



FINANCIAL CRISES, INCOME LEVELS AND ACCESS TO FINANCE

KAYA Halil Dincer

Northeastern State University, United States

Abstract:

In this study, we examine the impact of the 2008 Global Crisis on “access to finance” in high-income OECD, high-income non-OECD, middle-income, and low-income countries. We use three measures of access to finance. These are “Number of bank branches per 100,000 adults”, “Value traded of top 10 traded companies to total value traded (%)”, and “Market capitalization outside of top 10 largest companies to total market capitalization (%)”. During the run-up to the crisis and immediately after the crisis, we do not find any significant change in any of the three “access to finance” measures. We find that, during the crisis, only middle-income countries were affected significantly. These countries were affected in only one of the measures which is “Value traded of top 10 traded companies to total value traded (%)”. This measure went up and this change is marginally significant. We conclude that the global crisis only affected “access to finance” in middle-income countries.

Key words: *access to finance, bank branches, global crisis, financial crises*

1. Introduction

In this study, we examine the impact of the 2008 Global Crisis on “access to finance” in high-income OECD, high-income non-OECD, middle-income, and low-income countries. We can define “Access to finance” as the ability of firms or individuals to obtain financial services, which includes credit, insurance and other risk management services, deposit, and payment.

The previous research shows that there are several factors that influence “access to finance”. These studies look into this issue from several different perspectives. While some of the previous papers focus on the impact of shared cultural norms, language, and religion on “access to finance”, others look into the impact of regulations and contracts. There is also a separate stream of research that focuses on the effects of the aggregate real wealth of a region, consisting of its natural resources, infrastructure, technology, human knowledge and skill, as well as the quality of local financial systems on “access to finance”.

In this study, we contribute to the literature by focusing on the macro-economy as a possible factor in explaining “access to finance”. More specifically, we focus on the impact of the recent global crisis on firms’ and individuals’ access to finance. We use three “access to finance” measures. These are “Number of bank branches per 100,000 adults”, “Value traded of top 10 traded companies to total value traded (%)”, and “Market capitalization outside of top 10 largest companies to total market capitalization (%)”. The first measure deals with individuals’ access to finance and the second and the third measures deal with firms’ access to finance.

The paper proceeds as follows: Section 2 discusses the previous literature. Section 3 explains our hypotheses. Section 4 describes the data. Section 5 shows the empirical results; finally, Section 6 concludes.

2. Literature Review

Previous research shows that the factors that affect access to finance fall into one of the following four broad categories: cultural influences, regulatory framework, contract enforcement, and resources and infrastructure.

Several papers show that shared cultural norms, language, and religion bear a heavy influence upon the perceived proper uses of credit in a given society. Stulz & Williamson (2003) examine the ways in which common cultural proxies such as language and religion affect creditor rights. The authors compare averages of creditor rights variables between countries which are English-speaking vs. non-English-speaking, Christian vs. non-Christian, and Catholic vs. Protestant. With regard to creditor rights, English-speaking countries score higher than non-English-speaking countries, non-Christian countries score higher than Christian countries, and Protestant countries score higher than Catholic countries. The authors show that countries of the Western tradition score the highest in creditor rights. Stiglitz (1990) explains the problems faced by non-local financial institutions when they lend to rural, third world locations. The author discusses the success of the *Grameen Bank* in Bangladesh. The author explains the difficulty in enforcing contracts, information asymmetry due to geography, and the high cost of alleviating this asymmetry. Zeller (1998) argues that groups that have clear internal rules of conduct have a significantly higher repayment performance. The author also shows the establishment of minimum asset requirements as well as limits on the geographical living distances of members as important factors in repayment performance.

Several other papers discuss the challenge of developing a regulatory framework which prevents financial fraud, yet maximizes the efficient use of capital. The common argument in these papers is the vital role played by the regulatory environment in the stability and efficiency of financial and banking systems in developing countries. Jalilian, Kirkpatrick, & Parker (2007) show that both efficiency and quality of regulations are vital in optimizing a nation’s economic output. Graham & Woods (2006) argue that “the quality and efficiency of regulation, the degree to which it is employed in the areas in which it is most needed, and the degree to which private

sector solutions are allowed to be implemented when appropriate”, are all important for financial stability. Booth et al. (2001) find that private firms in developing countries form their capital structure based on the same motivating factors as developed countries, but that factors specific to individual countries such as the regulatory environment, concentration of bank ownership, and differences in accounting practices and reporting standards can alter their decisions. Barth, Caprio, & Levine (2001) conclude that restrictions on banking powers do not appear to have a material effect on the overall financial health of a country, but that restrictions on non-banking, commercial activities of banks such as securities and insurance underwriting as well as real estate investments can lead to banking inefficiencies. Barth et al. (2009) find that the corruption of banking officials highly discourages foreign investment. They recognize the importance of information-sharing in reducing the risk of bribery, but recognize that private credit bureaus are key in reducing lending corruption.

Other studies show that the framework in which contracts are enforced and disputes resolved, as well as the adaptability of that framework to the changing enforcement needs of the population, are crucial in proper loan underwriting and credit monitoring. In examining the financial strength and credit access of developing nations, Levine (2005) demonstrates the importance of private property as a base of contract enforcement. Beck, Demirguc-Kunt & Levine (2001) find that financial development in common law countries is significantly higher in most categories than civil law countries (2001). Demirguc-Kunt, & Levine (2005) show that countries with French Legal origins are not as efficient at debt enforcement as common law societies which base their decisions on principles of equity. Djankov et al. (2006) find that debt enforcement around the world is highly inefficient. Djankov, McLiesh, & Schleifer (2005) argue that developed economies tend to emphasize creditor rights, while developing economies without the resources for a strong legal framework will instead rely more on information-sharing and credit registries. They also find that creditor rights are emphasized more in common law countries than civil law countries, and that creditor rights remain stable over time. They suggest a government role in facilitating the sharing of information in civil law countries, as governments in such countries are well-positioned to collect and disseminate this information due to their centralized nature.

Several other studies examine whether the level of aggregate real wealth of a region, consisting of its natural resources, infrastructure, technology, human knowledge and skill, as well as the quality of local financial systems, play a major role in firms' decisions to invest. Asiedu (2006) discusses the impact of foreign direct investment in Africa. She finds that not only is the quantity of natural resources not a primary factor in access to credit, but neither is the quantity of FDI a nation receives. According to the surveys used by the author, corruption, taxes, regulation, weak infrastructure, and lack of access to global market are the most important constraining factors. Alfaro et al. (2004) suggests that “the full benefits of long-term stable flows may also not be realized in the absence of well-functioning financial markets.” Gelos, Sahay, & Sanderis (2011) concur with Asiedu (2006) that resource-abundant countries don't necessarily have greater access to credit markets. Additionally, neither a

country's links with the rest of the world through trade and FDI nor defaults in the previous year materially affect credit access either. They show that the perceived stability and quality of lawmaking and governing bodies matter significantly, as well as the susceptibility to financial shocks. Clark, Cull & Peria (2001) address the impact of entry by foreign banks on domestic financial markets in developing countries. Some hold the view that the entry of foreign banks, especially large ones, would reduce access to credit for smaller lenders. The authors demonstrate that this is not the case.

3. Hypotheses

We expect all access to finance measures to worsen due to the global crisis. Therefore, we expect to find significantly fewer bank branches for individuals. We expect more imbalance in the capital markets due to the panic which would result in stock trading concentrating on the largest companies. Therefore, we expect to find significantly higher values for "Value traded of top 10 traded companies to total value traded" after the crisis when compared to the pre-crisis period. For the same reason, we expect the variable "Market cap. outside of top 10 largest companies to total market cap." to be significantly higher after the crisis when compared to the pre-crisis period.

Our formal hypotheses are as follows:

Hypothesis 1: There are fewer bank branches available to individuals after the global crisis when compared to the pre-crisis period.

Hypothesis 2: The value traded of top 10 traded companies relative to total value traded is higher after the crisis when compared to the pre-crisis period.

Hypothesis 3: The market capitalization outside of top 10 largest companies relative to total market capitalization is lower after the crisis when compared to the pre-crisis period.

Table 1 shows the expected change in each variable due to the global crisis.

Table 1. The Expected Change in the Variables

Variable	Up	Down
Bank branches		X
Value traded of top 10	X	
Market cap. outside of top 10		X

4. Data

We use three measures of "access to finance". These are: "Number of bank branches per 100,000 adults", "Value traded of top 10 traded companies to total value traded (%)", and "Market capitalization outside of top 10 largest companies to total market capitalization (%)". These measures are listed below with their sources

explained in parenthesis. We collected the data from World Bank's Global Financial Development Database. World Bank collected the data from different sources. Below, for each measure, we show the actual source of each measure.

Our "access to finance" measures are:

Bank branches per 100,000 adults: Number of commercial bank branches per 100,000 adults. The data is from commercial banks-bank survey (International Monetary Fund, Financial Access Survey). This measure is a variable for individual-level access to finance.

Value traded of top 10 traded companies to total value traded (%): Value of all traded shares of the top ten traded companies as a share of total value of all traded shares in a stock market exchange (World Federation of Exchanges). This is for firm-level access to finance.

Market cap. outside of top 10 largest companies to total market cap. (%): Value of listed shares outside of the top ten largest companies to total value of all listed shares. (World Federation of Exchanges). This measure is also for firm-level access to finance.

Figures 1, 2, and 3 show the trend in each of the three measures for each income group over our sample period. As can be seen in the figures, the low-income countries only have data on "Bank branches per 100,000 adults". We do not have data on the other two measures for these countries', therefore, in our "empirical results" section, we will not be able to show any test results for this group for these two measures.

Figure 1 shows that, in terms of "Bank branches per 100,000 adults", during the 2004-2011 period, the high-income OECD countries have always had the highest numbers, the high-income non-OECD countries have had the second highest numbers, the middle-income countries have had the third highest numbers, and the low-income countries have had the lowest numbers.

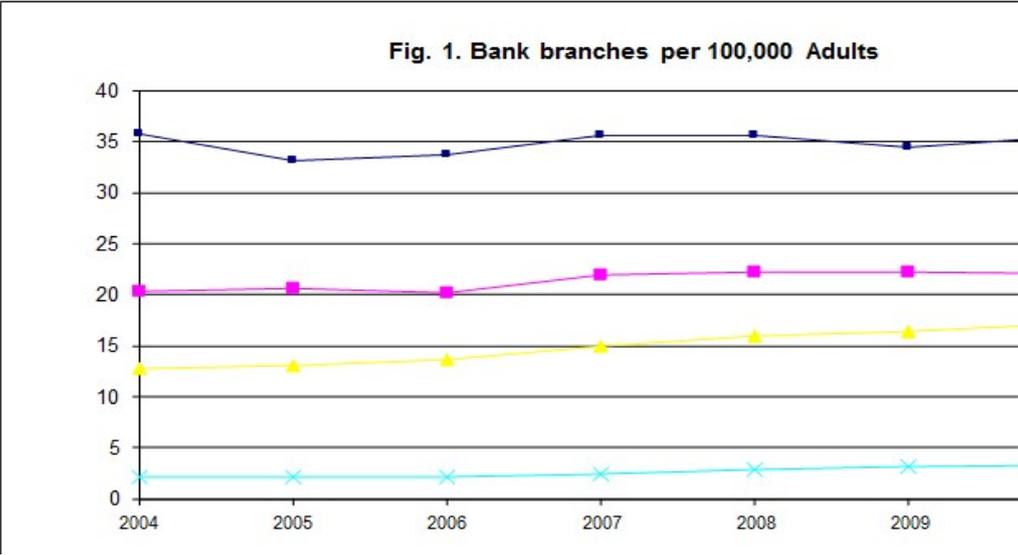


Figure 2 shows that, for “Value traded of top 10 traded companies to total value traded (%)”, the middle-income countries have had the best numbers, since they have had the lowest numbers for this measure (meaning that stock market activities were less concentrated in the top 10 firms in these countries). However, for these countries, we are seeing a big jump in this measure during the crisis (from 2007 to 2008). This finding shows that this “access to finance” measure got worse for middle-income countries during this period. Later, from 2009 to 2010, this measure improved (i.e. dropped) sharply for these countries meaning that the panic had passed and “access to finance” improved during this later period.

The high-income non-OECD countries have had the worst numbers (i.e. highest numbers) between 2004 and 2008. However, we are seeing that the high-income OECD countries overtook (i.e. became worse than) the high-income OECD countries in 2009 and in 2011.

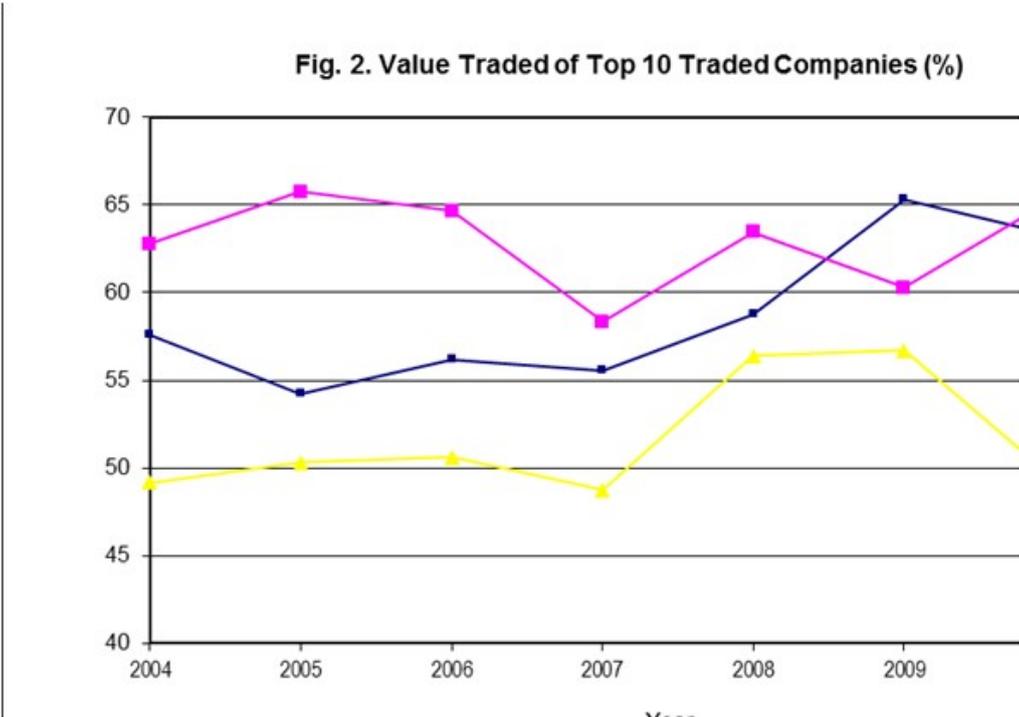


Figure 3 shows that, in terms of the third measure which is Market cap. outside of top 10 largest companies to total market cap. (%), the high-income non-OECD countries had been the worst group (i.e. had the lowest numbers) although this group had been improving throughout the period. The middle-income countries have had the best (i.e. highest) numbers.

Fig. 3. Market Capitalization Outside of Top 10 Largest Companies

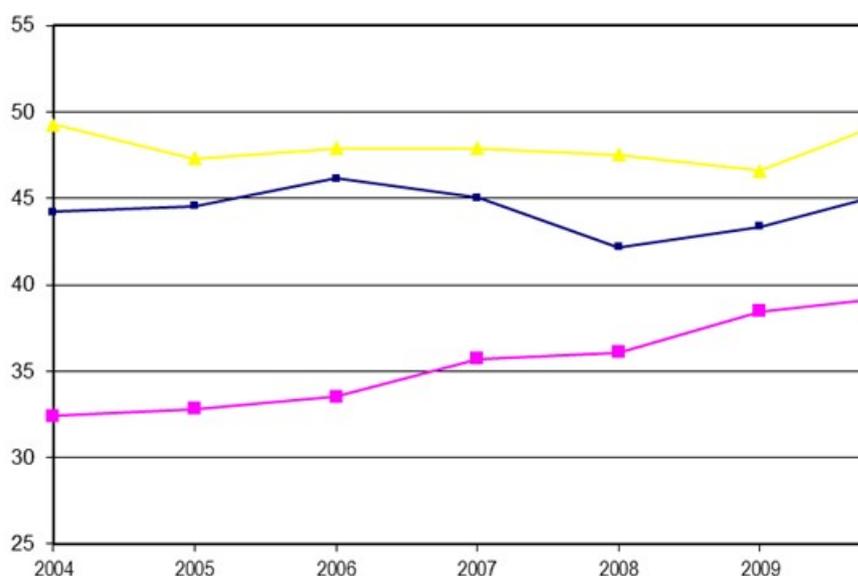


Table 2 shows the trend in each variable for each income group in tabular form. Panel A shows the trend in the three “access to finance” measures for high-income OECD countries. Panel B shows the trend for high-income non-OECD countries; Panel C shows the trend for middle-income countries; and finally Panel D shows the trend for low-income countries.

Table 2. Access to Finance Variables across Income Groups over Time

Panel A. High-Income OECD								
Year	2004	2005	2006	2007	2008	2009	2010	2011
Bank branches	35.8	33.2	33.7	35.6	35.7	34.5	35.5	36.3
Value traded of top 10	57.6	54.2	56.2	55.6	58.8	65.3	63.2	63.9
Market cap. outside of top 10	44.2	44.6	46.2	45.1	42.2	43.4	45.5	43.3
Panel B. High-Income Non-OECD								
Year	2004	2005	2006	2007	2008	2009	2010	2011
Bank branches	20.4	20.6	20.2	21.9	22.2	22.2	22.1	22.5
Value traded of top 10	62.8	65.7	64.7	58.3	63.5	60.3	65.4	57.9
Market cap. outside of top 10	32.4	32.8	33.5	35.7	36.1	38.5	39.3	40.8
Panel C. Middle-Income								
Year	2004	2005	2006	2007	2008	2009	2010	2011
Bank branches	12.8	13.1	13.7	14.9	15.9	16.3	17.1	17.5
Value traded of top 10	49.2	50.3	50.6	48.7	56.4	56.7	49.4	49.1
Market cap. outside of top 10	49.3	47.3	47.9	47.9	47.5	46.6	49.8	49.3

Panel D. Low-Income								
Year	2004	2005	2006	2007	2008	2009	2010	2011
Bank branches	2.09	2.15	2.15	2.49	2.84	3.11	3.25	3.57
Value traded of top 10	.	.	.	.	.	.	.	.
Market cap. outside of top 10	.	.	.	.	.	.	.	.

5. Empirical Results

Table 3 shows the results of the Mann-Whitney-Wilcoxon tests for the period just before the crisis started (i.e. “Run-up to the crisis”). Panel A shows the results for the high-income OECD countries, Panel B shows the results for the high-income non-OECD countries, Panel C shows them for the middle-income countries, and Panel D shows them for the low-income countries.

In the table, we are seeing that all three measures of “access to finance” slightly improved (although statistically insignificant) for all income groups during the year before the crisis started. As shown in the table, in terms of “Bank branches per 100,000 adults”, each panel shows that, for each income group, there was a slight improvement (although statistically insignificant) in this measure during the year before the crisis started. Panel A shows that the median value of the number of bank branches went up from 27.73 to 30.46 in high-income OECD countries (p-value of the difference is 0.4071). Panel B shows that this measure went up from 19.54 to 20.25 in high-income non-OECD countries (p-value of the difference is 0.3762). Panel C shows that this measure went up from 10.73 to 11.01 in middle-income countries (p-value of the difference is 0.2541). Finally, Panel D shows that this measure went up from 1.45 to 1.73 in low-income countries (p-value is 0.2145).

Table 3. The Run-Up to the Crisis

Variable	2006		2007		Mann-W. p-value
	Mean	Med.	Mean	Med.	
Panel A. High-Income OECD					
Bank branches	33.71	27.73	35.59	30.46	0.4071
Value traded of top 10	56.19	55.73	55.56	54.23	0.4609
Market cap. outside of top 10	46.17	45.20	45.05	48.68	0.3779
Panel B. High-Income Non-OECD					
Bank branches	20.20	19.54	21.93	20.25	0.3762
Value traded of top 10	64.67	62.28	58.33	50.87	0.3325
Market cap. outside of top 10	33.51	34.80	35.72	36.27	0.4426
Panel C. Middle-Income					
Bank branches	13.66	10.73	14.94	11.01	0.2541
Value traded of top 10	50.60	52.55	48.75	47.40	0.3307
Market cap. outside of top 10	47.88	47.77	47.91	49.29	0.4651
Panel D. Low-Income					

Bank branches	2.15	1.45	2.49	1.73	0.2145
Value traded of top 10	.	.	.	.	.
Market cap. outside of top 10	.	.	.	.	.

As shown in the table, in terms of “Value traded of top 10 traded companies to total value traded (%)”, each panel shows that, for each income group, there was a slight improvement (although statistically insignificant) in this measure during the year before the crisis started. For each income group, we are seeing that the traded value was less concentrated in the top 10 traded firms in 2007 when compared to 2006. Panel A shows that the median value of the value traded of top 10 traded companies went down from 55.73 to 54.23 in high-income OECD countries (p-value of the difference is 0.4609). Panel B shows that this measure went down from 62.28 to 50.87 in high-income non-OECD countries (p-value of the difference is 0.3325). Panel C shows that this measure went down from 52.55 to 47.40 in middle-income countries (p-value of the difference is 0.3307). There were no data on the low-income countries.

Table 3 also shows that, in terms of “Market cap. outside of top 10 largest companies to total market cap. (%)”, each panel shows that, for each income group, there was a slight improvement (although statistically insignificant) in this measure during the year before the crisis started. For each income group, we are seeing that the market value was less concentrated in the top 10 traded firms in 2007 when compared to 2006. Panel A shows that the median value of the market cap. outside of top 10 largest companies went up from 45.20 to 48.68 in high-income OECD countries (p-value of the difference is 0.3779). Panel B shows that this measure went up from 34.80 to 36.27 in high-income non-OECD countries (p-value of the difference is 0.4426). Panel C shows that this measure went up from 47.77 to 49.29 in middle-income countries (p-value of the difference is 0.4651). There were no data on the low-income countries.

Table 4 shows the results of the tests for the crisis period. Panel A shows the results for the high-income OECD countries, Panel B shows the results for the high-income non-OECD countries, Panel C shows them for the middle-income countries, and Panel D shows them for the low-income countries.

Table 4. The Crisis Period

Variable	2007		2008		Mann-W. p-value
	Mean	Med.	Mean	Med.	
Panel A. High-Income OECD					
Bank branches	35.59	30.46	35.69	32.01	0.4912
Value traded of top 10	55.56	54.23	58.76	57.78	0.3419
Market cap. outside of top 10	45.05	48.68	42.16	41.86	0.2989
Panel B. High-Income Non-OECD					
Bank branches	21.93	20.25	22.19	20.59	0.4725
Value traded of top 10	58.33	50.87	63.47	46.68	0.3567

Market cap. outside of top 10	35.72	36.27	36.07	39.11	0.4513
Panel C. Middle-Income					
Bank branches	14.94	11.01	15.94	11.45	0.3182
Value traded of top 10	48.75	47.40	56.40	54.91	0.0578
Market cap. outside of top 10	47.91	49.29	47.51	48.10	0.4441
Panel D. Low-Income					
Bank branches	2.49	1.73	2.84	2.09	0.2379
Value traded of top 10	.	.	.	.	.
Market cap. outside of top 10	.	.	.	.	.

Overall, in this table, we are seeing that the high-income non-OECD countries were better able to cope with the negative effects of the crisis on access to finance. In fact, while the other groups suffer in two of the three “access to finance” measures during the crisis period, the high-income non-OECD countries have actually improved in all three measures of “access to finance”.

As shown in the table, in terms of “Bank branches per 100,000 adults”, each panel shows that, for each income group, there was a slight improvement (although statistically insignificant) in this measure during the year before the crisis started. Panel A shows that the median value of the number of bank branches went up from 30.46 to 32.01 in high-income OECD countries (p-value of the difference is 0.4912). Panel B shows that this measure went up from 20.25 to 20.59 in high-income non-OECD countries (p-value of the difference is 0.4725). Panel C shows that this measure went up from 11.01 to 11.45 in middle-income countries (p-value of the difference is 0.3182). Finally, Panel D shows that this measure went up from 1.73 to 2.09 in low-income countries (p-value is 0.2379).

As shown in the table, in terms of “Value traded of top 10 traded companies to total value traded (%)”, while the high-income non-OECD countries actually improved slightly, the high-income OECD countries slightly suffered and the middle-income countries significantly suffered. Panel A shows that the median value of the value traded of top 10 traded companies went up from 54.23 to 57.78 in high-income OECD countries which means a slight deterioration (p-value of the difference is 0.3419). Panel B shows that, surprisingly, this measure actually went down from 50.87 to 46.68 in high-income non-OECD countries (p-value of the difference is 0.3567). Panel C shows that this measure went up sharply from 47.40 to 54.91 in middle-income countries (p-value of the difference is 0.0578). There were no data on the low-income countries.

Table 4 also shows that, in terms of “Market cap. outside of top 10 largest companies to total market cap. (%)”, while the high-income non-OECD countries actually improved slightly, the high-income OECD countries and the middle-income countries slightly suffered. Panel A shows that the median value of the market cap. outside of top 10 largest companies went down from 48.68 to 41.86 in high-income OECD countries which means a slight deterioration (p-value of the difference is 0.2989). Panel B shows that, surprisingly, this measure actually went up from 36.27 to

39.11 in high-income non-OECD countries which means a slight improvement (p-value of the difference is 0.4513). Panel C shows that this measure went down from 49.29 to 48.10 in middle-income countries which means a slight deterioration (p-value of the difference is 0.4441). There were no data on the low-income countries.

Table 5 shows the results of the tests for the “after the crisis” period (2008 to 2009). As shown in the table, the number of bank branches slightly improved (not statistically significant) for all income groups. We can say that, immediately after the crisis, the number of bank branches continued to slightly improve.

As shown in the table, in terms of “Value traded of top 10 traded companies to total value traded (%)”, while the high-income non-OECD countries actually improved slightly, the high-income OECD countries and the middle-income countries slightly suffered. Panel A shows that the median value of the value traded of top 10 traded companies went up from 57.78 to 75.43 in high-income OECD countries which means a slight deterioration (p-value of the difference is 0.1662). Panel B shows that, surprisingly, this measure actually went down from 46.68 to 37.74 in high-income non-OECD countries which means a slight improvement (p-value of the difference is 0.3381). Panel C shows that this measure went up from 54.91 to 55.52 in middle-income countries which means a slight deterioration (p-value of the difference is 0.4792). There were no data on the low-income countries.

Table 5 also shows that, just after the crisis, the median value of “Market cap. outside of top 10 largest companies to total market cap. (%)” improved slightly for all groups. Panel A shows that the median value of the market cap. outside of top 10 largest companies went up from 41.86 to 43.46 in high-income OECD countries (p-value of the difference is 0.3882). Panel B shows that this measure went up from 39.11 to 41.49 in high-income non-OECD countries which means a slight improvement (p-value of the difference is 0.4173). Panel C shows that this measure went up from 48.10 to 50.70 in middle-income countries which means a slight deterioration (p-value of the difference is 0.4585). There were no data on the low-income countries.

Table 5. The Reaction after the Crisis

Variable	2008		2009		Mann-W. p-value
	Mean	Med.	Mean	Med.	
Panel A. High-Income OECD					
Bank branches	35.69	32.01	34.52	32.04	0.4151
Value traded of top 10	58.76	57.78	65.34	75.43	0.1662
Market cap. outside of top 10	42.16	41.86	43.36	43.46	0.3882
Panel B. High-Income Non-OECD					
Bank branches	22.19	20.59	22.20	20.74	0.4908
Value traded of top 10	63.47	46.68	60.29	37.74	0.3381
Market cap. outside of top 10	36.07	39.11	38.47	41.49	0.4173
Panel C. Middle-Income					
Bank branches	15.94	11.45	16.35	12.63	0.3867
Value traded of top 10	56.40	54.91	56.70	55.52	0.4792

Market cap. outside of top 10	47.51	48.10	46.59	50.70	0.4585
Panel D. Low-Income					
Bank branches	2.84	2.09	3.11	2.77	0.2924
Value traded of top 10	.	.	.	.	.
Market cap. outside of top 10	.	.	.	.	.

6. Conclusion

In this study, we examine the relation between financial/economic crises and “access to finance” while considering the moderating effects of countries’ income levels. The data on “access to finance” in high-income OECD, high-income non-OECD, middle-income, and low-income countries are obtained from World Bank’s Global Financial Development Database. In this study, we use three measures of access to finance all of which come from World Banks’ database. These three measures are “Number of bank branches per 100,000 adults”, “Value traded of top 10 traded companies to total value traded (%)”, and “Market capitalization outside of top 10 largest companies to total market capitalization (%)”.

Our results show that, during the run-up to the crisis and immediately after the crisis, there was no significant change in any of the three “access to finance” measures in any income group (i.e. high-income OECD, high-income non-OECD, middle-income, and low-income countries).

On the other hand, we find that during the crisis, the middle-income countries were affected significantly. These countries’ “Value traded of top 10 traded companies to total value traded (%)” measure went up significantly. During the crisis (i.e. from 2007 to 2008), the median level of this measure went up from 47.40% to 54.91%. This means that, during the crisis, for middle-income countries, the stock market activity became much more concentrated on a certain group of firms (which would imply financing problems for any firm outside this small group of firms).

We conclude that the 2008 global crisis only affected “access to finance” in middle-income countries. We are hoping that these results would shed a new light for policymakers in middle-income countries. They should be aware of the problem and should take precautions before a new crisis starts.

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