

# The Efficiency of the Financial System: A Comparison of Developed and Less Developed Countries

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## Abstract

In this study, our objective is to find whether high-income countries have a more efficient financial system when compared to middle- and low-income countries. We expect high-income countries to have a better, more efficient financial system when compared to other countries. Our second objective is to find whether high-income OECD countries have a more efficient financial system when compared to high-income non-OECD countries. Most OECD countries are seen as developed nations with a very high Human Development Index, while the same cannot be said for some other high-income countries that are not members of OECD (i.e. Saudi Arabia for example). Do these developed nations have a better, more efficient financial system compared to the other high-income nations that are not classified as developed? We expect to find developed nations to have a better, more efficient financial system when compared to non-OECD countries. We examine eight measures of efficiency. These are “net interest margin”, “lending-deposit spread”, “non-interest income to total income”, “overhead costs to total assets”, “return on assets”, “cost to income ratio”, “credit to government and state-owned enterprises to GDP”, and “stock market turnover ratio”. When we compare the high-income countries to the “middle-income” and “low-income” countries, we find that with respect to six measures, the high-income countries have better “efficiency” values than the other countries. With regard to “cost to income ratio”, the two groups are not significantly different. Interestingly, with respect to “credit to government and state-owned enterprises to GDP (%)”, we find unexpected results. Contrary to our expectation, we find that, in the high-income countries, financial institutions lend more money to government and state-owned enterprises when compared to the low- and middle-income countries. When we compare the high-income OECD-member countries to the high-income Non-OECD-member countries, we find that with respect to five measures, the high-income OECD countries have better “efficiency” values than the high-income Non-OECD countries. With respect to three measures, the two groups are not significantly different. Overall, our results indicate that although high-income countries generally have a more efficient financial system, in terms of certain measures (i.e. cost to income ratio and credit to government and state-owned enterprises), they are not doing well.

**Keywords** efficiency, financial system, OECD, developed countries.

**JEL Classification** G10, G20.



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## Introduction

This study examines how countries with high-income levels differ from countries with middle- or low-income levels with respect to the “efficiency” of their financial system. First, we look at how OECD membership affects the “efficiency” of a country’s financial system. For this purpose, we compare “efficiency” measures across high-income OECD-member countries and high-income non-OECD-member countries. Next, we examine how the actual income level of countries affects the “efficiency” of their financial system.

We use World Bank’s Global Financial Development Database which has information on countries’ “efficiency” variables. As measures of “efficiency”, we use eight different variables. Seven of these variables (i.e. “Net interest margin”, “Lending-deposit spread”, “Non-interest income to total income”, “Overhead costs

to total assets”, “Return on assets”, “Cost to income ratio”, “Credit to government and state-owned enterprises to GDP”) are related to banking, and another variable, the “Stock market turnover ratio” deals with stock market.

The previous studies that examine the relationship between financial development and economic development have mixed results. Some of these studies like Schumpeter and Backhaus (2003), Bagehot (1873), Hicks (1969), and King and Levine (1993) argue that financial development leads economic development, while others like Robinson (1979) argue that economic development leads financial development.

In this paper, our first contribution is to examine the issue from a wider perspective. In total, we examine 203 countries which are included in World Bank’s dataset. Our second contribution is to do a deeper analysis compared to most of the previous studies. We examine eight variables in total. As mentioned above, most of these variables deal with the “efficiency” of the banking system. Our third and final contribution is to examine both the impact of OECD membership and the actual income level on “efficiency”. We argue that two countries with similar GDPs may have different levels of “efficiency” if one is an OECD member and the other is not. This is due to the differences in their cultures, institutions, and resources.

The next section summarizes the previous literature. The following section states our hypotheses. Then, in the next section, we explain our data and methodology. Then, we show the empirical results. The final section concludes.

## Literature Review

While a group of studies argues that financial development leads to economic growth, others argue the opposite (economic growth leads to financial development). In the earliest study on this topic, Bagehot (1873) examines the case of England and states that financial development played a key role in England’s industrialization. Later, in a seminal work, Schumpeter and Backhaus (2003) explains that a well-developed financial system is good because it channels financial resources to the most productive use. Hicks (1969) supports these studies. King and Levine (1993) contend that financial development can promote economic growth. Other studies like Pagano (1993), Fry (1988), and McKinnon (1973) also look into the relationship between economic growth and financial development.

While these studies support the hypothesis that financial development leads to economic growth, Robinson (1979) argues that financial development does not affect growth. According to this paper, financial development follows economic growth because growth creates a need for more and better financial services. Odhiambo (2008) examines Kenya while using savings as an intermitting variable. The author’s objective is to find whether growth leads to financial development or financial development leads to growth. Odhiambo (2008) contends that financial development is caused by growth.

Another paper, Ang and McKibbin (2007), focuses on Malaysia. The authors run co-integration and causality tests for the 1960-2001 period while considering the real interest rate and financial repression. They show that economic development and financial depth are positively related. They support the view that output growth leads to higher financial depth in the long-run.

Arestis and Demetriades (1997) contend that the results obtained from cross-country regressions may not accurately reflect individual country circumstances which include the policy regime, the institutional structure of the financial system, and the degree of effective governance. The authors show that the results significantly vary across countries.

Supporting these papers, Arestis and Demetriades (1999) show that the causal link between finance and growth depends on the individual countries’ circumstances (i.e. operation and nature of the financial institutions and policies pursued in each country).

Klein and Olivei (1999) show that developed countries with open capital accounts had better financial depth and economic growth compared to other countries. However, for developing countries, the same cannot be said. For these countries, opening up the capital account does not promote financial deepness.

Levine (1999) refers to Goldsmith (1969) as an important reference paper that documents the relationship between financial and economic development. According to the author, although there is a lot of progress in research, we still do not know whether economic development leads financial development or vice versa.

Khan, Senhadji, and Smith (2006) test to see if inflation impedes financial deepening. Using a large cross-country sample, they find that if inflation is less than a threshold (i.e. generally 3-6 percent per year, depending on the financial depth measure used), it has a positive effect on financial depth. If it is more than that threshold, it starts to have a negative effect.

As explained above, some of the papers show that finance leads economic growth, while others show that economic growth leads finance, there are yet other papers that simply ignore the possible impact of finance on economic growth. For example, Lucas (1988) explains that economists "badly over-stress" the impact of financial factors in growth. Chandavarkar (1992) and Stern (1989) also ignore the role of the financial system in economic growth.

## Hypotheses

We expect high-income countries' financial systems to be more efficient than those of other countries. Due to the reasons explained above, we also expect high-income OECD member countries' financial systems to be more efficient than those of non-OECD member countries.

Therefore, our formal hypotheses are as follows:

*Hypothesis 1: High-income countries' financial systems are more efficient compared to other countries' financial systems.*

*Hypothesis 2: High-income OECD member countries' financial systems are more efficient compared to high-income non-OECD member countries' financial systems.*

The next section explains our data and methodology.

## Data

In this study, as measures of efficiency, we use eight variables. These are listed below with their sources explained in parenthesis. We actually collected the data from World Bank's Global Financial Development Database (GFDD) which has information on access to finance, and depth, efficiency, and stability of financial systems in the world. World Bank collected these data from different sources. Here, we show the original source of each variable. All of the variables and their definitions are taken from World Bank's Global Financial Development Database.

Having a more efficient financial system means that the financial institutions have thinner profit margins, lower costs, lower lending-deposit spreads, more credit given to private sector, and higher stock market turnover ratios.

Below are the "efficiency" measures that we are using in this study as well as our expectation with regards to each measure:

*Net interest margin (%)* is the accounting value of bank's net interest revenue divided by its average interest-bearing (total earning) assets. (Bankscope)

(We expect the financial institutions in high-income countries to face more competition, therefore, we expect to see thinner net interest margins for them).

*Lending-deposit spread (%)* is lending rate minus deposit rate. (IMF)

(We expect the financial institutions in high-income countries to face more competition, therefore, we expect to see thinner lending-deposit spreads for them).

*Non-interest income to total income (%)* is bank's income that has been generated by non-interest related activities divided by total income (net-interest income plus non-interest income). (Bankscope)

(We expect the financial institutions in low- and middle-income countries to have more varying sources of income, therefore we expect to see more non-interest income for them).

*Overhead costs to total assets (%)* is operating expenses of a bank divided by the value of all assets held. Total assets include total earning assets, cash and due from banks, foreclosed real estate, fixed assets, goodwill, other intangibles, current tax assets, deferred tax assets, discontinued operations and other assets. (Bankscope)

(We expect the financial institutions in high-income countries to be more successful in limiting their costs, therefore, we expect to see lower overhead costs for them).

*Return on assets (%)* is commercial banks' net income divided by yearly averaged total assets. (Bankscope)

(We expect the financial institutions in high-income countries to face more competition, therefore, we expect to see lower profitability values for them).

*Cost to income ratio (%)* is operating expenses of a bank divided by sum of net-interest revenue and other operating income.

(We expect the financial institutions in high-income countries to be more successful in limiting their costs, but at the same time, we expect them to have lower profitability values. Therefore, these two effects cancel each other, so the two groups may not significantly differ in terms of cost to income ratio).

*Credit to government and state-owned enterprises to GDP (%)* is the ratio between credit by domestic money banks to the government and state-owned enterprises and GDP. (IMF)

(We expect the financial institutions in high-income countries to deal more with the private sector rather than government entities. Therefore, we expect to see less credit given to government and state-owned enterprises in these countries when compared to the other countries).

*Stock market turnover ratio (%)* is the total value of shares traded during the period as a share of the average market capitalization for the period. (Standard & Poor's, Global Stock Markets Factbook and supplemental S&P data)

(We expect the stock markets in high-income countries to be more liquid, therefore we expect higher stock market turnover ratios in these countries).

Table 1-Panel A shows that, for six measures, we expect the High-Income Non-OECD countries to have higher values, while for "Stock Market Turnover Ratio", we expect the High-Income OECD countries to have higher values. With respect to "Cost to income ratio", we expect similar values in both groups.

Similarly, Panel B shows that, for six measures, we expect the "Other" (i.e. low- and middle-income) countries to have higher values, while for "Stock Market Turnover Ratio", we expect the High-Income countries to have higher values. With respect to "Cost to income ratio", we expect similar values in both groups.

Table 1. The Expected Results of the Comparisons

<b>Panel A. OECD vs Non-OECD</b>		
<b>Variable</b>	<b>OECD</b>	<b>Non-OECD</b>
Net interest margin (%)		X
Lending-deposit spread (%)		X
Non-interest income to total income (%)		X
Overhead costs to total assets (%)		X
Return on assets (%)		X
Cost to income ratio (%)	?	?
Credit to government and state-owned enterprises to GDP (%)		X
Stock market turnover ratio (%)	X	
<b>Panel B. High-Income vs Other</b>		
<b>Variable</b>	<b>High-Income</b>	<b>Other</b>
Net interest margin (%)		X
Lending-deposit spread (%)		X
Non-interest income to total income (%)		X
Overhead costs to total assets (%)		X
Return on assets (%)		X
Cost to income ratio (%)	?	?
Credit to government and state-owned enterprises to GDP (%)		X
Stock market turnover ratio (%)	X	

Source: Author's own work.

There are 203 countries in the sample (31 countries are High-Income OECD countries, 29 countries are High-Income Non-OECD countries, 108 countries are Middle-Income countries, and 35 countries are Low-Income countries).

In order to compare the High-Income countries to the Other countries and also to compare the High-Income OECD countries to the High-Income Non-OECD countries, we use the Mann-Whitney-Wilcoxon test in the following section.

## Results

Table 2-Panel A shows the summary statistics for the High-Income OECD Countries, and Table 2-Panel B shows the summary statistics for the High-Income Non-OECD Countries.

Table 2. Efficiency of the Financial System in High-Income Countries

<b>Panel A. OECD Countries</b>				
<b>Variable</b>	<b>Mean</b>	<b>StD</b>	<b>Min.</b>	<b>Max.</b>
Net interest margin (%)	1.92	1.17	0.55	5.88
Lending-deposit spread (%)	2.78	1.25	1.04	4.85
Non-interest income to total income (%)	35.12	14.79	8.15	73.82
Overhead costs to total assets (%)	1.37	0.68	0.45	3.34
Return on assets (%)	0.41	2.43	-9.53	7.60
Cost to income ratio (%)	57.27	15.18	25.25	89.63
Credit to government and state-owned enterprises to GDP (%)	14.91	7.99	0.20	31.76
Stock market turnover ratio (%)	78.83	54.81	0.14	231.28
<b>Panel B. Non-OECD Countries</b>				
<b>Variable</b>	<b>Mean</b>	<b>StD</b>	<b>Min.</b>	<b>Max.</b>
Net interest margin (%)	2.85	1.14	1.28	5.48
Lending-deposit spread (%)	5.18	1.73	2.43	7.99
Non-interest income to total income (%)	34.33	12.46	15.64	68.39
Overhead costs to total assets (%)	1.87	0.81	0.80	3.85
Return on assets (%)	0.82	1.29	-4.02	2.68
Cost to income ratio (%)	54.39	21.40	23.48	117.71
Credit to government and state-owned enterprises to GDP (%)	19.07	13.01	0.42	40.24
Stock market turnover ratio (%)	33.24	47.66	1.21	157.27

Source: Author's own work.

Table 3 shows the results of the Mann-Whitney-Wilcoxon tests that compare the “efficiency” measures in High-Income OECD countries and High-Income Non-OECD countries. We expect High-Income OECD countries to have more efficient financial systems compared to High-Income Non-OECD countries. By design, we expect High-Income OECD countries to have higher values for some of these variables and lower values for one variable. Table 1 summarized our expectations.

Table 3. Efficiency of the Fin. Sys. in Non-OECD vs. OECD Countries

<b>Variable</b>	<b>OECD</b>	<b>Non-OECD</b>	<b>p-value</b>	<b>Expected?</b>
Net interest margin (%)	1,92	<b>2,85</b>	0,0015	Yes
Lending-deposit spread (%)	2,78	<b>5,18</b>	0,0011	Yes
Non-interest income to total income (%)	35,12	34,33	0,4273	No
Overhead costs to total assets (%)	1,37	<b>1,87</b>	0,0090	Yes
Return on assets (%)	0,41	<b>0,82</b>	0,0034	Yes
Cost to income ratio (%)	57,27	54,39	0,1466	Yes
Credit to govt. and state-owned ent. to GDP (%)	14,91	19,07	0,1593	No
Stock market turnover ratio (%)	<b>78,83</b>	33,24	0,0031	Yes

Source: Author's own work.

Table 3 shows that, as expected, High-Income Non-OECD countries have significantly higher values in terms of “Net interest margin (%)” and “Lending-deposit spread (%)”. Having higher values in these measures means that the financial systems of High-Income Non-OECD countries are less efficient than the financial systems of High-Income OECD countries. While the mean value of “Net interest margin (%)” is 1.92% for High-Income OECD countries, the corresponding value is 2.85% for High-Income Non-OECD countries (p-value of the difference=0.0015). While the mean value of “Lending-deposit spread (%)” is 2.78% for High-Income

OECD countries, the corresponding value is 5.18% for High-Income Non-OECD countries (p-value of the difference=0.0011). These results are as expected. In terms of these two measures, we can say that the financial systems of High-Income OECD countries are significantly more efficient than the financial systems of High-Income Non-OECD countries.

In terms of “Non-interest income to total income (%)”, we expect High-Income Non-OECD countries to have higher values. The two groups are similar in terms of this measure. While the mean value of this measure is 35.12% for High-Income OECD countries, the corresponding value is 34.33% for High-income Non-OECD countries (p-value of the difference=0.4273).

In terms of “Overhead costs to total assets (%)”, we expect High-Income Non-OECD countries to have higher values. As expected, we are seeing that the mean value of this measure is 1.37% for High-Income OECD countries while the corresponding value is 1.87% for High-Income Non-OECD countries (p-value of the difference=0.0090).

In terms of the profitability measure, “Return on Assets (%)”, we expect High-Income Non-OECD countries to have higher values. We are seeing that this is true. While the mean value of “Return on Assets (%)” is 0.41% for High-Income OECD countries, the corresponding value is 0.82% for High-Income Non-OECD countries (p-value of the difference=0.0034).

In terms of “Cost to income ratio (%)”, we expect the two groups to have similar values. While the mean value of this measure is 57.27% for High-Income OECD countries, the corresponding value is 54.39% for High-Income Non-OECD countries (p-value of the difference=0.1466). When we look at “Credit to govt. and state-owned ent. to GDP (%)”, we expect High-Income Non-OECD countries to have higher values. The two groups are similar in terms of this measure. While the mean value of this measure is 14.91% for High-Income OECD countries, the corresponding value is 19.07% for High-Income Non-OECD countries (p-value of the difference=0.1593). Finally, when we look at “Stock market turnover ratio (%)”, we expect High-Income OECD countries to have higher values. As expected, while the mean value of this measure is 78.83% for High-Income OECD countries, the corresponding value is just 33.24% for High-Income Non-OECD countries (p-value of the difference=0.0031). This result is as expected.

To summarize, the results of the comparisons between High-Income OECD countries and High-Income Non-OECD countries are mostly in line with our expectations. For five of these variables, we find that, High-Income OECD countries have better “efficiency” measures. For three measures, we do not find any significant difference between the two groups.

Table 4-Panel A shows the summary statistics for the Low-Income Countries, and Table 4-Panel B shows the summary statistics for the Middle-Income Countries.

Table 4. Efficiency of the Financial System in Low- and Middle-Income Countries

<b>Panel A. Low Income Countries</b>				
<b>Variable</b>	<b>Mean</b>	<b>StD</b>	<b>Min.</b>	<b>Max.</b>
Net interest margin (%)	6.27	2.92	0.17	11.36
Lending-deposit spread (%)	14.87	11.29	3.24	41.85
Non-interest income to total income (%)	45.02	12.17	22.62	72.76
Overhead costs to total assets (%)	5.24	2.52	0.34	9.66
Return on assets (%)	2.01	1.27	-1.57	4.53
Cost to income ratio (%)	62.47	21.37	24.81	136.98
Credit to government and state-owned enterprises to GDP (%)	7.35	10.17	0.02	49.62
Stock market turnover ratio (value traded/capitalization) (%)	18.73	36.91	1.68	93.96
<b>Panel B. Middle Income Countries</b>				
<b>Variable</b>	<b>Mean</b>	<b>StD</b>	<b>Min.</b>	<b>Max.</b>
Net interest margin (%)	4.66	2.16	0.44	11.78
Lending-deposit spread (%)	7.53	4.96	0.27	32.89
Non-interest income to total income (%)	38.48	15.91	3.02	81.10
Overhead costs to total assets (%)	3.74	2.72	0.11	16.84
Return on assets (%)	1.46	1.04	-2.18	4.82
Cost to income ratio (%)	56.24	14.97	6.65	95.06
Credit to government and state-owned enterprises to GDP (%)	10.78	11.81	0.31	69.27
Stock market turnover ratio (value traded/capitalization) (%)	21.27	38.50	0.15	178.41

Source: Author’s own work.

Next, we want to examine the relation between countries' income levels and the efficiency of their financial systems. Table 5 shows the results of the Mann-Whitney-Wilcoxon tests that compare the "efficiency" variables in High-Income countries (i.e. including OECD and Non-OECD countries) and Other countries (which includes Low- and Middle-Income Countries). We expect High-Income countries to have more efficient financial systems compared to Other countries.

Table 5 shows that, as expected, "Other" countries have significantly higher values in terms of "Net interest margin (%)" and "Lending-deposit spread (%)". Having higher values in these measures means that the financial systems of "Other" countries are less efficient than the financial systems of High-Income countries. While the mean value of "Net interest margin (%)" is 2.30% for High-Income countries, the corresponding value is 5.05% for Other countries (p-value of the difference<0.0001). While the mean value of "Lending-deposit spread (%)" is 4.13% for High-Income countries, the corresponding value is 8,78% for "Other" countries (p-value of the difference<0.0001). These results are as expected. In terms of these two measures, we can say that the financial systems of High-Income countries are significantly more efficient than the financial systems of Low- and Middle-Income countries.

Table 5. Efficiency of the Financial System in High-Income vs. Other Countries

Variable	High-Income	Other	p-value	Expected?
Net interest margin (%)	2,30	<b>5,05</b>	<0.0001	Yes
Lending-deposit spread (%)	4,13	<b>8,78</b>	<0.0001	Yes
Non-interest income to total income (%)	34,81	<b>40,03</b>	0,0120	Yes
Overhead costs to total assets (%)	1,58	<b>4,10</b>	<0.0001	Yes
Return on assets (%)	0,58	<b>1,60</b>	<0.0001	Yes
Cost to income ratio (%)	56,14	57,72	0,2773	Yes
Credit to govt. and state-own. Ent. to GDP (%)	<b>16,40</b>	10,01	<0.0001	No
Stock market turnover ratio (%)	<b>65,81</b>	21,01	<0.0001	Yes

Source: Author's own work.

In terms of "Non-interest income to total income (%)", we expect "Other" countries to have higher values. The table shows that "Other" countries have higher values. While the mean value of this measure is 34.81% for High-Income countries, the corresponding value is 40.03% for Other countries (p-value of the difference=0.0120).

In terms of "Overhead costs to total assets (%)", we expect "Other" countries to have higher values. As expected, we are seeing that the mean value of this measure is 1.58% for High-Income countries while the corresponding value is 4.10% for Other countries (p-value of the difference<0.0001).

In terms of the profitability measure, "Return on Assets (%)", we expect "Other" countries to have higher values. We are seeing that this is true. While the mean value of "Return on Assets (%)" is 0.58% for High-Income countries, the corresponding value is 1.60% for Other countries (p-value of the difference<0.0001).

In terms of "Cost to income ratio (%)", we expect the two groups to have similar values. While the mean value of this measure is 56.14% for High-Income countries, the corresponding value is 57.72% for Other countries (p-value of the difference=0.2773).

When we look at "Credit to govt. and state-owned ent. to GDP (%)", we expect "Other" countries to have higher values. Contrary to our expectation, we find that more credit is given to the government or state-owned enterprises in the High-Income countries. While the mean value of this measure is 16.40% for High-Income countries, the corresponding value is just 10.01% for Other countries (p-value of the difference<0.0001).

Finally, when we look at "Stock market turnover ratio (%)", we expect High-Income countries to have higher values. As expected, while the mean value of this measure is 65.81% for High-Income countries, the corresponding value is just 21.01% for "Other" countries (p-value of the difference<0.0001).

To summarize, the results of the comparisons between High-Income countries and "Other" countries are mostly in line with our expectations. For six measures, we find that, High-Income countries have better "efficiency" measures. For one measure, we do not find any significant difference between the two groups (expected). Interestingly, for one measure (i.e. credit to government and state-owned enterprises to GDP (%)), our results show that the "Other" countries are more efficient.

## Conclusions, Discussion and Recommendations

In this study, we examine two issues. First, we look at the relation between countries' income levels and the efficiency of their financial system. Do richer countries have more efficient financial systems when compared to other countries? Then, we look at how OECD membership affects the efficiency of a country's financial system.

We look into eight measures of efficiency. These measures are "Net interest margin (%)", "Lending-deposit spread (%)", "Non-interest income to total income (%)", "Overhead costs to total assets (%)", "Return on assets (%)", "Cost to income ratio (%)", "Stock market turnover ratio (%)", and "Credit to govt. and state-own. Ent. to GDP (%)". The data on these variables are collected from World Bank's Global Financial Development Database (GFDD).

The results of our comparisons between High-Income OECD countries and High-Income Non-OECD countries are mostly in line with our expectations. For five of these variables, we find that, High-Income OECD countries have better "efficiency" measures. For three measures, we do not find any significant difference between the two groups.

The results of our comparisons between High-Income countries and Other countries (i.e. Low- and Middle-Income countries) are also mostly in line with our expectations. For six measures, we find that, High-Income countries have better "efficiency" measures. With respect to the "cost to income" measure, we do not find any significant difference between the two groups (as expected). With respect to the "credit to government and state-owned enterprises to GDP (%)" measure, "Other" countries are more efficient.

Our results indicate that although rich countries generally have a more efficient financial system, in terms of certain measures (i.e. cost to income ratio and credit to government and state-owned enterprises), they are not doing well. We advise policymakers in High-Income countries to take precautions to improve these two measures. For the other countries, we advise them to improve the "competition" in the financial sector. Definitely, more financial sector competition is needed in these countries. More competition would help eliminate the "frictions" (i.e. higher margins, higher costs, higher lending-deposit spreads, etc.) in the system which hurt the companies that require financing.

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