.06	0.91	0.74	0.34	0.05	0.21	0.20	-0.08	-0.23	-0.14	0.07	0.29	0.65	0.94	0.39
2 IND	0.26	0.45	0.50	0.40	0.31	0.22	0.32	0.32	-0.02	-0.22	0.11	0.39	0.47	0.64	0.95	0.34
3 JOR	0.27	0.23	0.10	-0.02	0.02	0.07	0.04	-0.09	-0.13	-0.02	0.25	0.63	1.06	1.01	0.89	0.29
4 COL	0.09	-0.01	0.08	0.05	-0.08	-0.26	-0.40	-0.38	-0.28	-0.29	-0.21	0.10	0.41	0.54	0.24	-0.03
5 IDN	-1.15	-0.74	-0.55	-0.39	-0.65	-0.67	-0.10	0.46	-0.07	-0.25	-0.05	0.15	0.18	0.29	0.58	-0.20
6 MAR	-1.04	-0.73	-0.56	-0.31	-0.19	-0.18	-0.19	-0.38	-0.57	-0.77	-0.76	-0.35	-0.13	0.10	0.34	-0.38

(continued)

CC	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	Mean
7 EGY	-1.06	-1.13	-1.03	-0.69	-0.50	-0.45	-0.41	-0.47	-0.64	-0.61	-0.47	-0.20	0.28	0.55	0.73	-0.41
8 IRN	-1.89	-1.86	-1.23	-0.36	-0.05	-0.2	0.01	-0.16	-0.98	-0.64	-0.22	0.01	-0.19	-0.52	-0.77	-0.60
9 THA	-0.28	-0.22	-0.43	-0.72	-1.32	-1.85	-1.33	-1.17	-1.26	-1.09	-0.48	-0.21	-0.28	-0.30	-0.18	-0.74
10 ECU	-1.39	-0.75	-0.68	-0.89	-1.14	-1.31	-1.78	-2.29	-1.64	-1.26	-1.01	-0.93	-0.94	-0.90	-0.92	-1.19
1 GHA	-0.95	1.42	1.80	1.57	1.03	0.71	0.38	0.21	-0.13	-0.02	0.27	0.69	0.34	-0.24		0.50
2 ZWE	-0.11	0.23	0.22	0.52	0.40	0.19	0.55	0.72	1.48							0.47
3 ZMB			-0.84	-0.06	0.46	0.87	0.41	0.18	0.02	0.13	0.07	0.02	0.33	0.27	0.43	0.20
4 NGA	-0.88	-0.45	-0.08	-0.06	0.03	-0.15	-0.39	-0.29	-0.38	-0.29	-0.11	0.08	0.36	0.64	0.73	-0.08
5 KEN	-0.28	0.44	0.25	-0.23	-0.45	-0.54	-0.62	-0.87	-0.97	-0.89	-0.18	0.08	0.12	0.55	0.63	-0.20
6 PAK	-0.19	0.03	-0.21	-0.37	-0.30	-0.59	-0.90	-0.82	-0.96	-0.71	-0.31	-0.07	0.23	0.30	0.40	-0.30
7 CIV	-2.03	-1.47	-1.17	-0.91	-0.54	-0.27	-0.11	-0.13	-0.29	-0.29	-0.25	-0.12	0.01	0.32	0.82	-0.43
8 NPL			-1.21	-1.45	-1.64	-1.64	-1.41	-0.95	-0.85	-1.19	-1.23	-1.19	-1.06	-0.73	-0.30	-1.14
9 KGZ								-2.63	-2.68	-2.41	-1.44	-1.33	-1.55	-1.31	-1.32	-1.83
10 BGD					-1.09	-2.02	-2.35	-2.34	-2.29	-2.41	-2.35	-1.96	-1.79	-1.80	-1.50	-1.99
Mean	-0.38	-0.24	-0.21	-0.24	-0.26	-0.24	-0.17	-0.21	-0.35	-0.43	-0.27	-0.07	0.05	0.15	0.28	

Source: Own calculation, data taken from the financial structure dataset (updated: January 2009) provided by the World Bank

Figure 3.
Market capitalization,
in millions of USD
(base year: 2000)



financial system. This value puts Iran on rank 33. Hence, Iran ranks behind almost all other lower-middle income countries, except Ecuador. In regard to other indices calculated for Iran, this result does not surprise much. However, although the financial system is clearly bank-based, this finding reflects neither a negative nor a positive finding. Rather, this score implies how underdeveloped the stock market is while at the same time we cannot classify the banking sector to be well developed. Developed countries show up rather positive scores as their stock markets are much more developed. Nevertheless, their banks are highly developed as well. The USA unsurprisingly ranks first since it shows up the biggest stock market and a highly market-based financial system.

The factor plot in Figure 4 clarifies how the majority of countries tend to have positive index values. All highly developed countries show up positive structure-aggregate scores although they differ in terms of their financial structure.

4. Conclusion

We can prove that Iran's financial structure is, indeed, highly bank-based. Still, the signs of market improvement are apparent in regard to all three key-measures. The yearly growth rates for all indexes (in average) are much higher for the market than for the banking sector. Noticeably, the market is growing and moving towards a more balanced structure.

However, we cannot confirm to have identified a well-developed banking sector. Referring to previous researches, we most likely have to consider this result to be due to a very underdeveloped market rather than due to a well-developed banking sector. Demirgüç-Kunt and Levine (2001, p. 202) point out to this issue directly. This issue has also been addressed more or less directly in their previous works.

In regard to political suggestions, we highly recommend to focus on a much more balanced financial structure. Developed countries are revealing more balanced index values, regardless of being either bank- or market-based. Hence, the index values can also be interpreted as indicators of the overall economical status of a nation. In Iran's case, the financial system should improve from both sides. Nevertheless, the market should receive higher priority as it is the weakest part of Iran's financial system.

1	USA ^a	1.9341
2	TUR ^b	1.4090
3	ZAF ^b	1.3373
4	GBR ^a	1.0918
5	SGP ^a	1.0900
6	IND ^c	1.0392
7	KOR ^a	0.8920
8	KWT ^a	0.8805
9	SAU ^a	0.8584
10	MYS ^b	0.8534
11	CAN ^a	0.8327
12	PAK ^d	0.6744
13	MEX ^b	0.6646
14	PHL ^c	0.5596
15	JOR ^c	0.4294
16	ZWE ^d	0.4128
17	CHL ^b	0.3958
18	RUS ^b	0.3764
19	NOR ^a	0.3251
20	DEU ^a	0.2797
21	IDN ^c	0.2250
22	JPN ^a	0.2058
23	THA ^c	0.1860
24	POL ^b	-0.1973
25	COL ^c	-0.3662
26	EGY ^c	-0.3961
27	MAR ^c	-0.5058
28	GHA ^d	-0.5731
29	VEN ^b	-0.7015
30	NGA ^d	-0.7429
31	KEN ^d	-0.8152
32	KGZ ^d	-0.8191
33	IRN ^c	-0.8481
34	ZMB ^d	-0.9323
35	HRV ^b	-1.1990
36	CIV ^d	-1.5350
37	BGD ^d	-1.6956
38	ECU ^c	-1.8117
39	BGR ^b	-1.8196
40	NPL ^d	-1.9945

Source: Own calculation, data taken from the financial structure dataset (updated: January 2009) provided by the World Bank; ^ahigh income; ^bupper middle income; ^clower middle income; ^dlow income

Table VIII.
Structure-aggregate
ranking

Unambiguously, Iran has faced difficult years since the Iranian revolution and its efforts to implement Islamic values in its financial system. Large governmental debt, volatile oil prices, and economical problems have affected and also slowed down the development of both sectors. Future research could also focus on identifying the exact reasons for the observed development.

Another area for further research could be based on current governmental announcements to issue one billion US dollars of energy bonds in order to finance important energy projects. This might indicate that none of the current sectors is able

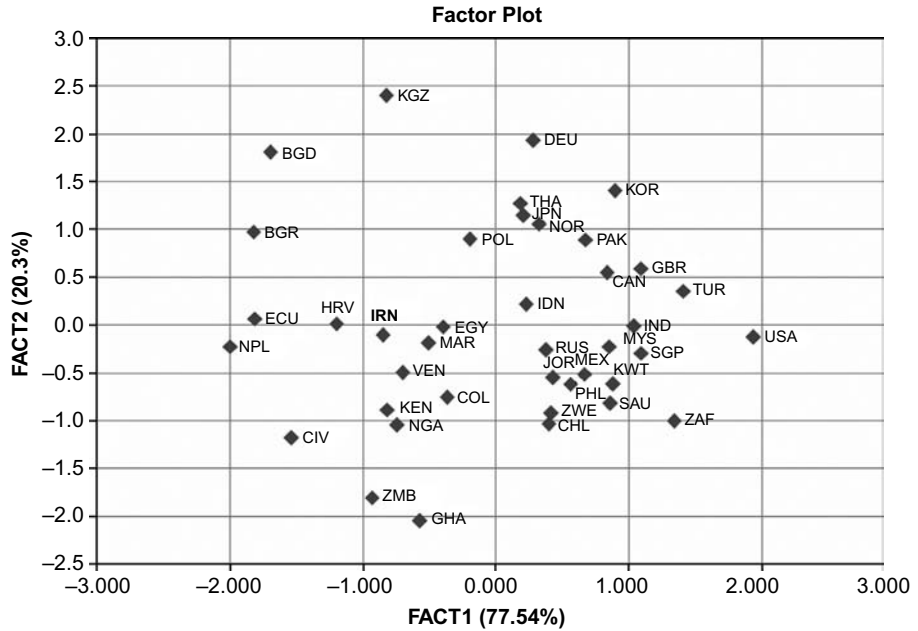


Figure 4.
Factor plot

to satisfy the high capital demand. In regard to Islamic regulations in both sectors, we suggest further research whether conventional systems are in advantage mainly in terms of development and their effect on economic growth.

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