One Half-Billion Shareholders and Counting:
Determinants of Individual Share Ownership around the World

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1. Introduction

The last quarter-century has seen dramatic growth in capital market size and activity around the world. Between 1983 and the end of 2007, the capitalisation of the world stock markets grew by 1,800% and the volume of share trading has increased almost 100-fold, from $1.22 trillion in 1983 to $111.2 trillion during 2007. The number of countries with stock exchanges is now 142 compared to 58 in 1980 and currently 94% of the world population live in countries that have stock exchanges compared to 55% in the 1980s. Even after the worldwide decline in equity market values during 2008 and early 2009, stock market capitalization still equals two-thirds of total world GDP, estimated by the World Bank at around $54 trillion.

The market capitalisation in each country and the value (or percentage) of traded securities that are owned by various groups of investors (e.g., institutional, individual, foreign, etc.) is relatively well recorded. In contrast, this is far from the case with regard to how many shareholders there are in total and how these are allocated between countries. Partly this is because the data is extremely hard to collect and partly because almost universally there are no legal requirements to collect this data. However, knowing the number of shareholders per country and understanding the major variables that explain differences between countries is important for many reasons. For example, the proportion of the population that own shares in a country is an interesting measure of market development which has not received attention due to lack of data; individual shareholders are more likely to be akin to noise traders than institutions and hence it gives some understanding of the differences in scale of noise traders between markets; it also provides an understanding of the number and international distribution of individuals and households whose wealth will be directly affected by stock market changes; furthermore the proportion of the population directly holding equity is likely to have implications for political preferences, market development and economic activity such as the prospective burden on governments to meet welfare objectives.

This study presents the first comprehensive compilation of the number of people around the world owning shares directly and indirectly. The data has been hand-collected from a wide range of sources, e.g., individual stock exchanges, government statistical offices, and financial trade associations, some of which have not been publicly available before and calculations are then undertaken as necessary to maximize consistency. We have been able to collect direct share

ownership data for 70 countries over the period 1980 – 2007. Including the countries (with populations above 100,000) that do not have stock markets this gives a maximum data set of 112 countries. The countries for which we have been able to collect direct share ownership data cover 100% of the population of countries that have developed stock markets and 75% of the total population of countries that have emerging stock markets. In total the capitalisation of the stock markets of the 70 countries for which we have data covers over 96% of the world stock market capitalisation.

Section 2 of the paper discusses and presents the detailed data on direct and indirect shareholding. Section 3.1 discusses a series of potentially important factors that may affect share-ownership ((i) market classification and development, (ii) GDP, (iii) privatisation, (iv) legal origins and endowments, and (v) the size of government. Section 3.2 provides regression analysis of the country cross section data on direct share ownership. Section 4 gives conclusions.

2. Data

The starting point is the 192 countries recognised by the UN. 141 of these countries have at least one stock exchange and 51 do not. However, several of these countries are extremely small and there are very few statistics available for them. Therefore, we exclude countries with population of less than 100,000 in 2007 unless the country jointly has a stock exchange with other countries and the population of the 'joint' countries is above 100,000. There are 10 countries excluded on this basis.[1] In addition, there are two important stock exchanges that are in countries that are not UN recognised. These are Hong Kong and Taiwan and these are included in our sample.[2] Therefore, our analysis is based on a sample of 184 countries of which 42 do not have a stock exchange.[3]

[1] Excluded countries were: Andorra, Kiribati, Lichtenstein, Marshall Islands, Monaco, Nauru, Palau, San Marino, Seychelles, Tuvalu. Countries with population below 100,000 that have remained in the sample are Antiqua and Barbuda, Dominica, and St. Kitts and Nevis that together with Granada, St. Lucia, and St. Vincent and the Grenadines trade share at the Eastern Caribbean Stock Exchange.

[2] There are six more countries not recognized by the UN that have stock market. These are Bermuda, Cayman Islands, Faroe Islands, Gibraltar, Jersey and Palestine. The first five countries have their population below 100,000, hence, are not included in the sample. Statistics for Palestine are not available, and although it is population is most likely in the range of a few millions, we exclude it from the sample.

[3] Each country is classified by the oldest operating stock exchange, i.e., it does not take into account the dates of creation of stock exchanges that were closed for a substantial period of time. For example, Hungary had a stock exchange that closed in 1949. The Budapest Stock Exchange created in 1990 is puts Hungary in the group of 52 countries that opened a stock exchange in the 1990s. The figure does not account for multiple exchanges. For example, India belongs to the group

Interestingly, the value (or percentage) of traded securities that are owned by various groups of investors (e.g., institutional, individual, foreign, etc.) is relatively well recorded but this is far from the case with regard to how many investors hold shares. In particular, it is not documented how many retail investors hold shares. Partly this is because the data is extremely hard to collect and partly because almost universally there are no legal requirements to collect this data.

There are two major difficulties in collecting and aggregating data on the numbers of shareholders within and across countries: (i) the methods of collecting the data differ even for the same country at different times and (ii) the data are recorded in different formats in different countries. For example, some countries, due to organisation of their exchanges, keep a record of statistics of the number of accounts registered by individuals (e.g., Japan). In others, the only way of accounting for shareholders is to survey people directly (e.g., UK). These different collection methods tend to influence the recording mechanism. The individual account method gives a clear picture how many people hold shares but it does not provide information on other forms of equity investments, like, for example, mutual funds. In contrast, some survey methods (usually individual questionnaire based) can ask detailed questions about forms of equity investments (distinction between equity, funds, etc.) giving quite good evidence on the different types of holdings but other surveys ask quite general questions and tend to aggregate the different forms of holdings when reported. Moreover, surveys typically ask about equity holdings at a household level, whereas, individual accounts do not distinguish how many individuals having accounts come from the same household. Surveys usually account for the adult population only. However, it is not uncommon for children to hold shares, whether by inheritance, conscious investment decision of the family or the result of a policy design[4]. Finally, surveys show the numbers of shareholders at the time of survey collection (typically it will not be the 31 December), whereas the numbers of accounts will typically be end-of-year statistics.

Therefore, although there are many ways of recording individual share ownership we are limited as to what we can achieve if we are interested in aggregate data and inter country comparisons. To

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that opened a stock exchange in the 19th century (the Bombay Stock Exchange was opened in 1983) although it opened one more stock market in 1993 (National Stock Exchange) that started share trading in 1994. . See, e.g., Petraki and Zalewska, 2009, for a discussion of the growth of stock markets.

[4] For example, the U.K. Labour government's £250 voucher, given to every British child at birth, can be converted into a bond/equity investment via a range of selected funds. Although not accounted for in the official statistics, a high proportion of children owns shares (at least) until they are 18 years old and are entitled to cash the amount invested at their birth (£250), plus accrued investment returns.

maximise consistency we are driven by the data to adopt a distinction between *direct* and *indirect* forms of share investment depending on whether an individual made a personal decision to invest in a stock market based assets, or whether the decision was to some extent 'imposed' on him/her. More precisely, we define individuals holding shares directly if having some fraction of wealth invested on stock market (via investing in equity or funds) is a result of a decision of an individual. So we class as direct share ownership both investing directly in specific companies publicly listed and investing in funds that invest in equity. If, one the other hand, the individual only has limited control or no control at all over how much of the deposited money is invested on a stock market and what assets are included, then we class this as indirect ownership. Typically, indirect share investments are the result of saving schemes individuals have to contribute to (e.g., compulsory pension schemes) or find financially unsound to opt out from (e.g., highly favourable tax incentives for mortgage schemes linked to stock markets).

The direct shareholding data used in the paper are hand-collected from a wide range of sources, e.g., individual stock exchanges, government statistical offices, and financial trade associations, some of which have not been publicly available before and calculations are then undertaken as necessary to maximize consistency. A particular problem with the data is the potential double counting issue. This arises, for example, when the numbers of individuals holding equity and the numbers of individuals investing in hedge/mutual funds are quoted as separate statistics. Figures are collected in this way for several countries and it is virtually certain that the same individuals will appear in both statistics. So if we add these together we certainly overestimate the number of shareholders in the country. We have opted for the conservative route of quoting the highest number of the two rather than the sum. This means that we may significantly underestimate the true total number of shareholders, but we believe that the downward biased numbers are better than the less reliable ones that could be obtained if underestimated and overestimated statistics were added together.

A similar approach is adopted for reporting the numbers of indirect shareholders. To minimise incompatibility of data available across countries we focused our attention on the pension industry, and in particular on those schemes (mainly by funded mandatory and voluntarily saving schemes) that invest in equity. In particular, since the 1980s mandatory schemes that invest some proportion of collected contributions in equity have become standard in emerging markets. Here, however, due to differences in pension schemes and in methods of recording data, the cross-country comparison of the numbers of indirect shareholders is just as difficult as in the case of direct shareholders. Typically,

statistics are based on a particular scheme and ignore other schemes. Even if several schemes are recorded (e.g., compulsory and voluntary) no information about a possible overlap of contributors is available. A simple reference to the number of registered accounts does not help as during working years an individual can open several accounts with different employers resulting in double-counting the numbers of indirect shareholders.[5] Moreover, some data sources refer to active contributors only, whereas others to total contributors, i.e., those active and those who have already started to cash their pensions. For some of the recently created pension schemes only active contributors exist (i.e., no one is yet entitled to receive a pension), but this is not true for the more mature schemes for which the number of total contributors can be much higher than the numbers of the active ones. The number of contributors (whether active or not) does not take into account the partner of the contributor, many of whom will have rights under the scheme. In particular, in countries with a low level of female participation in labour force, this will result in a strong downward bias in the counts of indirect shareholders.

To minimise the issue of double counting we report statistics that come from one form of pension saving even if statistics from several sources are available.

2.1 Direct shareholders

We have been able to collect direct share ownership data for 70 countries over the period 1980 – 2007. Including the countries that do not have stock markets this gives a maximum data set of 112 countries. The countries for which we have been able to collect share ownership data cover 100% of the population of countries that have developed stock markets, and 75% of the total population of countries that have emerging stock markets. In total the capitalisation of the stock markets of the 70 countries for which we have data covers over 96% of the world stock market capitalisation.

Only 7% of the world population lives in countries that do not have stock markets. Other than all being relatively small, the countries without stock markets are quite diverse and it is hard to make general statements about any form of share ownership within these countries.

[5] For example, the official statistics for Australia reported by the Australian Prudent Regulation Authority state that in 2006 29.1 million Australians had superannuation fund accounts. This, however, means that 142.7% of the Australian population had superannuation fund accounts in 2006.

For several countries we have been able to access data for long periods of time (e.g., for Japan we have yearly data from 1980 till 2006 and for Australia we have 12 observations from 1986). There are 18 countries where we can only find statistics for one year only (e.g., Mongolia, Barbados). On average we have 5.6 annual statistics per country on some form of direct shareholding.

Table 1 presents the most recent direct shareholder statistics for the 70 countries we have found information for. Column 2 shows the percentage of population owning shares in the calendar year for which the most recent statistic is available. Column 3 gives the number of individual shareholders used to calculate the percentage presented in column 2. The next five columns give the form of the reported ownership (equity investment, fund investment, or combined equity of fund investment) and the source of the information.

Table 1 shows that that there are at least 328 million individual shareholders, of whom nearly 173 million live in countries with developed stock markets and the remaining 155 million live in countries with emerging stock markets. For reasons outlined earlier, these figures are strongly downward biased.

An alternative measure of interest is how many people in the world live in households which have direct shareholding within the household. If we assume a conversion rate of 3.2 relatives per individual (based on the statistic that an average woman has 2.2 children) we would then multiply the number of individual shareholders by 4.2. This gives a number of individuals living in households that directly own shares of over 1.3 billion.

Table 1: Share-ownership in 70 countries (as of 12 September 2009)

This table details the percent of a nation's population owning shares either directly or through mutual funds, the total number of shareholders, and the principal data source used to construct these values. The number of shareholders is computed based on the fraction of the population owning shares and the total population for the year the statistic is available for. The most recent available data are used. Population data are from the U.S. Census Bureau or the Economist's *2006 Pocket World in Figures* and the database Euromonitor International.

Country	Percent of population owning shares	Individual shareholders	Details of share ownership data employed to calculate approximate total number of shareholders				
			Ownership type (E: equity, F: funds, EF: equity and funds)	Percent of population measure	Population measure	Year	Principal source of share ownership data
Argentina	0.52	194,728	EF	-	No. of Accounts	2005	Bolsa de Comercio de Buenos Aires[6]
Australia	35.11	7,268,000	EF	46	Adults	2006	Australian Stock Exchange[7]
Austria	7.11	583,783	E	7	Households	2005	Eurobarometer (European Commission)[8]
Bangladesh	0.46	728,498	EF	-	No. of Participants	2007	Dhaka Stock Exchange[9]
Barbados	9.09	26,543	EF	-	No. of Accounts	2005	OICV-IOSCO[10]
Belgium	17.3	1,808,623	EF	17	Households	2005	Eurobarometer (European Commission)[3]
Bolivia	0.16	12,961	E	0.7	Households	1999	World Bank, Survey Data, 1999
Bosnia and Herzegovina	6.87	269,027	F	-	No. of Accounts	2005	OICV-IOSCO[10]
Brazil	1.62	3,123,425	EF	1.62	Population	2007	Australian Stock Exchange[11]
Canada	37.52	12,396,020		49	Adults	2004	Toronto Stock Exchange[12]
Chile	4.24	636,474	E	6.4	Adults	1999	International Federation of Stock Exchanges (now World Federation of Exchanges)[13]
China	5.9	76,700,000	EF	-	No. of Accounts	2005	Shenzhen and Shanghai Stock Exchanges[14]
Colombia	0.07	33,158	F	-	No. of Accounts	2005	OICV-IOSCO[5]
Cyprus	28.97	242,281	E	19	Households	2005	Eurobarometer (European Commission)[3]
Czech Republic	29.0	2,963,264	E	3	Households	2005	Eurobarometer (European Commission)[3]
Denmark	23.5	1,270,218	EF	29	Households	2005	Eurobarometer (European Commission)[3]
Antigua and Barbuda, Dominica, Grenada, St. Kitts, St. Lucia, St. Vincent	1.26	7,483	EF	-	No. of Shareowners	2007	Eastern Caribbean Securities Exchange[15]
Estonia	2.6	35,484	E	4	Households	2005	Eurobarometer (European Commission)[3]
Finland	14.5	761,674	EF	-	No. of Investors	2006	Finnish Foundation for Share Promotion[16]
France	14.7	9,000,000	EF	-	No. of Shareholders	2006	Deutsches Aktieninstitut[17]
Germany	12.5	10,317,000	EF	-	No. of Shareholders	2007	Deutsches Aktieninstitut[17]
Ghana	1.5	345,000	E	-	No. of Shareholders	2006	http://www.myzongo.com/Foreigners-hold-75-percent-of.html
Greece	8.36	934,170	E	-	No. of Accounts of private people	2007	Athens Stock Exchange[18]
Guatemala	0.1	11,785	E	0.5	Households	2000	World Bank, Survey Data, 2000
Hong Kong	22.98	1,618,000	E	28.6	Adults	2005	Hong Kong Exchanges and Clearing Ltd.[19]
Hungary	7.9	2,885,981	E	1	Households	2005	Eurobarometer (European Commission)[3]
India	2.00	21,794,832	EF	-	No. of Shareholders	2004	Society for Capital Market Research & Development[20]
Iran	5.02	3,282,934	E	9.1	Adults	1999	International Federation of Stock Exchanges (now World Federation of Exchanges[7]
Ireland	7.52	308,978	E	10	Households	2005	Eurobarometer (European Commission)[3]

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Italy	7.98	4,667,894	F	14	Households	2004	Borsa Italiana[21]
Japan	30.75	39,284,500	E	-	No. of Shareholders	2006	Tokyo Stock Exchange[22]
Kenia	0.37	110,000	E		No of participants in privatization of Kenyan Airways	1998	Nairobi Stock Exchange[23]
Korea	9.3	4,441,000	E	-	Investing Population	2007	Korea Stock Exchange[24]
Latvia	1.21	27,887	E	2	Households	2005	Eurobarometer (European Commission)[3]
Lithuania	1.64	56,073	E	2	Households	2005	Eurobarometer (European Commission)[3]
Luxembourg	14.5	66,096	E	18	Households	2005	Eurobarometer (European Commission)[3]
Malaysia	39.2	10,239,650	F	-	No. of Accounts	2005	OICV-IOSCO[10]
Malta	12.57	50,900	E	-	No. of Individual Investors	2006	Borza Malta[25]
Mauritius	2.56	32,000	E	-	No. of Individuals	2007	Central Depository and Settlement Co, Mauritius[26]
Mongolia	2.51	60,000	E	-	No. of Accounts	1995	http://www.indiana.edu/~mongsoc/mong/survey95.htm
Morocco	0.04	12,453	I	-	No. of Accounts	2005	OICV-IOSCO[10]
Netherlands	17.05	2,780,889	E	21	Adults	2005	Statistics Netherland, Voorburg/Heerlen[5]
New Zealand	28.1	1,161,810	EF	39	Adults	2005	New Zealand Exchange Ltd.[27]
Norway	7.3	340,821	E	-	No. of Shareholders	2006	Deutsches Aktieninstitut[11]
Pakistan	0.03	46,475	F	-	Adults	2003	Personal contact
Poland	2.7	1,029,000	E	-	No. of Investment accounts	2008	Warsaw Stock Exchange[28]
Portugal	3.07	323,237	E	4	Households	2005	Eurobarometer (European Commission)[3]
Romania	0.05	11,903	F	-	No. of Accounts	2005	OICV-IOSCO[10]
Russia	0.14	204,000	E	0.2	Individuals	2006	Personal contact
Saudi Arabia	38.2	10,743,440	E	64.8	Adults	2007	Saudi Stock Exchange
Singapore	11.97	473,915	E	16.2	Adults	1999	International Federation of Stock Exchanges (now World Federation of Exchanges[7]
Slovakia	2.4	129,493	E	3	Households	2005	Eurobarometer (European Commission)[3]
Slovenia	20.0	399,329	E	24	Households	2005	Eurobarometer (European Commission)[3]
South Africa	2.63	1,275,513	F	-	No. of Accounts	2005	OICV-IOSCO[10]
Spain	5.0	2,152,969	E	6	Households	2005	Eurobarometer (European Commission)[3]
Sri Lanka	1.53	285,644	E	2.3	Adults	1999	International Federation of Stock Exchanges (now World Federation of Exchanges[7]
Sweden	19.7	1,780,530	E	19.7	Population	2006	Deutsches Aktieninstitut[11]
Switzerland	20.22	1,508,062	EF	21.2	Adults	2006	Swiss Banking Institute, University of Zurich[29]
Taiwan	34.78	7,920,000	E	-	No. of Investors	2006	Taiwan Stock Exchange[30]
Thailand	5.3	375,891	F	-	No. of Accounts	2005	OICV-IOSCO[10]
Turkey	5.9	4,303,000	E	-	No. of Shareholders	2005	Central Registry Agency Inc. of Turkey[31]
United Kingdom	15.09	9,060,260	EF	19	Adults	2005	United Kingdom Shareholders Association[32]
United States	21.2	62,880,000	EF	39.3	Millions of Households	2005	Investment Company Institute and Securities Industry Association[33]
Vietnam	0.27	229,521	EF	-	No. of Individuals	2007	Hanoi Securities Trading Centre[34]
Zambia	0.25	29,000	E	-	No. of Individuals	2000	Personal contact
		328,053,478					

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2. 2 Indirect shareholders

Direct shareholder does not tell us the whole story of the numbers of people with wealth that is dependant on share prices. We have collected data for 66 countries (20 developed and 46 emerging markets) of pension funds contributors. For some countries finding statistics of how many people indirectly invest in shares is relatively straightforward (e.g., countries that have recently reformed the pension industry tend to keep quite detailed records of contributors) but for other (e.g., countries that have not introduced compulsory saving schemes) do not record sufficient information about the coverage of the existing schemes to make the statistics useful for the purpose of this research. On average we find more statistics per country for indirect ownership than direct (e.g., only for seven countries we have single time point observation) but we find data for less countries (e.g., we could not find relevant statistics for all developed countries).[35] In many countries pension reforms have been implemented only a few years ago, hence, on average, the available statistics cover shorter periods of time.

Table 2 presents the most recent statistics available for 66 countries for which the number of people investing indirectly on stock exchanges is available. The format of the table is similar to the format of Table 1, but since the numbers of contributors (active members) or the numbers of participants (contributors plus current pensioners) are quoted directly, there is no column reporting ownership type or percent of population measure.

Table 2 shows that in total there are at least over one-half billion people indirectly investing in shares. As explained above, this figure grossly understates the true number of shareholders, and it is likely to grow much faster in the coming years than the number of direct shareholders. Over 35% of the quoted statistics comes from one country alone – China. The Chinese pension funds started to invest in equity in 2003 after the creation of the National Social Security Fund in 2000, and although its current penetration is very low, it can be expected to grow significantly over years.[36]

[35] France, Greece, Luxemburg and New Zealand are excluded from the sample due to the lack of data.

[36] It is widely criticized that China's pension system is mostly designed to cover employees in urban areas, especially employees in state-owned enterprises. However, the cruel fact is that up to 70% percent of the total labour force, accounting for 584 million of the population in 2007 work in the rural sector. In 2007, only 3.92 million famers in rural areas obtained the basic pension (China Ministry of Labour and Social Security, 2007)

Table 2. Indirect share-ownership in 66 countries.
This table documents the percent of a nation's population having an account at a pension fund that invests in equity, the total or active number of the members, type of pension scheme and year the statistics refer to, and the principal data source. The most recent available data are used. Population data are from the database Euromonitor International.

Country	Percent of population contributing to pension funds	Number of contributors to pension funds	Population measure	Year	Principal source of pension fund participation data	Active(A)/ Total (T) contributors
Algeria	14.19	4,400,000	Total Contributors	2002	World Bank[37]	A
Argentina	28.14	10,816,790	Affiliates	2007	International Federation of Pension Fund Administrators[38]	T
Australia	49.2	10,034,483	Members of Superannuation Funds	2006	Australian Prudent Regulation Authority [39]	T
Austria	6.37	526,588	Total Members of Auton. Pension Funds	2006	Eurostat[40]	T
Bahamas	13.14	42,500	Pension Fund Contributors	2005	The Central Bank of The Bahamas[41]	A
Bahrain	13.89	94,500	Total Contributors	2002	World Bank[28]	A
Belgium	3.58	374,294	Total Members of Auton. Pension Funds	2005	Eurostat[31]	T
Bolivia	12.08	1,134,359	Affiliates	2007	International Federation of Pension Fund Administrators[29]	T
Brazil	1.04	1,990,024	Affiliates	2007	International Federation of Pension Fund Administrators[29]	T
Bulgaria	37.36	2,848,009	Affiliates	2007	International Federation of Pension Fund Administrators[29]	T
Canada	17.48	5,690,580	Registered Members	2006	Statistics Canada[42]	T
Chile	48.8	8,043,808	Affiliates	2007	International Federation of Pension Fund Administrators[29]	T
China	15.29	201,070,000	Urban Pension Contributors	2005	World Bank[28]	A
Colombia	16.76	7,814,535	Affiliates	2007	International Federation of Pension Fund Administrators[29]	T
Costa Rica	36.85	1,646,405	Affiliates	2007	International Federation of Pension Fund Administrators[29]	T
Cyprus	367,598	43.96		2005		A
Czech Republic	35.3	3,619,428	Total Members of 3rd Pillar Funds	2006	Eurostat[31]	T
Denmark	0.36	19,287	Total Members of Auton. Pension Funds	2004	Eurostat[31]	T
Dominican Republic	16.89	1,648,295	Affiliates	2007	International Federation of Pension Fund Administrators[29]	T
Egypt	26.63	17,860,000	Total Contributors	2002	World Bank[28]	A
El Salvador	23.03	1,579,410	Affiliates	2007	International Federation of Pension Fund Administrators[29]	T
Estonia	38.65	519,726	Total Members of Auton. Pension Funds	2006	Eurostat[31]	T
Fiji	39.73	331,050	Members	2006	Fiji Provident National Fund[43]	A
Finland	2.28	119,664	Total Members of Auton. Pension Funds	2006	Eurostat[31]	T
Germany	18.54	15,300,000	Individuals with Occupational Retirement Provision	2003	OECD[44]	T
Honduras	0.3	21,866	Affiliates	2007	International Federation of Pension Fund Administrators[29]	T
Hong Kong	38.2	2,719,000	People under Mandatory Prov. Fund	2006	Mandatory Provident Fund Scheme[45]	A
Hungary	39.8	4,015,263	Total Members of Auton. Pension Funds	2006	Eurostat[31]	T
Iceland	64.7	191,316	Total Members of Auton. Pension Funds	2005	Eurostat[31]	T
India	2.56	27,487,000	Members of Pension Funds run by EPFO	2003	Employees Provident Fund Organisation, India[46]	A
Iran	11.6	7,668,000	Total Contributors	2000	World Bank[28]	A
Iraq	4.08	1,121,000	Total Contributors	2004	World Bank[28]	A

[37] World Bank http://info.worldbank.org/etools/docs/library/152894/mena_223-224.pdf
[38] FIAP Statistics and Annual Reports http://www.fiap.cl/prontus_fiap/site/edic/base/port/series.html
[39] APRA Insight, Issue 2, "Celebrating 10 Years of Superannuation Data Collection 1996-2006", 2007, http://www.apra.gov.au/Insight/APRA-Insight-Issue-2-2007.cfm (estimation through number of superannuation accounts and average accounts per employed person)
[40] Eurostat Statistics (active members) http://epp.eurostat.ec.europa.eu/portal/page?_pageid=0,1136195,0_45572097&_dad=portal&_schema=PORTAL
[41] "Survey of Private Pension Plans in The Bahamas (2005)", Published in the *Quarterly Economic Review*, Vol. 16, No. 2, June 2007, http://www.centralbankbahamas.com/publications.php?cmd=view&id=15982
[42] Statistics Canada, Registered Pension Plans and Members, by type of plan and sector, http://www40.statcan.ca/l01/cst01/famil120a.htm
[43] Fiji National Provident Fund Statistics, http://www.fnpf.com.fj/page.asp?frmPageID=16#70
[44] A. Oster, "Risk-based pension supervision – German Approach", Presentation at OECD/OPS Conference on Private Pensions in Latin America, Santiago, Chile, 2006, http://www.oecd.org/dataoecd/43/52/36344245.PDF
[45] http://www.mpfa.org.hk/english/quicklinks/quicklinks_pub/quicklinks_pub_ar.html
[46] EPFO India, http://www.epfindia.nic.in/operational_stat.htm#members

Ireland	12.9	542,362	Current Pension Schemes' Members	2006	Irish Association of Pension Funds[47]	T
Italy	3.9	2,279,338	Total Members of Auton. Pension Funds	2005	Eurostat[31]	T
Japan	8.54	10,870,000	Contributors to Semi-Private Pensions	2001	National Institute of Population and Social Security Research[48]	A
Jordan	11.38	661,651	Number of Active Contributors	2006	Jordan Social Security Corporation[49]	A
Kazakhstan	59.8	9,223,712	Affiliates	2007	International Federation of Pension Fund Administrators[29]	T
Kenya	7.93	2,900,000	Total Members	2006	World Bank[28]	T
Latvia	4.34	99,596	Total Members of Auton. Pension Funds	2006	Eurostat[31]	T
Lebanon	10.36	406,000	Total Contributors	2003	World Bank[28]	A
Lithuania	22.93	780,437	Total Members of Auton. Pension Funds	2006	Eurostat[31]	T
Malaysia	20%	5,746,477	Employee Provident Fund	2008	Employee Provident Fund[50]	A
Mexico	35.50	38,531,579	Affiliates	2007	International Federation of Pension Fund Administrators[29]	T
Morocco	7.92	2,337,000	Total Contributors	2002	World Bank[28]	A
Netherlands	33.91	5,703,022	Total Members of Auton. Pension Funds	2006	Eurostat[31]	T
Norway	5.95	276,303	Total Members of Auton. Pension Funds	2006	Eurostat[31]	T
Oman	4.5	114,311	Active Insured Employees	2006	Public Authority for Social Insurance[51]	A
Panama	6.19	206,952	Affiliates	2007	International Federation of Pension Fund Administrators[29]	T
Peru	14.35	4,101,060	Affiliates	2007	International Federation of Pension Fund Administrators[29]	T
Poland	34.47	13,134,081	Affiliates	2007	International Federation of Pension Fund Administrators[29]	T
Portugal	3.82	404,108	Total Members of Auton. Pension Funds	2006	Eurostat[31]	T
Russia	4.57	6,503,980	Affiliates	2007	International Federation of Pension Fund Administrators[29]	T
Singapore	0.9	41,334	Number of Account Holders	2007	Ministry of Finance[52]	A
Slovakia	44.1	2,377,685	Total Members of Auton. Pension Funds	2006	Eurostat[31]	T
Slovenia	9.82	196,833	Total Members of Auton. Pension Funds	2006	Eurostat[31]	T
South Africa	20.71	9,853,055	Number of Accounts	2004	Financial Services Board[53]	T
Spain	23.29	10,361,201	Affiliates	2007	International Federation of Pension Fund Administrators[29]	T
Sweden	4.81	427,119	Members of Autonomous Pension Funds	2001	Eurostat[31]	A
Switzerland	58.47	4,361,740	Total Members of Auton. Pension Funds	2006	Eurostat[31]	T
Thailand	1.68	1,050,000	Participants in Government Post-Reform Pension Fund	2006	Government Pension Fund[54]	A
Tunisia	20.45	2,000,000	Total Contributors	2003	World Bank[28]	A
Turkey		1,500,000	Private Pension Fund Members	2007	Turkish Embassy London[55]	A
Ukraine	0.63	290,927	Affiliates	2007	International Federation of Pension Fund Administrators[31]	T
UK	45.5	27,500,000	Total Pension Fund Members	2006	Office for National Statistics[56]	T
Uruguay	23.15	773,134	Affiliates	2007	International Federation of Pension Fund Administrators[31]	T
USA	20.3	60,160,000	Individuals owning equity through employer retirement plans	2005	Investment Company Institute[57]	T
Venezuela	0.04	11,703	Affiliates	2007	International Federation of Pension Fund Administrators[31]	T
Total		**565,341,478**				

[47] Ms Deirdre Kelly, Executive Officer, Information Services, The Pensions Board, IAPF
[48] Outline of the Public Pension System in Japan, http://www.ipss.go.jp/s-info/e/Jasos2002/out_p.html
[49] SSC, "Social Security in Numbers, Special Edition 2002-2006", http://www.ssc.gov.jo/uploads/E_by_numbers_2006.pdf
[50] http://www.kwsp.gov.my/index.php?ch=p2reports&pg=en_p2reports_statistic&ac=1013&tpt=32e
[51] Public Authority for Social Insurance Employees Statistics, http://www.taminat.com/english/stats_ins_emp_ann.jsp
[52] Singapore Ministry of Finance, SRS Statistics, http://www.mof.gov.sg/taxation/cumulative.html
[53] FSB, Registrar of Pension Funds, Forty-Sixth Annual Report, 2004, http://www.fsb.co.za/index.htm
[54] GPF Website http://www3.gpf.or.th/english/portfolio.jsp
[55] Turkish Embassy London, Office of the First Economic Counsellor, Insurance, Re-insurance and Private Pensions in Turkey, http://www.turkisheconomy.org.uk/insurance.html
[56] "Occupational Pension Schemes Annual Report", No. 14, 2006, http://www.statistics.gov.uk/downloads/theme_population/Occ-pension-2006/OPSS_Annual_Report_2006.pdf
[57] ICI, Trends in Ownership of Mutual Funds in the United States, 2007, http://www.ici.org/stats/res/fm-v16n5.pdf

3. Interpretation of the evidence.

The purpose of this section is to use the data outlined in Section 2 to provide insight into factors that are thought to be important in determining stock market development and the number of shareholders . Section 3.1 discusses a series of potentially important factors that may affect share-ownership ((i) market classification, (ii) GDP, (iii) privatisation, (iv) legal origins and endowments, and (v) the size of government. Section 3.2 provides regression analysis of the country cross section data on direct share ownership.

3.1. Factors

Market classification and development

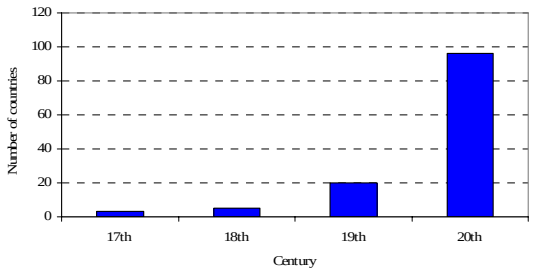
The last twenty years have seen an enormous growth of stock markets around the world and this has played a role in enhancing the numbers of shareholders. Indeed, by far the majority of the world's stock exchanges are comparatively young. Figure 1 presents data on countries that currently have at least one stock exchange. For each country that has at least one stock exchange we take the date that its current oldest market opened and plot the distribution of the opening of these exchanges across centuries (from 1600 to 2000) in Figure 1 Panel A, on the decade level from the 20th century onwards in Figure 1 Panel B, and on a yearly bases from 1980 onwards in Figure 1 Panel C. Figure 1 shows a clear time trend across centuries. Indeed, since 1985 84 countries have opened stock markets which contrasts with the pre 1980 statistic of 58 countries with stock markets (both developed and emerging). This means that currently there are almost two and half times as many countries with stock markets (142) than there were in 1980 (58). One has to be careful, however, when interpreting the data since for some countries the picture has not been one of continuous markets. A good example of the differences in interpretation is Poland. The Warsaw Stock Exchange opened in 1817. At that point Poland did not exist as a country having been finally partitioned by the neighbouring countries in 1795. Poland re-emerged in 1918 (after the First World War) but the exchange was closed in 1939. An exchange was opened in Warsaw in 1991 (following the collapse of communism) and Poland enters Figure

1 as an observation in the 1990s.[58] Several exchanges of some type existed pre-1939 for several European transition economies.[59]

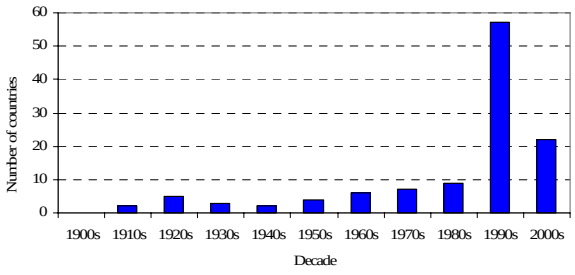
Almost by definition, all these new exchanges are classed as 'emerging'. The standard definition of what constitutes a developed market is the one used by the World Federation of Exchanges and we use this definition throughout the paper. This identifies 24 developed markets. Markets that are not developed are classified as emerging. There are nearly 5 times as many countries with emerging stock markets (118) than countries with developed stock markets (24). However, not all these markets are recent in the way that the terminology emerging markets suggest. Some have long vintages (for example the Buenos Aires exchange was opened in 1854, the Sao Paolo exchange in 1890 and the Bombay exchange in 1875) but are still not classed as developed. We investigate whether there are differences between these markets and newer emerging markets and so we distinguish between (post 1985) emerging markets which we call *new emerging markets* and pre-1985 emerging markets which we call *old emerging markets*.

Figure 1. The time distribution of the oldest operating stock exchange at a country level in the sample of 138 countries that currently have a stock exchange. Panel A shows the distribution at a century level from the 17th till the 20th century. Panel B gives the distribution at a decade level from 1900 onwards, and Panel C shows the distribution on a yearly bases from 1980 onwards.

Panel A



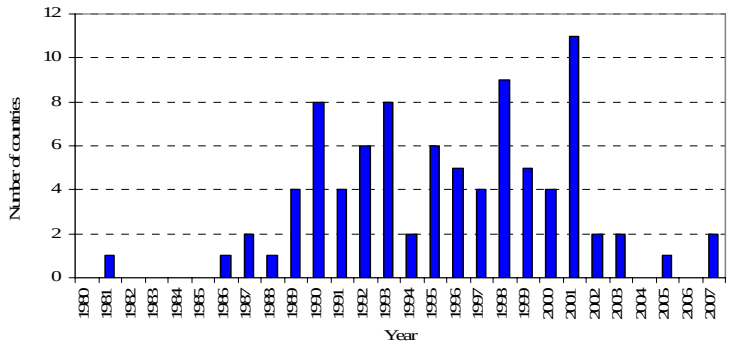
Panel B



[58] The official website of the Warsaw Stock Exchange list 1991 as its opening date

[59] Each country is classified by the oldest operating stock exchange, i.e., it does not take into account the dates of creation of stock exchanges that were closed for a substantial period of time. For example, Hungary had a stock exchange that closed in 1949. The Budapest Stock Exchange created in 1990 is puts Hungary in the group of 52 countries that opened a stock exchange in the 1990s. The figure does not account for multiple exchanges. For example, India belongs to the group that opened a stock exchange in the 19th century (the Bombay Stock Exchange was opened in 1983) although it opened one more stock market in 1993 (National Stock Exchange) that started share trading in 1994. See, e.g., Petraki and Zalewska, 2009, for a discussion of the growth of stock markets.

Panel C



Much of the evidence of the share ownership data in the papers is presented as percentage of population in a country so it is interesting to address the relationship between world population and countries with stock markets. Currently 94% of the world population live in countries that have stock exchanges, of which 80% live in countries with exchanges classed as emerging, and 14% in countries with exchanges classed as developed. This contrasts sharply with the corresponding statistics for the early 1980s when only 55% of the world's population lived in countries having a domestic stock market. Over the same period (i.e., early 1980s to now) the percentage of the world's population living in the countries with developed markets has hardly changed (around 15%), whereas the percentage of the world's population living in countries with emerging markets has doubled (Zalewska, 2008, 2009).

Table 3 provides the summary shareholding statistics. For countries within the sample it aggregates the number of shareholders in each of the three categories (developed/old emerging markets /new emerging markets). It also shows the total population of the countries in the sample in each of the categories and the percentage of stockholders as a percentage of the population. Addressing the pure numbers initially, Table 3 shows that within the sample the new emerging markets currently contribute over 100 million direct shareholders, amounting to almost a third of the world stockholders. This alone provides an indication of the origin of many of the new shareholders in the last twenty five years. The table shows that developed markets have much higher direct share ownership as percentage of population than emerging markets but that there is also a clear distinction between old and new emerging markets. It is the new not the old emerging markets where the stockholding percentages are higher (over twice as high for the new than for the old emerging markets).

Table 3. Direct share-owners in 70 countries.

	Population		Share owners	
	World	Sample	Numbers of individuals	% of the group population
Developed markets	895,262,300	895,262,300	172,747,449	19.3%
Old emerging markets	2,787,418,900	2,026,008,400	51,217,741	2.5%
New emerging markets	2,424,360,012	1,863,073,512	104,075,328	5.6%
Total of countries with stock exchanges	6,107,041,212	4,784,344,212	328,040,518	6.9%

Table 4 repeats the exercise for indirect shareholding and the story is roughly similar: the old emerging markets again provide a lower percentage than the newer emerging markets. However, in the case of indirect shareholders the countries in the sample with new emerging stock markets provide more indirect shareholders than the developed markets and the aggregate for all the emerging markets in the sample constitutes almost 70% of the total in the sample.

Table 4. Indirect share-holders in 66 countries

	Population		Share owners	
	World	Sample	Numbers of individuals	% of the group population
Developed markets	895,262,300	8,1844,290	157,710,423	19.27%
Old emerging markets	2,787,418,900	1,830,995,000	134,508,216	7.35%
New emerging markets	2,411,376,300	1,815,310,400	273,122,839	15.05%
Total of countries with stock exchanges	6,094,057,500	4,464,748,300	565,341,478	9.28%

Tables 3 and 4 indicate that there is little relationship between the vintage of a market and the number of shareholders. Vintage alone appears to carry very limited information with regard to

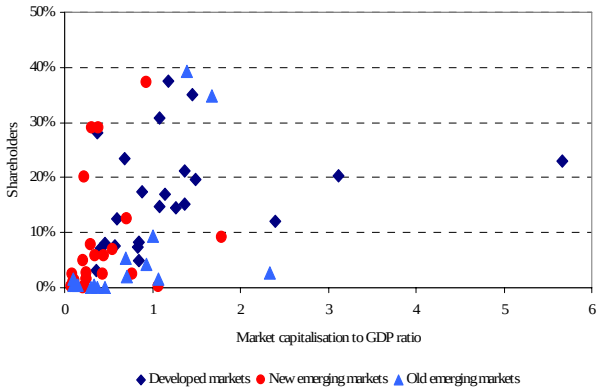
the percentage of individuals that own shares. The oldest markets are the developed markets and these on average have comparatively high percentage of shareholders. However, as we have indicated, the old emerging markets have the lowest average percentage, yet within this group there are some very old markets. Even within type of market age does not provide a clear picture. For example, there is no clear relationship between shareholder numbers and increase in the age of the market in developed markets (in the UK share ownership as percent of population has been declining for the last decade whereas in Japan it has been consistently increasing since 1985).

We close this subsection with details of the relationship between the numbers of shareholders and stock market characteristics often used as indicators of market development (the three categories of market are marked separately in the figures). A common measure of stock market development is market capitalisation relative to GDP. In Figure 2 Panel A shows the percentage of population directly owning stock against the market capitalisation relative to GDP. These two measures are positively related, i.e., larger markets relative to GDP are associated with deeper shareholder penetration in the population, with a correlation of 37%. However, a regression coefficient, while significant, can only explain around 10% of the variability of the data so the relationship is weak. Figure 2 Panel B plots the absolute capitalisation of markets against absolute numbers of shareholders in the country. Finally Figure 2 Panel C shows the percentage of population directly owning stock against ownership concentration figures that are downloaded from La Porta et al. (2006) [60]. The ownership concentration is commonly used in the legal origins literature which we discuss later in this section. Figure 2 Panel C shows that the concentration of ownership defined by the largest non-state owners of the largest companies has no relationship with the penetration of share ownership in the population.

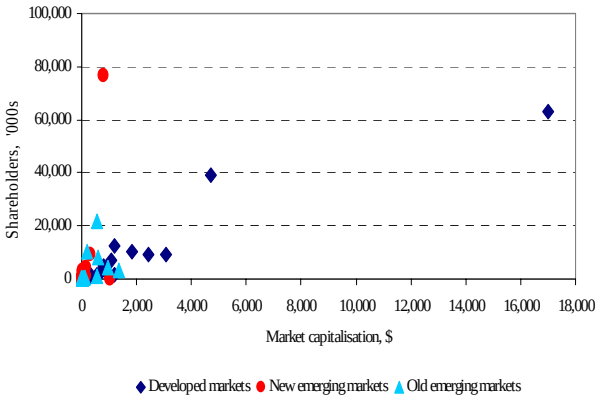
[60] What works in securities laws, 2006 Journal of Finance.

Figure 2. Shareholders versus stock market development measures: market capitalisation to GDP (Panel A), market capitalisation (Panel B), and ownership concentration ratio (Panel C).

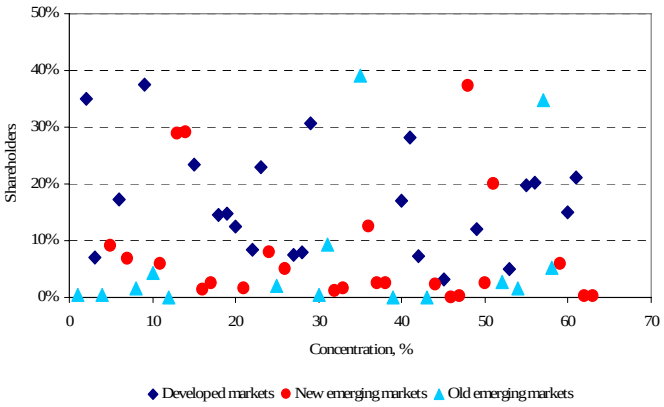
Panel A.



Panel B



Panel C.



GDP per capita

For the few countries where there is sufficient data there is strong evidence from within country cross section analysis that individual stock ownership is positively associated with income (see, for example, Bergstresser, D., and J. Poterba, 2004 and Campbell, 2006). For this reason it is interesting to see the relationship between GDP per capita and the percentage of population holding stock conditional on market type.

Figure 3 plots direct share-holding as a percentage of total population against GDP PPP per capita calculated in international dollars for 2006. It is clear that the marginal effect of wealth on percentage of stockholders is positive in the cross section across all countries in the sample (0.408, significant at the 1% level). However, this effect is weaker once the relationship is investigated within market type 0.08 (not significant) for developed markets, 0.897 (significant at the 1% level) for new emerging and 0.852 (significant at the 5% level) for old emerging markets. Figure 4 shows the situation for indirect ownership which seems more uniform across various market groups.

Figure 3. Direct share-ownership of individuals as a percentage of total population, as reported in Table 1, versus GDP PPP per capita expressed in thousands of international dollars. The figure includes 24 countries with developed stock markets, 31 countries with new emerging stock markets (opened after 1985) and 15 countries with old emerging stock markets (opened before 1985).

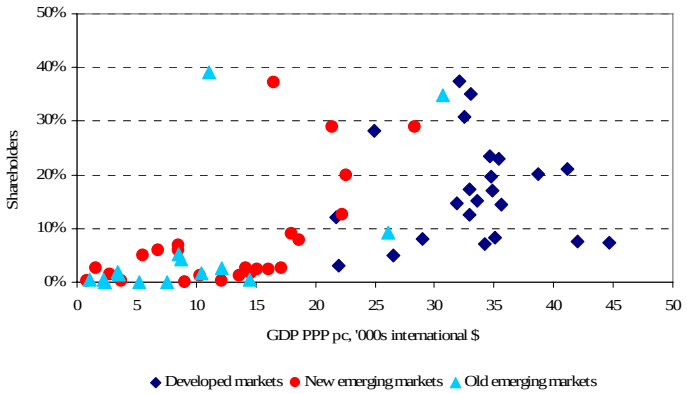
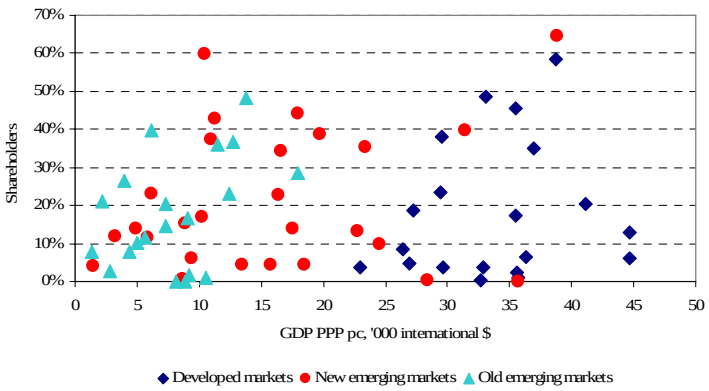
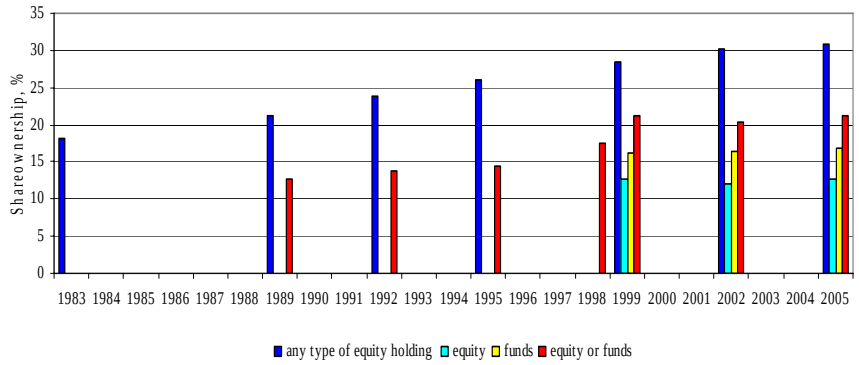


Figure 4. In direct share-ownership of individuals as a percentage of total population, as reported in Table 1, versus GDP PPP per capita expressed in thousands of international dollars in 2006. The figure includes 20countries with developed stock markets, 72 countries with new emerging stock markets (opened after 1985) and 19 countries with old emerging stock markets (opened before 1985).



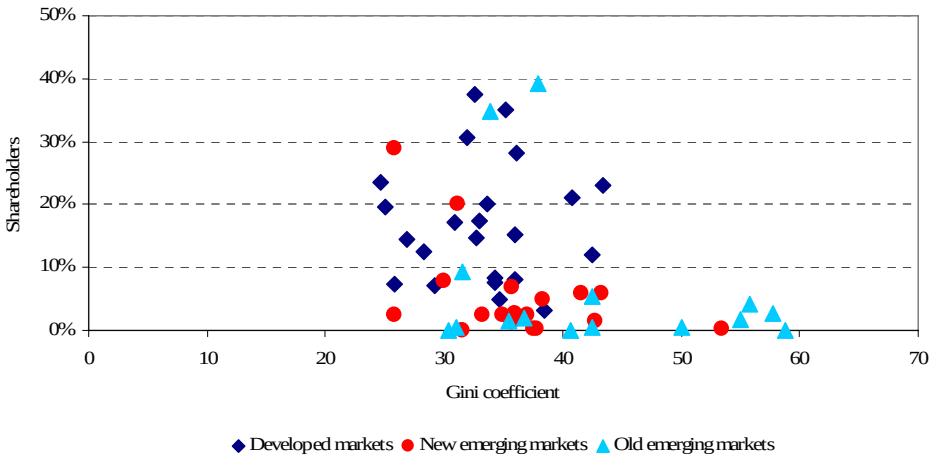
GDP per capita and growth appears to be particularly important in the development of the US stock market. The US stock market is the most studied markets in the world, however, when it comes to accounting for how many Americans own shares the information is very incomplete and scattered. Somewhat surprisingly, given that the culture of holding shares, especially via variety of funds investments seems well established, very few authorities are concerned with how many people actually own shares and record the statistics over years. Figure 5 shows the limited time series of data referring to the direct shareholding that we were able to collect for the US market. It is clear that despite differences among quoted statistics they show a similar pattern - the number of shareholders increases over time. Moreover, the increase is substantial, the number of people that hold any type of equity nearly doubled since the early 1980s. This is consistent with figures reported by others based on national surveys. For instance, Bergstresser and Poterba (2004) report that the percentage of households holding any type of equity increased from 27.3% to 50% between 1989 and 2001. According to Aizcorbe, Kennickell and Moore (2003) 51.9% of American households hold any type of equity in 2001. Alongside this increase in the number of households holding equity, the amount allocated in equity also changed. Bergstresser and Poterba (2004) report that between 1989 and 2001 an average American family increased the amount of money allocated in equity as the proportion of the total financial assets from 40.4% to 71.6%. Campbell (2006) shows that the average ratio of equity investment in the total household portfolios is a more-or-less monotonous function of wealth. He also shows that, roughly speaking, the proportion of people owning equity in each percentile of wealth distribution is equal to this percentile, i.e., 10% people will hold equity in the lower 10% group of wealth distribution, 20% will hold shares in the second deciles, etc. Indeed, equity was the only group of assets characterised by such a linear pattern.

Figure 5. Shareholders as a percentage of population, USA.



As well as GDP per capita the relationship between inequality of GDP may matter. However, Figure 6 shows that there is no simple systematic relationship between the Gini coefficient of income and the numbers of shareholders whether at the cross-country level or within each of the three groups.

Figure 6. The number of shareholders as a percentage of population versus Gini coefficient.



Privatization

The global wave of privatisation has transferred an enormous amount of assets from state to private hands. The cumulative total value of assets transferred from the public to the private sector has been estimated to be over $1.50 trillion by the end of 2008 (Privatization Barometer).

The market value of privatized companies in 2006 was 18.2% of global stock market value and 38.6% of the non-U.S. total value.[61] Within developed economies, privatized companies account for a significant fraction of the stock markets (e.g., at least 13.1% in Germany and 11.7% in Australia). In many OECD countries (France, Italy, Spain, Portugal) privatized companies are by far the biggest on the market, and almost 90% of the world's largest public stock offerings have been share issue privatizations. Privatization and liberalization have been seen as a means of improving incentives, reducing political control, bolstering public finances, and improving the financial and operating efficiency of divested firms. Evidence suggests privatization is generally, although not universally, associated with improved efficiency (Megginson and Netter, 2001) and is more likely the higher the level of sovereign debt (Bortolotti et al., 2003).

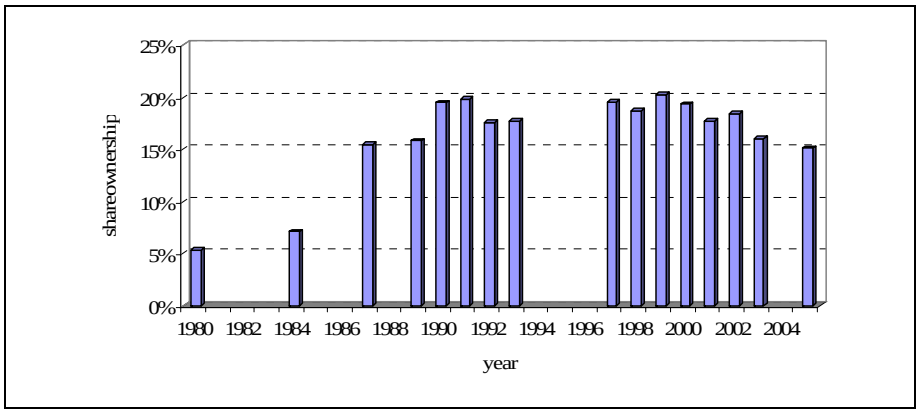
Of course, new share issuances do not necessarily imply increased numbers of new shareholders, since stock offerings can be, and historically have been, distributed mostly to investors who already own some shares. However, most privatisations have had a specific objective of increasing the ownership base. There are theoretical justifications and empirical evidence for widening share ownership as part of a privatization policy. Using judicious underpricing, privatization sales to the general public can be used to shift political preferences to the right (Biais and Perotti, 2002). Indeed it has been shown that privatization discounts are greater than discounts in standard initial public offerings (Dewenter and Malatesta, 1997; Jones, et al., 1999) and it is conservative coalitions that are more likely to privatise (Bortolotti, et al., 2003). Expropriation and government intervention is also a central concern for the markets and the financial risk premium assigned by investors to privatised companies is extremely sensitive to policy changes (Grout and Zalewska, 2006a). Widening share ownership by providing free shares can be both profitable overall (Schmidt, 2000), and can reduce expropriation and other political risk (Perotti and van Oijen, 2001).

The UK led the privatisation wave amongst developing countries and provides a good case study of the effects of privatisation of stock ownership and the longer run consequences. Figure 7 shows the numbers of individual stock holders in the UK as a percentage of the population for the years when data exists. The privatisation of 50.2% of British Telecommunications at the end of 1984 raised £4.1bn and was the first very large privatisation (at the time six times bigger than any previous issue on the London Stock Exchange). Concerns that the issue was too large led to

[61] Personal calculation of the author, based on 2006 FT 500 List of the World's Most Valuable companies.

the campaign to persuade non-shareholders to invest (the number of individual shareholders in the UK had been declining for many years). This aspect of the offering was enormously successful. The issue was 5 times oversubscribed, prices doubled in the first day and there were xx individual shareholders. This alone was mainly responsible for the more than doubling of the number of individual stock holders between 1984 and 1986 (the privatisation was in December 1984 and is not represented in our 1984 figures in Figure 7). There were other privatisations between December 1984 and December 1989 and the number of stock holders remained roughly constant between these dates. In December 1989 the water industry was privatised (10 regional companies) and in December 1990 the regional electricity distribution industry was privatised (12 regional companies). These privatisations created a spike in ownership numbers after which the number of shareholders declined again. After a change in the Building Society Act, seven very large building societies (non-profit lenders) demutualised in the UK between 1997 and 2000 with several of the largest becoming publicly listed banks. In these cases all deposit holders and borrowers were given shares or cash. There were over 7.6 million individuals given shares in one case alone (Halifax). In one year, 1997, £36bn (6% of consumers annual expenditure) was handed in shares and cash to individuals as a result of demutualisation. This created a new wave of individual shareholders and as a result a second spike in 1997 to 2000. Since this point individual stock ownership has again declined. Halifax estimated that over 5 million of its shareholders had sold all their stock within the four months of the listing. The unravelling of shareholder numbers appears to be a common theme in privatisations.

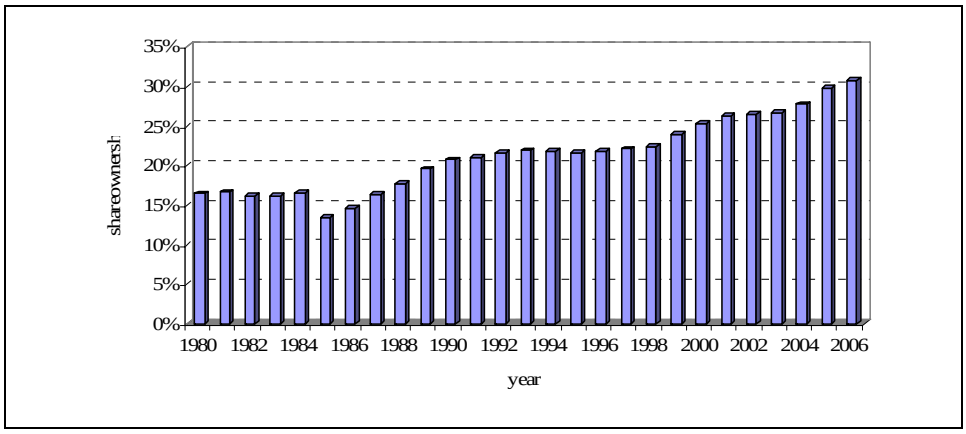
Figure 7. Available statistics on the proportion of the UK population holding shares in the period 1980-2005. Source: United Kingdom Shareholders Association.



The Japanese situation contrasts with the UK's. Japan is one of the very few countries in the world for which share-ownership statistics have been recorded annually for the last few decades. Figure 8 shows that the proportion of the Japanese population owning shares has doubled since 1980, and, with the most current statistics exceeding 30%, it is over twice as high as in the US. It is also interesting that the proportion of people holding shares has been growing more-or-less steadily since 1986, i.e., that seems to coincide with privatisation offerings of shares of the Japan Tobacco and Salt Corporation, and of the Nippon Telegraph and Telephone Public Corporation (NTT). The growth of share-holders was quite fast through the late 1980s what may be driven, at least partly, by the follow up offerings of the NTT shares (1986, 1987, 1989) as well as privatisation of the Japan Airlines (1987). The privatisation of the Japanese National Railroads in October 1993 and the subsequent offering of shares of JR East Japan do not seem to impact greatly on the increase of shareowners in Japan, but the 1990 were rather difficult years for the Japanese economy so a slowdown in the growth of shareowners should not come as a surprise. Having said that, the proportion of Japanese population owning shares has been increasing steadily since the late 1990s despite the burst of the e-commerce bubble and the subsequent decline in the share prices on the world stock exchanges (including the Tokyo Stock Exchange). Sales of shares of the NTT in 1998 and 1999 were well received by the public and might have contributed towards the creation of this new trend. Although outside the collected data set the privatisation of postal services in October 2007 might further impact on how many people would be willing to include equity holdings in their portfolios.

In contrast with the UK, the Japanese privatisation programme has been rather slow and gradual, i.e., only a few companies were privatised and the reduction of the state control was only partial with the government retaining big stakes in the privatised companies. However, if one of the aims of the privatisation programme was to broaden share-ownership, it definitively worked better in Japan than in the UK where already discussed the numbers of share-holders have been more volatile.

Figure 8. Share-ownership as a percentage of population, Japan.



Major privatisations create many new individual stock holders but unless there is a regular flow of fresh privatisations the numbers then wane overtime. It is important to distinguish between different relationships between privatisation and the stock markets.

In the context of developed markets the government has typically privatised major utilities and state owned enterprises that for historic reasons (frequently associated with war efforts) have had a close association with the state (airlines, car manufacturers, etc.). In these cases individual share holding has been an active choice on the part of the individual, albeit with significant financial incentives that made purchase by state nationals at the time of privatisation a valuable one-sided bet. In some privatisations shares were given free but this was mainly to employees of privatised companies. This latter process should be seen as part of a wider policy of employee share holding which has become popular in recent years and in some broader sense share ownership as part of the incentivisation of employees and management.

In contrast to the position developed markets in many other countries stock markets had to be created as part of the privatisation process (e.g., Hungary, Poland, Russia). Hence, the unprecedented growth of stock markets on the 1990s is strongly linked with the collapse of communism. Indeed, 28 out of 52 countries that opened stock exchanges in the 1990s are countries that totally (e.g., Poland, Hungary, Slovenia) or only partly (China, Vietnam) undertook market reforms to replace a central plan by a free-market system. For many emerging markets, particularly in transition economies, privatized assets are still almost the only assets

publicly listed on local stock markets. Czechoslovakia and Russia are good examples. Privatised companies accounted for around 80% of industrial output in Russia immediately after privatisation and 90% in Czechoslovakia.[62] In these countries the stock markets were created primarily to service the privatisation process. This massive asset transfer was accompanied by a comparable increase in the shareholder base. In Czechoslovakia 90% of the working population held shares but by 2005 28.99% of the Czech Republic held shares and 2.4% in Slovakia. In Russia, although the privatisation transfer was been affected by numerous cases of corruption, the new shareholders represented approx 40 million or 28% of the working population (Djankov and Murrell, 2002). In the countries where stock markets were created as part of the privatisation process then shareholding was in some sense 'imposed' on individuals. To be more precise it was the option of shareholding that was imposed since frequently individuals were not given shares directly but were given vouchers that were convertible but transferable before conversion. This 'imposition' of ownership tends to be associated with more rapid declines of the privatisation-induced ownership. Note, that in the UK it was in the context of demutualisation that the induced-share holding declined most rapidly.

Legal origins

The legal origins approach to financial development argues that there are significant differences between countries in terms of investor protection and that there is a systematic relationship between investor protection and legal origin/tradition in that common law countries offering far more investor protection than civil law countries. This view is particularly associated with La Porta, Lopez-de-Silanes, Shleifer and Vishny who in a series of papers (e.g., La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997, 1998, 1999) see La Porta, Lopez-de-Silanes, and Shleifer (2008)) argue that the development of financial institutions (including stock markets) is strongly determined by the legal origin of the country they operate in.

Table 5 provides statistics on the average percentage of individual shareholders relative to population in subgroups cut by legal origin and market type. The numbers in brackets give the percentage of countries in the sample falling in each particular category. This shows that although there is a substantial difference between the numbers of shareholders in common law

[62] Before its split into the Czech Republic and Slovakia.

and civil law countries in the case of the developed markets and new emerging markets, this difference disappears in the group of the old emerging markets.

Table 5. The average percentage of population holding shares. The distinction for common and civil origin is based on La Porta et. al. (2008). The statistics in brackets show the percentage of countries of the sample in each category.

	Common law origin	Civil law origin
Developed markets	22.44%	13.97%
	(12.31%)	(24.62%
Old emerging markets	6.44%	7.22%
	(12.31%)	(10.77%)
New emerging markets	13.05%	5.46%
	(9.23%)	(30.77%)

An alternative explanation for market development, endowment theory, links financial development with geographical characteristics (e.g., a geographically hostile environment resulted in a grab-and-run attitude of colonisers, and hence less concern for protection of private property, than accommodating geographical conditions which favoured the development of property rights). Beck, Demirguic-Kunt, and Levin (2003) find empirical support for both the law and finance theory and the endowment theory but argue that the latter provides a better explanation of the cross section disparity in data. The geographical endowment argument is heavily based on the role of colonisation in stock market development and is less relevant to deal with the general issue of the penetration of stock ownership in the population. Figure 9 shows settler mortality against shareholders as percentage of population for those countries where there is settler mortality data. For these countries low shareholder penetration in the population appears to have little relationship with settler mortality although those countries with shareholder penetration above 10% all have low settler mortality.

Figure 9. The number of shareholders as a percentage of population versus settler mortality as quoted by Beck et al. (2003)

The size of government

As a broad approximation, governments that have a large share of GDP undertake more economic activity for citizens than governments that have a small share of GDP. Where governments provide less for citizens then citizens may need to build up more wealth to self-provide for activities that will be provided by governments in other countries. So there may be a negative relationship between the size of government and share ownership as a percentage of population. Of course, there is no unique theoretical relationship. For example, the relationship may go the other way to the one suggested above if a governments takes a large share of GDP for activities that citizens would not choose to do, which leaves less wealth to be invested generally and hence less in shares. So it is likely to matter what governments are choosing to do and not do. An area that seems to have particular relevance for share ownership is the stance of governments to the provision of income for old age, notably in the light of demographic changes.

. It has become difficult for countries to retain the pay-as-you-go model in the face of (i) the current and predicted demographic changes and (ii) rising expectations of current citizens of the appropriate provision in of income for old age. This has become a central concern of governments globally. It is now ten years since the IMF estimated that public pension funds relative to GDP must increase significantly by 2030—for example, doubling in Germany--if benefits are to stay constant in real terms (Chand and Jaeger, 1996). Not surprisingly, pension reform is now a leading policy issue. Governments have been forced to reconsider their role as

welfare provider, notably as the principal provider for citizens in their old age, and individuals are now charged with providing for their some or all of their own retirement and for downturns in circumstances. This movement is almost universal (Chan-Lau, 2004; Disney 2000; Lindbeck and Persson, 2003; Poterba, 2004).

In developed economies the impact on direct and indirect ownership arising from private pension is exacerbated by higher levels of wealth, and hence higher expectations of provision in old age, which has led to unprecedented growth in mutual and pension fund holdings. In the United States in 1998, more than 20% of the adult population directly held stock, 49% of all households held stocks directly or indirectly (this figures rises to over 90% for households with income over $100k), and 84% held stock through any mechanism. The growth can be gauged from the fact that 44% of all households held mutual funds in 1998 compared to a figure of less than 6% in 1980 (all references, Poterba, 2001). There has also been considerable growth in retail market participation, particularly for new issues.[63] This process sucks into the market more wealthy investors who previously may have restricted their saving to mutual and pension funds.

The growth in pension funds has also been strong in developing markets. The World Bank has promoted the policy of replacing pay-as-you-go with private (managed) structures (the so-called second and third tiers). In both developing countries and transition economies this has resulted in a dramatic increase of people investing indirectly in stock markets (Roldos, 2004; Vittas, 2000). For example, in Latin America alone, the number of investors exceeds 40 million and in Poland, the number of investors already exceeds 65% of the working population (where there were none in 1989).

Although the demographic changes and government responses are having particularly significant implications for indirect ownership there are also implications for direct ownership. The correlation between the percentage of population owing shares direct and indirect in the sample of countries where both statistics are available is 0.238, which is not as high as one might expect if, for example, GDP per capita was the sole driver. Furthermore, high indirect ownership is not concentrated in the countries with developed markets. Ten out the thirteen countries that

[63] The scale of this process in the United States can be gauged from the Google initial public offering in 2004, which has been seen as a watershed. The company (valued in May 2009 at almost 129 billion dollars) chose to bypass the banking support process and the associated large investors. Instead it set the initial public offering price, and raised around two billion dollars, through the retail market in part using information derived from internet bids. Although the process of bypassing the banking support operations was deemed premature and not an unmitigated success, the ability to place such a large offering straight into the U.S. retail market showed the extent that this market has grown in the last twenty years and signals the scope for future growth.

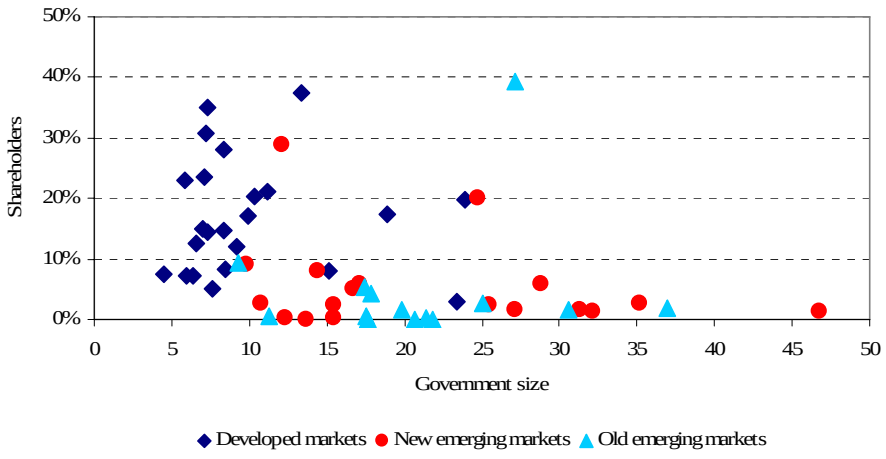
have a percentage of the population owning stock indirectly above 30% are either transition countries (Bulgaria, Czech Republic, Estonia, Kazakhstan, Poland) or emerging markets (Fiji, Chile, Costa Rica, and Mexico (all old) and Iceland (new)). The remaining three (developed markets) are Hong Kong, Netherlands, and UK.

Figure 10 Panel A plots the percentage of the population directly owning shares against a standard measure of government size (share of government of GDP). There is a relationship, in that small government size is on average associated with higher percentage of the population owning shares, although there is a substantial difference between the developed and emerging markets. While a vertical line seems the best fit for the developed markets, a horizontal one would fit in the emerging ones quite well if two countries (Czech Republic and Slovenia) with the percentage of shareholders in the range of 20%-30% were ignored.

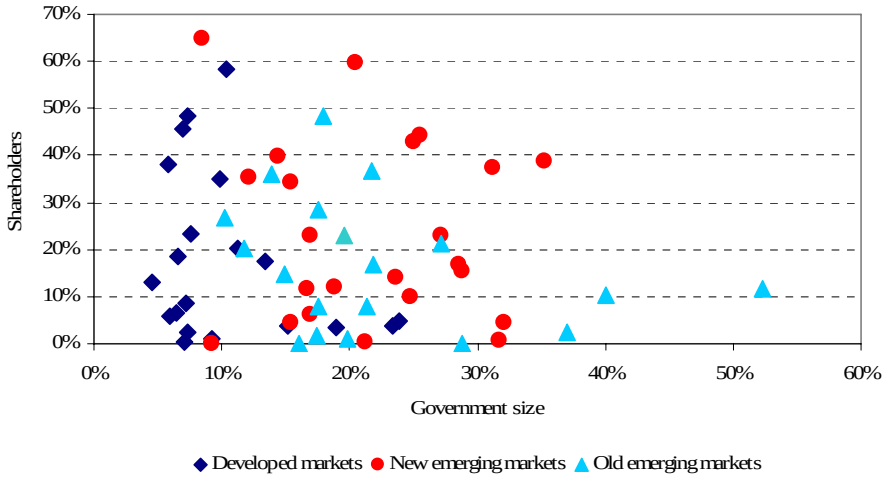
Figure 10 Panel B repeats this exercise for indirect ownership. There is a relationship in that small government size is on average associated with higher percentage of the population owning shares as one would expect.

Figure 10. Direct shareholders (Panel A) and indirect shareholders (Panel B) as the percentage of population versus government size. Government size is taken from the Penn World Tables figures for 2000.

Panel A



Panel B



3.2. Regression analysis

Section 3.1 discussed several factors commonly used in the literature on stock market development in the context of their relationship to the numbers of shareholders (as the percentage of country's population). This section presents results of our econometric analysis.

The analysis is undertaken at three levels.

First, we focus on our data set of countries that have stock markets. Table 6 presents the results using the most recent statistics of the number of individual shareholders as a percentage of population, as presented in Table 1, as the dependent variable. We have 65 not 70 observations, as we treat the six countries that trade shares on the Eastern Caribbean Stock Exchange as one observation point.

Second, we add to the above data set the countries that do not have stock markets (except those with population below 100,000). Hence, these regressions are based on 102 country observations. Table 7 shows the results when the dependent variable consists of the statistics presented in Table 1 and zero for the countries that do not have stock markets (for these countries we have made an assumption that the number of shareholders is zero).

Third, to check for the robustness of our findings we repeat Table 6 but with the variables (dependent and independent when appropriate) constructed as the average of the existing observations over the period 1997-2007. The averaging is introduced to control for possible changes in the numbers of the shareholders over the last decade, and to eliminate the possibility of a result being a one-off 'fluke'. These are given in Table 8

The independent variables used in the regressions are:

- GDP PPP pc – that denotes GDP in Purchasing Power Parity per capita (World Bank figures) calculated in international dollars for the same year for which the shareholder statistics is used (Table 6, 7) and for each year of the period 1997-2007 (where available) for Table 8.
- Gini coefficient – is the measure of the inequality in the year for which the shareholder statistics used in Tables 6 and 7 are quoted. If not available, the closest in time statistic is used. For the six countries unified by the Eastern Caribbean Stock Exchange the Gini coefficient for St. Lucia is used as there were no Gini coefficients available for the other five countries. The data are taken from the World Bank data base;
- Age – denotes the years of operation of the oldest existing stock exchange in a country (defined as the year equity trading started) till the year the shareholding statistic is used;
- Developed market - is a dummy equal to one for developed markets and zero otherwise;
- Emerging markets – is a dummy equal one for emerging markets (old and new) and zero otherwise;
- Old emerging market – is a dummy equal one for old emerging markets (created before 1985) and zero otherwise;
- New emerging markets – is a dummy equal one for new emerging markets (created after 1985) and zero otherwise;
- Common law – is a dummy equal one for common law countries and zero otherwise; the classification is downloaded from Andrei Shleifer's web page.
- MC/GDP ratio – is a ratio of the equity market capitalisation to the GDP in the year of the shareholder statistic is used (Table 6 and 7). For the purpose of Table

8 the ratio is calculated using the average of the market capitalisation and the average of the GDP statistics;

- Government size – is the government share of GDP as given in the Penn World Tables 6.1 Year 2000;
- Transition economies – is a dummy equal one if a country is a transition economy and zero otherwise.

Starting from regression I in Table 1, we see that wealth as measured by GDP PPP pc is a highly statistically significant factor in explaining the percentage of the population owning shares (each $1000 increasing the proportion of shareholders by 0.42%) and alone explains nearly 27% of the variability of the data. Controlling for the inequality of the income distribution (regression II) does not help much (R squared increases but the coefficient is insignificant). Similarly, the age of an equity market does not contribute to explaining the scale of penetration of equity holding (regression III).

While GDP per capita is important in explaining the penetration of equity holding it is useful to see if this is true for all stock markets or is driven by the relationship for particular types of markets. Hence in regression IV we introduce dummies for old and new emerging markets and interactive terms between these and GDP per capita. We find that GDP per capita is no longer significant but the interactive terms with the new and old emerging markets are. Thus it is differences in GDP in emerging markets that are crucial. This finding is consistent with our discussion presented in Section 3.1 (Figure 3). Furthermore, the coefficients for the old and the new emerging markets dummies and the interactive terms are very similar indicating that there is little difference between the GDP per capita effect in these two types of emerging markets. For this reason we introduce one dummy for the emerging markets (regression V) and one interactive term. Again the generic importance and significance of the GDP PPP pc in explaining shareholding variations across countries does not persist once we distinguish between emerging and developed markets. Therefore, the specification of regression V is chosen as the base for the following regressions.

We find, in line with earlier research on determinants of stock market development (e.g., La Porta et al., 1997, 1998, 1999; Beck et al., 2003), that a common law variable, or more specifically, whether a country has a law system based on the common law principle matters.

The common law dummy is highly significant and its inclusion increases the explanatory power of the model by 10%.

Adding variables that control for the development of the stock markets, namely MC/GDP ratio and volume of trading to MC (not presented), do not add to the explanatory power of the model nor deliver statistically significant coefficients. Interestingly, neither privatisation (the transition economy dummy) nor a government size dummy are significant either. The common law variable is robust (remains significant at 1%) to the introduction of these variables.

Table 7 expands the sample used for the regressions presented in Table 6 by adding those countries that do not have stock markets and confirms results presented in Table 6. It does not however, use the government size variable as no values are available for the countries without stock markets.

Table 8 differs from Table 7 in that it uses averages over the period 1997-2007 of the available statistics rather than the most recent observations only. Using the averages smoothes out some of the data but the main point is that it also takes the data further back in time, which has significance for one variable. The main results remain unchanged. However, there is one feature of the averaging process that is interesting. In the averaged data the transition economies dummy is now significant, albeit only at the 10% level, and has a positive sign. This effect can be explained by the fact that it is the transition economies as a group that have experienced the largest decline in the numbers of shareholders. Hence taking the data closer to the period when the markets were introduced has had an effect on the regressions. In several transition countries privatisation of state owned enterprises created vast numbers of shareholders in the early–mid 1990s. This ‘imposition’ of shares did not, however, succeed in maintaining high penetration levels, as many people liquidated their equity stakes. The signs of the transition dummy in Tables 6, 7 and 8 are interesting in this regard. The sign of the coefficient in the average statistics (Table 8) is positive, as one would expect. Given that large numbers of shareholders were created by the privatisation process. In contrast, the sign in Tables 6 and 7 are negative. That is, the shareholdings had declined to such an extent that not only is privatisation no longer significant in the statistical sense, but the insignificant coefficient is actually negative in both tables.

Table 6. Regression results when the percentage of population holding shares as quoted in Figure 1 is used a dependent variable. The independent variables are listed in the first column. T-statistics are quoted in brackets. *** - 1% statistical significance, ** - 5% statistical significance, and * - 10% statistical significance.

	I	II	III	IV	V	VI	VII	VIII	IX
Constant	2.310	8.755	0.624	17.32**	17.32**	12.94**	12.01*	14.16**	13.05**
	(1.114)	(1.250)	(0.200)	(2.532)	(2.569)	(2.044)	(1.869)	(2.147)	(2.039)
GDP PPP pc	0.417***	0.369***	0.550**	-0.015	-0.015	0.036	0.023	0.022	0.035
	(4.959)	(4.085)	(3.516)	(-0.079)	(-0.081)	(0.211)	(0.132)	(0.130)	(0.202)
GINI coefficient		-0.166							
		(-1.059)							
Age			0.025						
			(0.545)						
GDP*Age			-0.001						
			(-0.817)						
Old emerging markets				-19.06**					
				(-2.451)					
New emerging markets				-20.76***					
				(-2.704)					
GDP*Old emerging markets				0.882**					
				(2.570)					
GDP*New emerging markets				0.899***					
				(2.900)					
Emerging Markets					-19.97***	-19.54***	-19.30***	-18.87***	-19.43***
					(-2.778)	(-2.953)	(-2.864)	(-2.854)	(-2.904)
GDP*Emerging markets					0.879***	0.942***	0.953***	0.757***	0.949***
					(3.378)	(3.925)	(3.882)	(2.751)	(3.890)
Common law						7.768***	7.466***	6.734***	7.568***
						(3.467)	(3.135)	(2.810)	(3.117)
MC/GDP ratio							0.012		
							(0.818)		
Government size								-0.038	
								(-0.261)	
Transition economies									-0.700
									(-0.225)
Observations	65	61	65	65	65	65	64	58	65
R-squared	28.1%	33.3%	29.3%	39.7%	39.4%	49.5%	50.5%	46.7%	49.6%
Adjusted R-squared	26.9%	31.0%	25.8%	34.6%	36.4%	46.2%	46.2%	41.6%	45.3%

Table 7. Regression results when the percentage of population holding shares as quoted in Figure 1 is used a dependent variable for the markets that have a stock exchange and is defined as zero for the countries that do not have a stock exchange. The independent variables are listed in the first column. T-statistics are quoted in brackets. *** - 1% statistical significance, ** - 5% statistical significance, and * - 10% statistical significance.

	I	II	III	IV	V	VI	VII	VIII
Constant	0.019	6.035	-1.203	0.000	0.000	-1.017	-0.940	-0.888
	(0.017)	(1.206)	(-0.925)	(0.000)	(0.000)	(-0.637)	(-0.591)	(-0.547)
GDP PPP pc	0.480***	0.415***	0.584***	0.000	0.000	-0.067	-0.062	-0.061
	(8.603)	(6.266)	(6.207)	(0.000)	(0.000)	(-0.226)	(-0.210)	(-0.206)
GINI coefficient		-0.130						
		(-1.173)						
Age			0.045					
			(1.556)					
GDP*Age			-0.002*					
			(-1.779)					
Developed markets				17.32***	17.32***	15.40***	14.00***	15.41***
				(3.068)	(3.094)	(2.889)	(2.601)	(2.880)
Old emerging markets				-1.741				
				(-0.519)				
New emerging markets				-3.444				
				(-1.071)				
GDP*Developed markets				-0.015	-0.015	0.086	0.062	0.079
				(-0.043)	(-0.043)	(0.263)	(0.191)	(0.239)
GDP*Old emerging markets				0.867**				
				(2.236)				
GDP*New emerging markets				0.881**				
				(2.382)				
Emerging Markets					-2.655	-4.280*	-5.024**	-4.088*
					(-1.027)	(-1.718)	(-1.977)	(-1.616)
GDP*Emerging markets					0.862**	1.005***	0.979***	1.010***
					(2.504)	(3.060)	(2.959)	(3.060)
Legal origin						5.203***	4.807***	4.952***
						(3.464)	(3.098)	(3.122)
MC/GDP ratio							0.016	
							(1.447)	
Transition economies								-1.094
								(-0.509)
Observations	102	84	102	102	102	102	101	102
R-squared	42.5%	44.6%	44.3%	54.6%	54.4%	59.5%	60.8%	59.7%
Adjusted R-squared	42.0%	43.2%	42.6%	51.3%	52.1%	57.0%	57.8%	56.7%

Table 8. Regression results when the average percentage of population holding shares is used a dependent variable. The averaging of the available statistics is taken over the period 1997-2007. The independent variables are listed in column 1. The GDP PPP pc and the MC/GDP ratio variables are also averaged over the period 1997-2007 where available. The remaining independent variables are identical to those used in Table 6. T-statistics are quoted in brackets. *** - 1% statistical significance, ** - 5% statistical significance, and * - 10% statistical significance.

	I	II	III	IV	V	VI	VII	VIII	IX
Constant	4.315	23.20**	4.076	16.296	16.296	13.783	14.520	9.916	12.673
	(1.418)	(2.197)	(0.893)	(1.660)	(1.668)	(1.411)	(1.474)	(0.938)	(1.324)
GDP PPP pc	0.481***	0.332**	0.682***	0.020	0.020	0.044	0.085	0.094	0.054
	(3.393)	(2.092)	(2.635)	(0.064)	(0.065)	(0.144)	(0.274)	(0.301)	(0.182)
GINI coefficient		-0.447*							
		(-1.901)							
Age			-0.019						
			(-0.287)						
GDP*Age			-0.001						
			(-0.254)						
Old emerging markets				-19.74*					
				(-1.758)					
New emerging markets				-23.65**					
				(-2.143)					
GDP*Old emerging markets				1.180**					
				(1.960)					
GDP*New emerging markets				1.863***					
				(3.601)					
Emerging Markets					-22.03**	-22.36**	-22.98**	-26.620**	-23.76**
					(-2.111)	(-2.170)	(-2.216)	(-2.469)	(-2.351)
GDP*Emerging markets					1.625***	1.700***	1.715***	2.017***	1.593***
					(3.672)	(3.871)	(3.888)	(3.764)	(3.675)
Common law						5.349	6.210*	5.734	7.712**
						(1.602)	(1.759)	(1.544)	(2.208)
MC/GDP ratio							-0.020		
							(-0.773)		
Government size								0.223	
								(0.975)	
Transition economies									8.781*
									(1.910)
Observations	64	59	64	64	64	64	64	58	64
R-squared	15.7%	21.2%	18.8%	35.6%	34.1%	36.8%	37.5%	35.8%	40.6%
Adjusted R-squared	14.3%	18.4%	14.7%	30.1%	30.8%	32.6%	32.1%	29.6%	35.4%

4. Summary and Conclusions

This study presents the first comprehensive compilation of the number of people around the world who own shares directly and indirectly. We document that at least at least 328 million people in 70 countries (24 developed and 46 emerging market nations) own stock directly. Nearly 173 million of these investors live in countries with developed stock markets and the remaining 155 million reside in countries with emerging stock markets. We also document that at least 565 million individuals in 66 countries own stock indirectly through pension fund holdings.

We present very preliminary regression analyses of the determinants of personal shareholdings (we plan to expand these tests dramatically over the coming months). There are four main findings that appear to be robust.

One is that GDP per capita matters in determining shareholding in the population but this is driven by the impact of GDP differences in emerging markets (and is very similar for both new and old emerging markets). This factor alone can explain around 35% of the cross country differences if we use our data set of countries with stock markets and over 50% when the data set includes countries that do not have stock markets. Differences in GDP per capita do not seem to matter in developed markets.

The legal origin impact on the number of shareholders as percentage of population is very strong and is significant at the 1% level in all regressions using all three data sets.

The privatisation dummy (a transition dummy) is only significant in the average data set. The reason for this is that the averaged data moves the time of the data closer to the period when the stock markets were introduced in transition countries and the large individual shareholders were created. The two data sets that use the most recent data do not find any significance for the privatisation dummy, indeed the insignificant coefficient actually has a negative sign in the two data sets that use the most recent data.

Finally, other variables such as market capitalisation to GDP ratio, size of government, Gini coefficient, and age of market are not significant.

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