SPEAR'S RUSSIA WHITE PAPER 2013/1

Does Financial Market Development Explain (or at Least Predict) the Demand for Wealth Management and Private Banking Services in Developing Markets?

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Abstract:

How should wealth managers and private bankers find and serve the wealthy – particularly in developing countries? Several banks and consulting firms provide market sizing estimates for the number of high net worth and ultra-high net worth individuals. However, it is still an open question whether financial management services actually create wealth (or increase the number of wealthy persons). How can financial advisors know if, on a macro-level, their service offerings grow their collective assets under management and increase their prospect numbers? In this paper, we find evidence that advanced wealth management and private banking services might help grow a wirehouse's book of business in developed, but not developing, markets. If wealth management and private banking follow general trends affecting the broader financial sector, their business also grows wealth in less advanced economies. Such evidence sheds light on the currently ambiguous role that financial development seems to play in creating affluent, high net worth and ultra-high net worth individuals.

JEL Codes: D31, E01, E21, O10
Keywords: wealth management, private banking, high net worth, wirehouse, HNWI

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Introduction

Wealth management and private banking have become, in the Post-Lehman era, one of the fastest growing segments of banking. In 2011, at a time of economic recession, the wealthy's holdings world-wide grew by 4.3% (BCG, 2011, p. 2). Developing countries account of much of this growth. In 2011, Middle East, Asia, Latin America grew by about 7%. Hiring in many of the international banks – at the time of this writing – has also focused on adding wealth managers and private bankers in developing markets. According to *eFinancialCareers*, roughly 2 jobs appeared in wealth management for each job in retail banking at the end of 2011. Do the financial institutions like *JP Morgan* and *HSBC* who offer these wealth management services help account global increases in wealth? In this paper, we assess the extent to which wealth managers and private bankers create wealth (assuming the affects of their services follow patterns related to the broader financial sector). We specifically look at the extent to which differences in financial sector institutions (and the wealth managers that work within them) help grow their own assets under management and prospective wealthy clients.

Our paper assesses the extent to which different financial sector institutions -- defined as financial institutions differing in returns on assets, costs, insurance premiums collected and so forth -- correlate with increases in wealth across countries and the number of affluent as well as high net worth individuals (particularly in developing economies). Because the large wirehouses and private banks abroad do not publish information about their books of business, we deduce that pattern affecting the broader financial sector also apply to the wealth management and private banking industries in these developing countries. We develop a model for explaining how wealth management firms and private banks can grow the wealth of their clients in developing countries and include mechanisms for increasing the numbers of affluent and high net worth clients through wealth management practices.

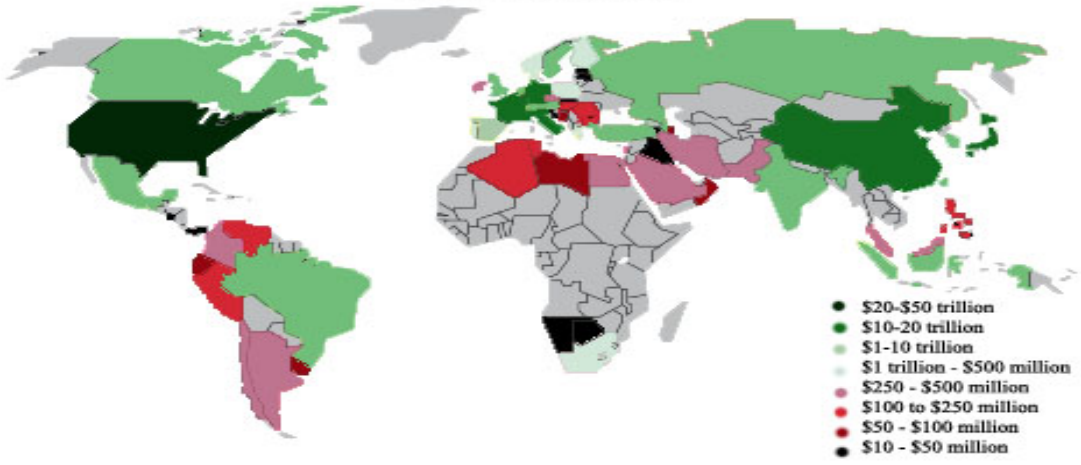
Our paper both supports and refutes the role of wealth management in generating wealth (and high net worth individuals). We find that such wealth management services probably serve to increase wealth (and the numbers of the wealthy) in the OECD member countries. However, in developing countries, we observe no or negative correlation between the differences in financial institutions and the growth of wealth and the numbers of wealthy. We also find that macroeconomic and institutional quality affect the extent of wealth creation far more than wealth managers and private bankers likely do. Our results remain extremely tentative – as only a detailed analysis of broker-dealers' client books can tell definitively if wealth management helps or hurts the affluent.

What Do We Know About Wealth and Banking Sector Development in the Developing World?

Recent trends in wealth

Wirehouses interested in acquiring new assets should ostensibly look to the developing world.[1] Figure 1 shows the value of such wealth in various countries (as proxied by wealth held by the top 10% of the adult population). Rich US households hold roughly $50 trillion in wealth (depending on whose estimates you believe).[2] However, Brazilian, Russian, Indian and Chinese ultra-high net worth individuals, high net worth individuals and the affluent together also hold roughly $50 trillion in wealth.[3] For wirehouses looking to target wealth in Latin America, Argentina and Colombia provide wealth managers with the opportunity to collect between $250 million and $500 million. In the Middle East, the data show relatively deep pockets of wealth in Turkey. Saudi Arabia, and Egypt. Surprisingly, Iran and Pakistan also provide amble opportunities for wealth mangers to accumulate client's assets in these markets. In Asia, India and Indonesia provide some of the largest opportunities (in absolute terms and outside of China and Japan) for aspiring wealth managers.

Figure 1: The World's Wealth Mostly Lies in the Traid with BRIC Economies Quickly Catching Up



The figure shows the amount of wealth held by the top 10% of the population in each of the indicated countries in 2010.
Source: Credit Suisse Wealth Databook (2011).

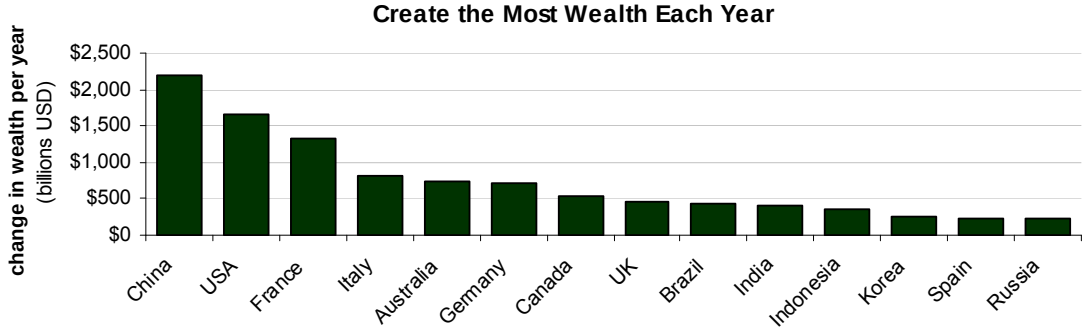
[1] The term wirehouse has come, increasingly in the specialised financial press, to represent international banks and broker-dealers operating in more than one branch or office. The term comes from the old days when they would send information by wire (or electronically). We use the term repeatedly as our paper focuses on implications for large wealth management firms and private banks operating in more than one jurisdiction.

[2] We discuss in the literature review section the various companies which produce "market sizing" estimates for wealth across countries.

[3] We use the term ultra-high net worth individual to refer to persons with $10 million or more in wealth, a high net worth individual has $1 million in wealth, while an affluent person has $100,000 or more in assets after subtracting out liabilities (and in current US dollar terms).

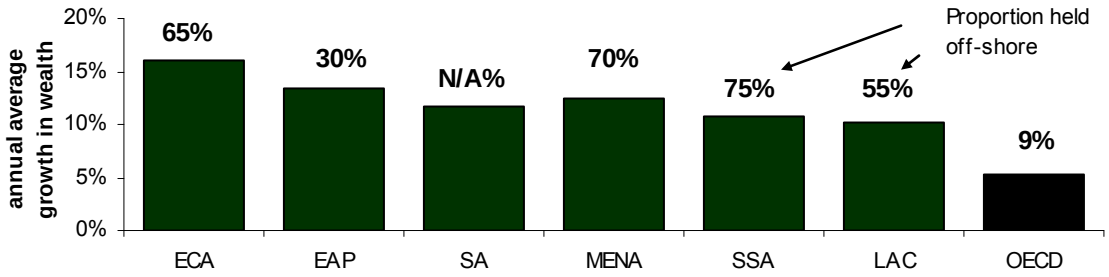
The developed economies – while producing wealth less quickly than the developing economies – tended to produce more of it (in absolute terms). Figure 2a shows the change in the absolute levels of wealth in the top 15 countries (ranked by levels of wealth). As shown, China produced the most wealth in 2010 (generating almost $2 trillion for the top 10% of its wealth holders). The US came in second – generating a bit more than $1.5 trillion. France, Italy and Australia filled-out the list. Yet, looking at the rates of growth, we see from the data that the old world clearly has not produced wealth at the same rate as in much of the developing world. Figure 2b shows these rates of change The OECD member countries generated wealth at roughly 4% per annum since 2000. The former Socialist economies in Eastern Europe and the Former Soviet Union produced wealth at roughly 15%.

Figure 2a: In Absolute Terms, The Big Economies Unsurprising Create the Most Wealth Each Year



The data in the figure show the annual average change (in absolute terms) of the wealth in 2010. We show the top 15 countries -- applying the decade long annual average geometric growth rate of welath to the 2010 level of wealth in each country using data from the Credit Suisse Wealth databook (2012).

Figure 2b: Former Socialist Economies Produce Fastest Growth of Wealth in 2000s



The data in the figure show the average geometric growth rate of total wealth from 2000 to 2010. Total wealth equals wealth per adult multiplied by the number of adults for each region. We have used total wealth for each country to weigh each country's wealth growth rate in our regional average growth rate estimates.
Source: Credit Suisse (2011) for geowth rates of wealth. Estimates for off-shore holdings come from Boston Consulting Group (2011).

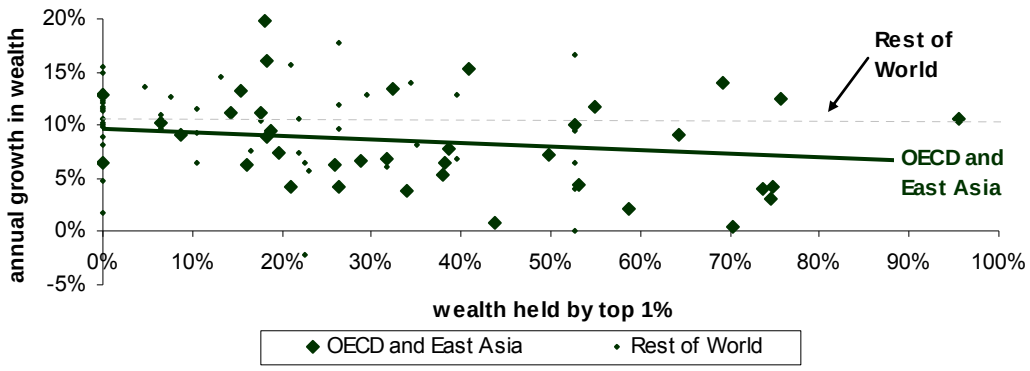
The data in Figure 2b also show another trend of particular interest to the international wirehouses keen on building books of business in developing countries. In much of the developing world, ultra-high net worth individuals sent much of their wealth into the hands of foreign wealth managers. The Middle East (for example) has one of the highest proportions of the wealthy using foreign wealth managers – with roughly 70% of wealth

ending up in Switzerland, London, New York and other international banking centres. Such a pattern represents a large opportunity for large international wirehouses – who can take these funds from developing countries and use them in developed OECD member states. However, such a pattern poses both practical and analytical problems. Practically, asset managers do not use this wealth to invest in the markets where the wealth came from. Such wealth can not contribute to local businesses and grow an indigenous affluent class – complicating any analysis of the role of domestic financial advice on wealth creation. Analytically, wealth sent abroad can significantly distort any accounting of wealth in a particular country. Both national accounting (like household surveys) and international surveys (like BIS data) can serious under-report the extent of assets (and liabilities) held abroad. Such a pattern makes research on wealth that much the harder.

Despite these problems, we know that countries where the richest 1% of households possess significantly more wealth than the other top 10% saw slower growth in wealth in the last decade. Figure 3 shows the correlation between the annual growth rate of wealth and the proportion of wealth held by the top 1% (as a proportion of wealth held by the top 10%). The graph shows rates of change on the y-axis – so the negative correlation depicted in the graph means that countries with a less wealthy top 1% saw higher overall rates of growth in wealth. To the extent that the *Credit Suiss*e data reflect reality, even a simple unweighted bivariate correlation very strongly suggests a relationship between wealth and inequality.[4] However, the relationship differs across regions. In the East Asia and Pacific region, more concentrated wealth correlates with lower growth rates in overall levels of wealth (with a correlation coefficient of -0.26). Yet, in Sub-Saharan Africa and South Asia, highly concentrated wealth across countries correlates with increased growth in wealth. We can not say for sure what relationship the concentration of wealth has with the growth in overall levels of wealth. Yet, we can not ignore the intuition behind these numbers – that inequality relates in some way in the 2000s with wealth (for whatever reason).

[4] We do not wish to over-interpret this finding. Thousands of papers provide theoretical and empirical arguments related to the relationship between the growth in incomes, household assets and economic inequality. We only seek to present the data "as is" in order to help the reader understand the data we use in our more complicated statistical analysis later.

Figure 3: Wealth Grows More Slowly in Economies where the Top 1% Control a Larger Proportion of Resources?

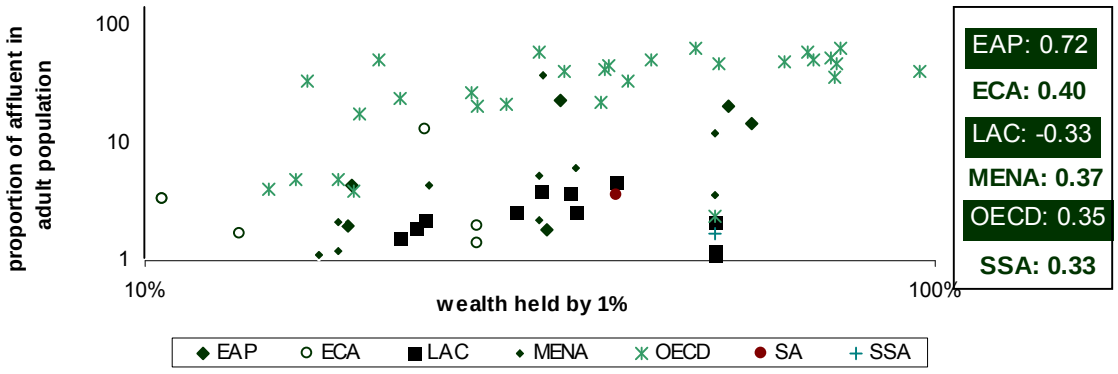


Correlation coefficients			
EAP=-0.26	ECA=0.0	LAC=0.02	MENA=0.12
OECD=-0.09	SA=0.71	SSA: 0.79	

The figure shows the annualized change in wealth from 2000 to 2010 for a variety of countries compared with the proportion of wealth held by the top 1% out of all wealth held by the top 10%. Source: Credit Suisse (2010).

The data also suggest that the proportion of affluent persons (with net assets of more than $100,000) correlates with the proportion of national wealth held by the country's richest 10% of the population. The regional differences can startle. In East Asia and the Pacific, a correlation of 0.72 means that as the wealthiest accumulate assets, more adults become affluent – possible reflecting recent upward wide-spread economic mobility in several countries in the region. In Latin America, on the other hand, a negative relation exists. Such a relationship suggests that the wealthy either become very wealthy – or stay in the middle classes.

Figure 4: Between Groups of Countries, Higher Proportions of Affluent Potential Investors Correlate with Higher Shares held by Top 1%



The data in the figure show the relationship between the proportion of affluent adults and the proportion of wealth held by the top 1% (relative to the top 10%). We show the correlation coefficients next to the graph to give the reader a sense of correlations within groups. Data plotted on a logarithmic scale. Source: Credit Suisse (2010).

What explains wealth – and increases in the numbers of wealthy individuals? Macroeconomists explain the accumulation of wealth from four factors -- individuals can produce goods and services (and then trade them for financial assets like money), they can invest and receive returns from these investments, they can consume, and/or they can benefit from asset/wage bubbles (ε). This basic equation underpins the study of most wealth and we express this in equation 1. Wealth managers looking to expand their book of business traditionally have had to seek places where wages increased quickly, where stock markets and other investments boomed, where people chose to save rather than engage in copious consumption and/or where some mania or some "rush" (like a gold rush) had temporarily pushed up incomes and/or asset prices.[5]

wealth = labour + returns to investment – consumption – ε *(1)*

The data suggest that developing economies will likely provide the greatest opportunities for wealth managers. Figure 5 shows the likely evolution of wealth in a number of economies, using the basic wealth accounting we presented above. In this figure, we predict the extent to which the richest 1% of several advanced economies will likely remain important targets for aspiring private bankers. The figure shows the wealth shares held by the top 1% compared with income shares held by that same 1% for the most recent dates available (around the end of the 2000s). The wealth share of the richest Argentineans hovers at around 17%, yet they earned 23% of incomes toward the end of the 2000s. Such data suggest that their wealth should increase over time to reflect their increased income. Conversely, Australians at the top 1% hold roughly half of all wealth. However, they only earn 8% of incomes. We can therefore expect dissipation over time of their wealth (as the flows of wealth do not keep up with the levels or stocks of wealth they currently possess).

[5] In practice, the relationship becomes more complicated because of debt. Debt simply postpones the effects of the long-term factors we cite in equation 1. For example, in the short-term, individuals or households may use debt to finance consumption (and repay such debt with funds they acquire as a result of their labour). An investor can also accumulate wealth from funding an investment through debt (which would comprise a simple investment return). In more complicated cases, the wealthy individual can simply defaulting on debt. In such a case, the wealth generated would analytically equal an abnormal return (ε)—the same as if he or she managed to gain from some distortion in asset or other markets.

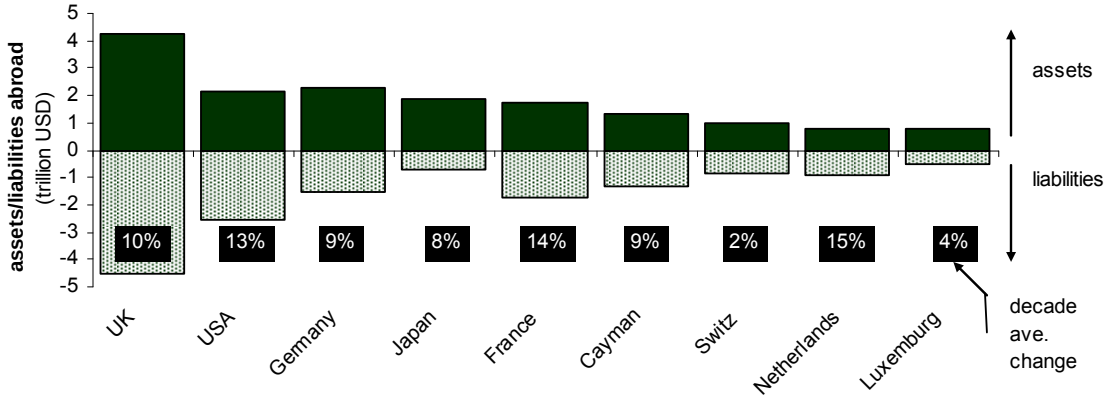
Figure 5: The Uber-Rich are less likely to remain super-rich in the advanced economies in the upcoming years

Country	wealth*	incomes*	Index of Accumulate**	Expected direction
Argentina	17%	23%	6%	Accumulation
Australia	49%	8%	1%	Dissipation
Canada	59%	13%	-4%	Dissipation
Finland	29%	6%	-4%	Dissipation
France	63%	9%	-2%	Dissipation
Germany	41%	11%	2%	Dissipation
India	0%	16%	4%	Accumulation
Ireland	50%	10.50%	-7%	Dissipation
Japan	50%	8%	-	Dissipation
Netherlands	40%	5.25%	-	Dissipation
New Zealand	39%	8%	-1%	Dissipation
Spain	27%	8%	-2%	Dissipation
Sweden	65%	5.50%	1%	Dissipation
Switzerland	38%	8%	-	Dissipation
United Kingdom	60%	13%	-2%	Dissipation
United States	54%	11%	-4%	Dissipation

* Wealth shares show the proportion of national wealth held by the 1% of the richest population and income shares show the percent of national income earned by the top 1% of the population.
** We construct the index by adding the growth rate of savings to the growth rate of GDP and subtracting the growth rate of consumption. We used GDP (constant 2000 US dollars), gross savings (as a % of GDP) and household final consumption expenditure (constant 2000 US$) for our calculations. We did not want to turn this indicator into a complicated formula, so we provide this simple index rather than a true measure of changes in accumulation over time. By failing to weight the savings rate, we give changes in savings a greater weight. The index also provides a common sense check on the Credit Suisse data. Sources: Credit Suisse (2011) for wealth shares, Roine *et al.* (2009) for income shares, and World Bank (2012) for macroeconomic data.

Part of this change in wealth (and incomes) reflects financial flows from abroad (and particularly developing countries). We previously showed data about the off-shore holdings of the wealthy in several developing countries (in Figure 2b). Figure 6 shows bank assets and liabilities held abroad in several developed economies – providing further clarification about the extent to which wealth goes to (and comes from) relatively wealthy economies. As shown, the UK, Germany and the US represent the top 3 markets to which investors send their money abroad and foreign investors prefer to place their assets. These economies saw more than $4 trillion either held abroad or held by foreigners. Much anecdotal evidence suggests that funds placed with managers – particularly from Middle Eastern, Africa and other developing countries – appear in the UK, Switzerland and the Netherlands. These data seem to confirm this trend. Wealth managers with firms like Bank of America, UBS, AXA thus have seemed to have found numerous rich clients abroad.

Figure 6: Much Wealth Held Across Borders in the Usual Locations Abroad

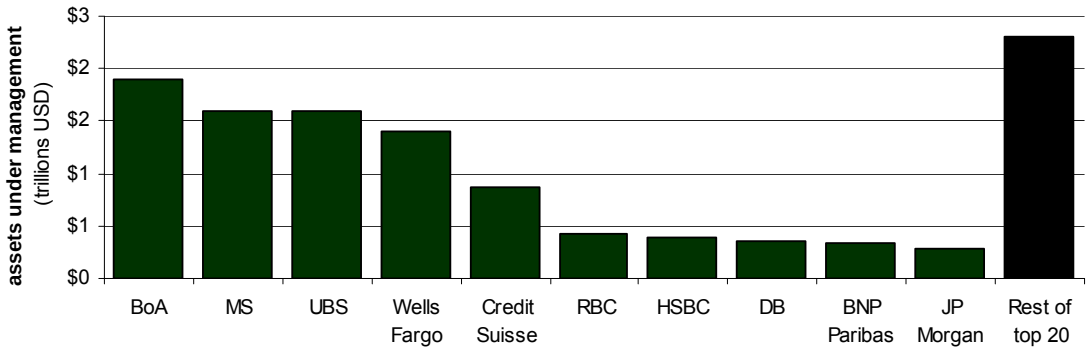


The data in the figure show the external positions of banks in all currencies vis-a-vis all sectors in trillions of US dollars. Amounts above the abscissa refer to bank assets and below the abscissa to bank liabilities. The figure reports indicate averages over the decade 2000-2010. The figures in the black boxes below each bar describe growth rates (in geometric terms).
Source: BIS (2012) from table 2A.

We also know from bank-level data that these OECD-based wealth managers (also known as financial advisors) are scooping up larger shares of high net worth and ultra-high net worth investors. Figure 7 shows the top financial advisors as reported by various rankings. These ranking mostly cover the US – as the press reports on wealth management most vigorously in the US. The top 10 wealth management firms in the US control a fair amount of wealth. The largest wealth management firms – Bank of America, Morgan Stanley, UBS and Wells Fargo – manage roughly $8 trillion in assets (or roughly a bit more than China's GDP). Such amounts clearly indicate that banking institutions serve as important intermediaries in managing wealth. We can not know how much of this wealth represents the financial holdings of high net worth individuals abroad. However, we do know that the US (and these financial institutions) represent prime wealth management service providers for many of the rich in the developing world.[6] **Financial institutions in rich countries (particularly in the OECD) seem to play a special role in wealth creation**.

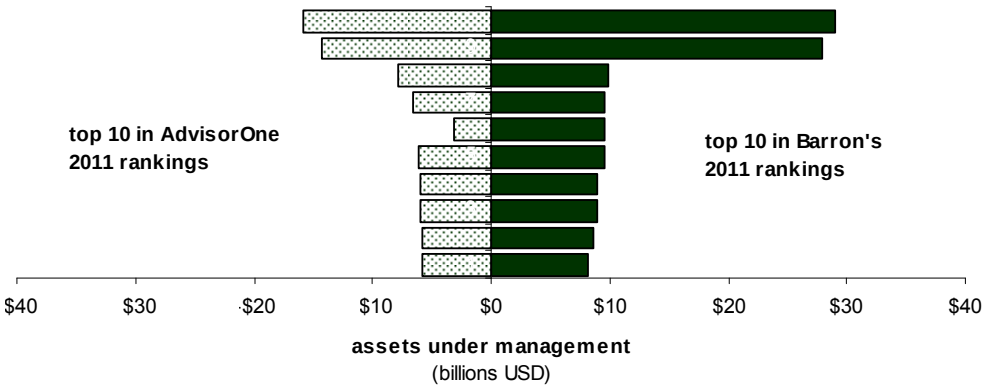
[6] These data do not show the holdings of financial advisors based abroad – for example a Merrill Lynch advisor located in Argentina. In practice, US and foreign regulations pose obstacles for Argentine high net worth individuals seeking to wire funds to a US-based private banker. However, as the data show, these obstacles do not represent extremely serious deterrents.

Figure 7: Total Private Bank Assets Held by Major Broker-Dealers in 2011



The data in the figure show the assets under management for major wealth management firms in 2011. The total accounts for roughly 30% of total wealth in the US (as estimated by Boston Consulting Group in 2011). Source: Scorpio Partnership (2012).

Figure 7 (cont): Over $200 billion managed by top 20 wealth



The data in the figure show the assets under management by the top 10 individual wealth managers in the US for 2011 according to two different rankings. The Barron's list contains individuals working for larger wirehouses, whereas the AdvisorOne rankings show independent advisors.

Equity placements seem to benefit high net worth investors

A number of scholars argue that wealth inequality (particularly at the upper end of the scale) comes from equity investment (Favilukis, 2012). In this view, high net worth individuals acquire wealth simply as *rentiers*. Part of such increases in wealth simply reflects the geometric effects of compounding – as a billion dollars growing at 5% will earn more money (in absolute terms) than one thousand.[7] Another part represents the fact that the rich can earn a higher rate of return because of preferential access to investments, lower commissions and so forth.

[7] We ignore the relative productivity of capital and of course financial risk in this simple description.

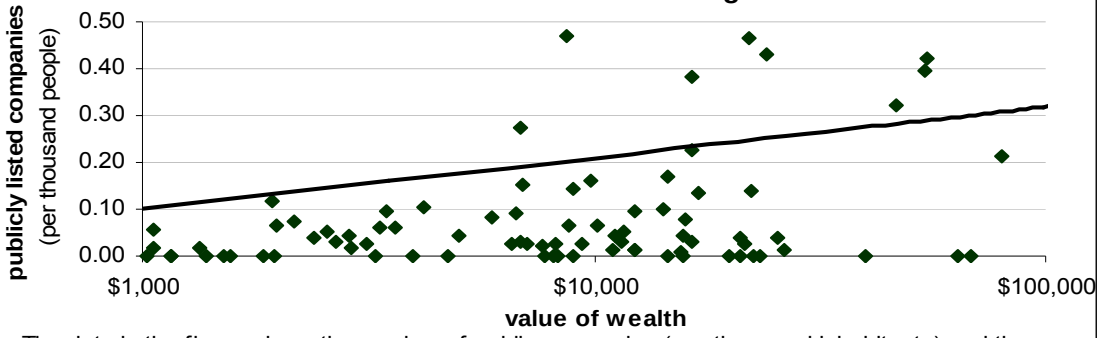
The data seem to bear out the story that equity holders (on an aggregate national level) tend to have more wealth than those that don't. However, the data do not tell whether equity ownership has resulted in that wealth – or whether wealth has led to equity ownership. Figure 8 shows the cross-country correlation between wealth and stock market capitalisation (or the value of stock holdings on the national level). The data show what common sense already tells us – that countries with relatively high amounts of wealth per person also have relatively high levels of stock market capitalisation. At low levels of market capitalisations, the relationship with wealth is not very pronounced. At higher levels though, such a relationship becomes clearer.

Figure 8: Countries with Amble Equity-Holding Opportunities Have Wealthier Denizens

The data in the graph show stockmarket capitalisation as a percent of GDP and the average amount of wealth held by adults in that country. Sources: Beck at al. (2011) and Credit Sussie (2012).

The number (as well as value) of companies seems to have some relationship with wealth. If equity ownership affected wealth, then wide-spread securitisation of domestic commercial organisations should make their investors relatively wealthy. Figure 9 shows the number of publicly traded companies relative to the average level of wealth per person in economies world-wide. As shown, a weak (though positive) relationship exists in the data between the number of publicly-traded companies and the value of wealth per person. Naturally, increases in levels of wealth could explain increases in the number of public companies – rather than the other way around. However, the relationship does seem to exist.

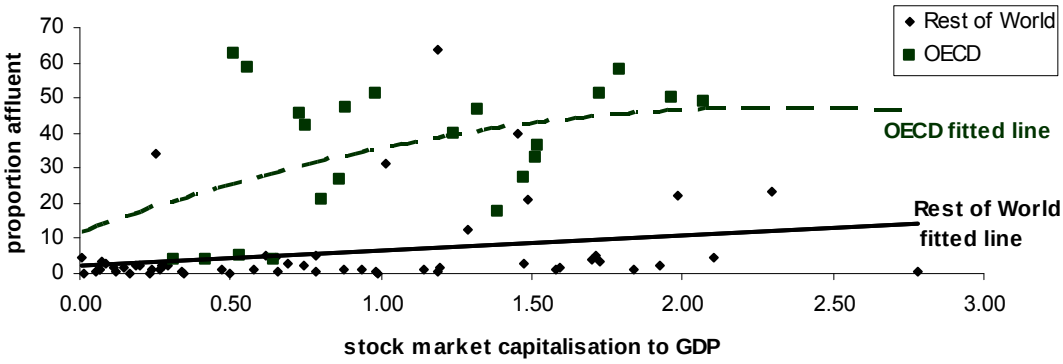
Figure 9: More Opportunities to Hold Wealth As Equity Also Correlate with Wealth Holdings



The data in the figure show the number of public companies (per thousand inhabitants) and the average value of wealth by individuals from each country shown in the graph.
Sources: Beck et al. (2011) and Credit Suisse (2011).

The effect of stock market capitalisation also correlates with the number of affluent persons. Figure 10 shows the relationship between the proportion of affluent persons in an economy – and stock market capitalisation. We have divided the sample into OECD and non-OECD economies in order to see whether OECD economies' structural differences accounted for any difference in the way equity markets help create affluent persons. As shown, the relationship between the OECD and the rest of the world look very different. Equity participation and the proportion of affluent adults correlate far more strongly in the OECD than in the rest of world.

Figure 10: Equity Markets Make for Affluence in OECD Much More than the Rest of the World



The data in the figure show the relationship between stock market capitalisation and the proportion of affluent persons in each country. We have divided the sample into OECD and non-OECD member states. We have removed all stockmarket capitalisations above 3 (like Hong Kong and Luxembourg) as such offshore investment distorts the way that local investment leads to wealth.
Sources: Beck at al. (2011) and Credit Sussie (2012).

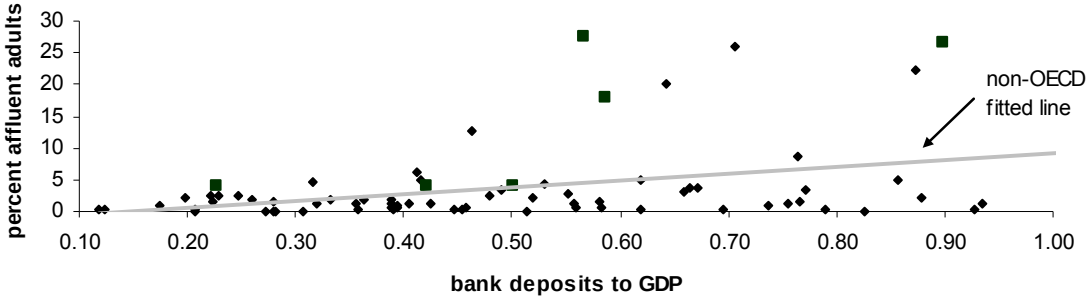
The data show a relationship between equity participation and wealth as well as the number of affluent individuals in a population. Macro-level data can not determine whether wealth leads to greater equity participation – or visa versa. Macro-data also can not tell whether a third factor affects both equity participation as well as the level of

wealth (as well as its distribution among the population). However, these data do suggest that equity participation – particularly in the OECD -- warrants further analysis. The quality of financial institutions (particularly in the OECD) determines – in part – such shareholding. The quality of financial institutions could thus play an important role in wealth generation.

More and Better Banking Only Partially Explains Wealth Accumulation

What effect do financial institutions have on the generation of wealth? The ability to save, and earn interest, on monies should have some effect on wealth. The wealthy – or at least the affluent – should prefer to keep their money in banks. Yet, we fail to see these trends in the data. Figure 11 shows the extent to which individuals keep their money in banks and the proportion of affluent persons in a country. In theory, we would expect to see high net worth individuals keeping larger amounts of the country's domestic product in bank accounts. Yet, the data show an extremely weak relationship between the proportion of affluent persons in a population and funds deposited with banks.

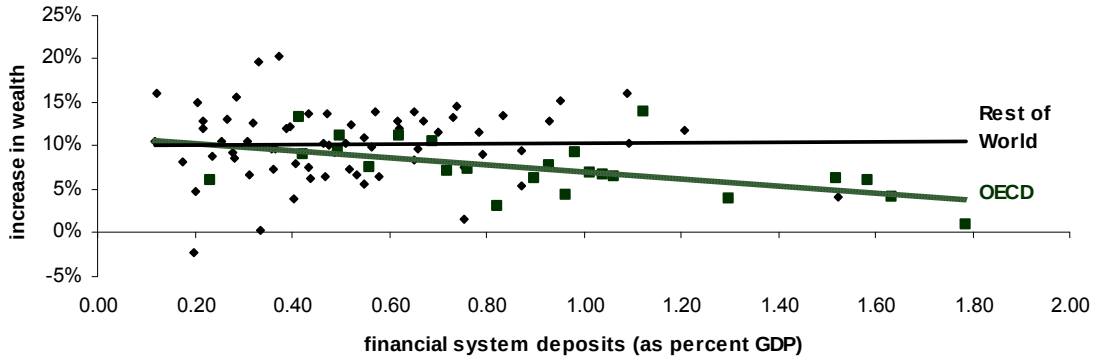
Figure 11: Weak relationship between the proportion of affluent persons and about of banked funds



The data in the figure show the percent of affluent persons in an economy in 2010 compared with the percent of bank deposits to GDP. The OECD countries show a stronger relationship -- which we do not show as several very wealth OECD countries distort their general pattern.
Source: Beck et a. (2011) and World Development Indicators (2012).

Financial systems (in theory) should lead to larger, sustained accumulations of wealth. Banks and other financial institutions provide a store of value, channel savings to their most productive use and serve to compound financial assets (through interest). However, Figure 12 seems to show that the extent to which individuals hold their wealth in banks and other financial institutions does not lead to long-term sustained higher growth rates in wealth across countries. Among OECD countries in the 2000s, countries with higher levels of financial holdings tended to have lower rates of change of wealth. As for the rest of the world, no relation seems to exist (as indicated by the flat line).

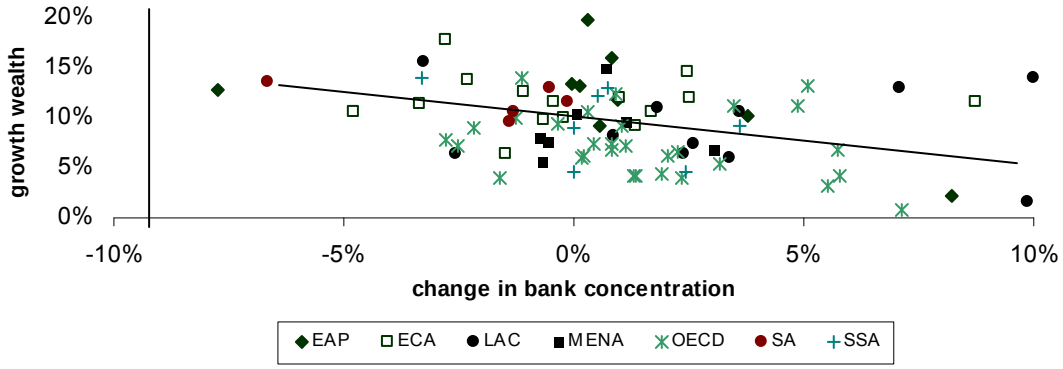
Figure 12: Richer Countries Generally Saw Lower Rates of Change in Wealth



The data in the figure show the relationship between increases in wealth in the 2000s and the extent of financial system deposits (as a percent of GDP).

As another hypothesis, imperfect competition in banking systems could cause differences in wealth accumulation. Whether concentrated (anti-competitive) or competitive banking best helps the wealthy accumulate assets remains an open question. Observing a pattern in cross-national data would suggest some kind of deeper relationship. Figure 13 shows the correlation between growth rates of wealth world-wide and changes in bank concentration (as defined by the assets held between the 3 largest banks). As shown across groups of countries, changes in bank concentration correlated with decreased growth rates of wealth in all major geographical groups. Such results suggest that the quality of financial institutions plays some role in wealth accumulation.

Figure 13: Countries which deconcentrated their banking sectors saw increased growth in wealth

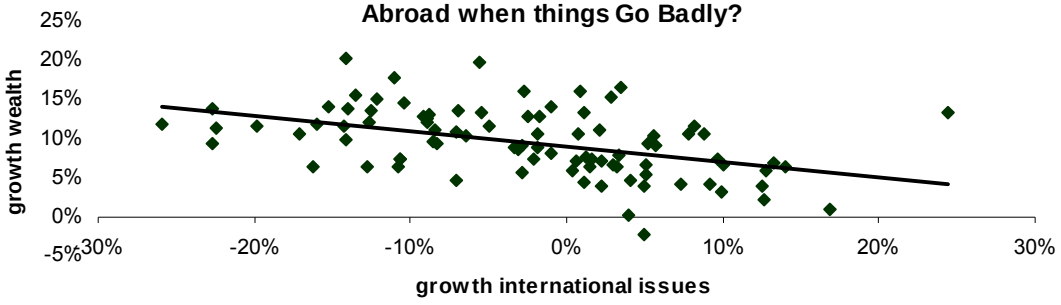


Correlation coefficients			
EAP=-0.56	ECA=-0.48	LAC=-0.01	MENA=-0.39
OECD=-0.27	SA=-0.51	SSA: -0.47	

The data in the figure show each country's annual geometric growth rate in wealth compared with a similar geometric change in bank concentration (measured as the assets of the three largest banks as a percent of total bank assets). Source: Beck et al. (2011) and Credit Suisse (2012).

International financial flows can correlate with increased wealth either because capital flows into the country provide more funds to generate wealth – or increases in wealth seek higher returns outside the country. We have already showed that high and ultra net worth individuals in many developing countries most likely prefer to keep much of their wealth in OECD-based financial institutions. Yet, financial institutions engaged in cross-border activities probably have other roles to play in wealth management. Figure 14 shows the relationship between international debt issues (as a percent of GDP) and the growth of wealth in countries floating such debt. Loans from abroad correlate negative with the growth of wealth – suggesting that such debt tended to substitute rather than complement wealth creation. A number of reasons could explain such a correlation (including the capitalisation of growing but unprofitable firms with international debt or seeking foreign debt during times of recession). For our purposes, we only need to note that cross-border financial institutions (and their operations) play some role in influencing the evolution of wealth across countries.

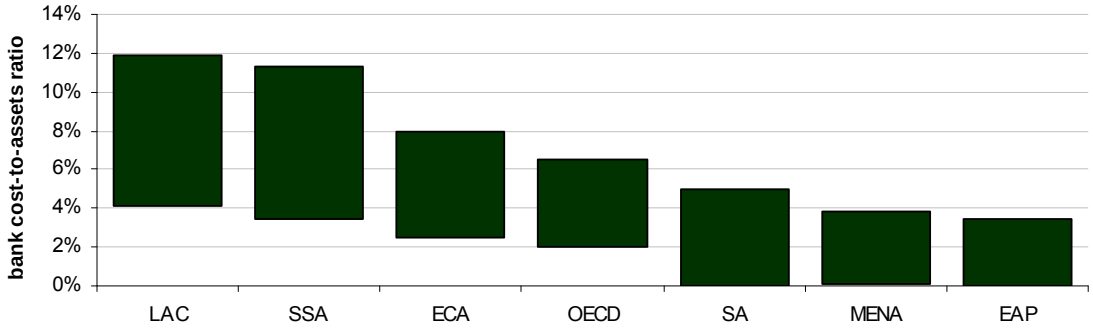
Figure 14: Do International Banks Help the Wealth Borrow from Abroad when things Go Badly?



The data in the figure show the geometric average growth rate in wealth from 2000 to 2010 for a range of countries. We compare these growth rates with the geometric growth rate of international debt issues (as a percent of GDP). Source: Beck et al. (2011) and Credit Suisse (2012).

Other data strongly suggest that differences in financial institutions play a role in predicting (and hopefully explaining) differences in wealth across countries. Figure 15 shows the average cost across countries of banking – expressed as the proportion of bank overhead costs to bank assets. As shown, Latin American and Sub-Saharan African banks have the highest costs – and banks in the East Asia and Pacific region have the lowest. Such anecdotal evidence seems to suggest that differences in financial institutions – and their cost structures – can influence the long-term evolution of wealth across countries.

Figure 15: The Cost (Rather than the Extent) of Banking May Well Drive the Creation of Wealth



The data in the figure show the cost of banking (as proxied by bank overhead costs expressed as a percent of total assets) for each of the regions we explore in our paper. Each bar shows the range of costs of 95% of all banks in that region. For example,. 95% of banks in the OECD sample had costs ranging from about 2% to 6.2%.
Source: Beck et al. (2011).

Even the cursory evidence suggests that financial institutions – and the way they help generate wealth as well as increase the numbers of the wealth – differ in the OECD from other regions. Figure 16 shows a simple statistical test which compares various banking attributes across regions. The test assesses basically whether differences in costs, revenues, concentration, bank equity and risk-appetite correlate with proportions of wealth (and the number of affluent adults) across geographical regions. Summarising the figure crudely, banks' costs and incomes (in the form of interest) roughly help explain differences in wealth and the affluent in the OECD as opposed to other regions. We can not say from these tests how or why these OECD-based financial institutions help their clients become wealthy differently than in other regions. We only know a significant relationship exists in the data that bear further investigation.

Figure 16: The Structure and Efficiency of the Banking Sector Has Only Weak Influences on the Creation of Wealth (Except in the OECD)

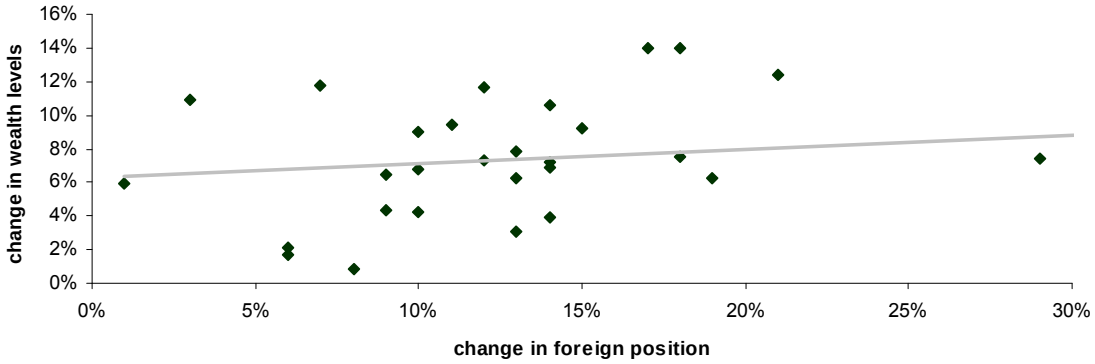
Variable	Wealth to GDP	affluent per adults
Banks' overhead costs to total asset ratios	***	***
Banks' net interest margin		***
Bank concentration		
Banks' return on assets		
Bank's return on equity	***	
Banks' cost-to-income ratios		
Bank's "time to failure" (z-score)		***
Statistically significant geographical groups	**OECD**	**OECD, SA**

This table shows what is called a F-test of the similarity of group means. In brief, the test finds out whether the mean net interest margin for banks from Latin America roughly hovers at about the same margins for banks in other regions. In more rigourous language, we test whether we can have a 95% confidence or higher than differences in net interest margins reflect real differences rather than random fluctuations.

Has Foreign Investment Led to the Rise of the Super-Rich?

OECD-based wirehouses (mostly from the US) have led the way in trying to increase the numbers of high and ultra-high net worth individuals in developing countries – as well as accumulate their assets. What does the data tell us about the way foreign financial institutions have interacted with the wealth of other nations in the past? Figure 17 shows that changes in foreign banking positions tend to correlate with changes in wealth. The wealthy open accounts abroad – or attract funds from abroad. We do not know why – but we do know that international banking must be responding to demand for foreign banking. We also know that demand for foreign banking services exists particularly strongly in the OECD countries (though we do not know by how much as BIS data for developing economies is remarkable sketchy).

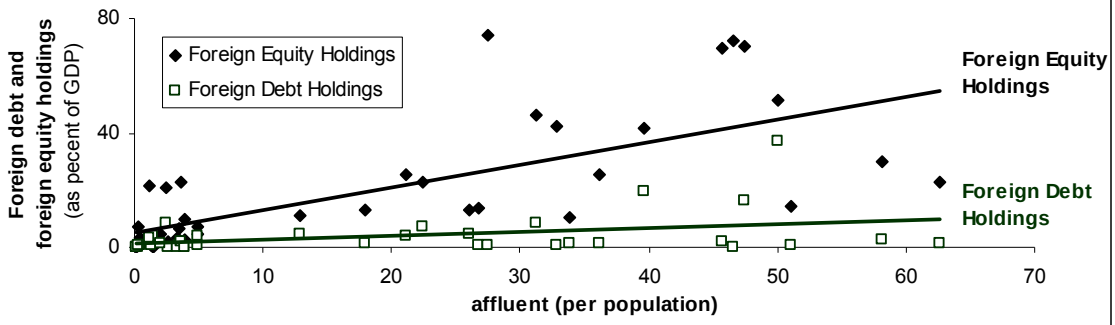
Figure 17: Changes in Foreign Bank Positions Positively Correlate with Changes in Wealth (at least in mostly high-income countries)



The data in the figure show the relationship across countries between changes in the external position of banks and changes in wealth levels from 2000 to 2010. Source: BIS (Table 2a) and Credit Suisse (2012).

Wealthy investors may also prefer to hold equity (in general) as opposed to debt. In figure 18, we show the correlation between the proportion of affluent investors in various countries and overall holdings of foreign debt and equity instruments. As shown, countries with higher proportions of affluent adults (and thus investors) tend to have much higher holdings of foreign equities than debt (as a share of the investors' country's GDP). These data suggest a role for financial institutions – and financial advisors – as equities require far more management than fixed income investments (bonds). Much of these investments will come from institutional investors. However, at the bottom of the financial food chain will lie individuals who give their income (in some way) to intermediate financial institutions and money managers.

Figure 18: Relatively Strong Relation Between Holdings of Foreign Equity, Debt and the Proportion of Affluent in a Country



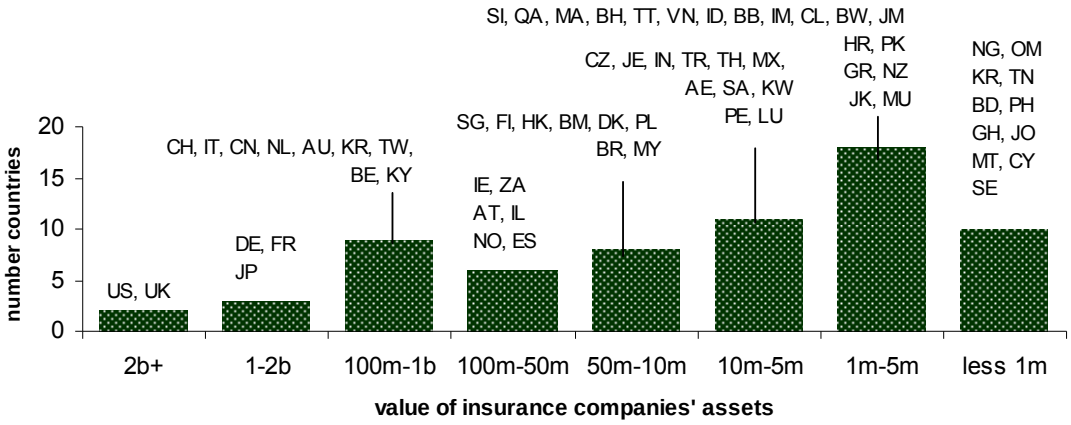
The data show the value in US dollars in 2010 of foreign debt and equity holdings in each country as compared with the percent of affluent persons as a percent of the adult population.
Sources: BIS (2012) and Credit Suisse (2012).

What do these data tell us about the potential role for wirehouses looking to operate in the developing world? We know that foreign investment provides an important avenue for individuals to increase their wealth. Even from simple observation, we see the rich-and-famous involved in significant foreign investment. A crude look at the data show that the wealthy send significant proportions of wealth abroad. The data also show some correlation between such flows – and changes in the value of wealth and the number of wealthy persons in any economy. However, no where does foreign investment seem to play a role than insurance. Yet, in many markets, local insurance markets still remain underdeveloped.

Insurance Markets Protect the Wealth of High Net Worth Individuals

Most broker-dealers in recent years have increased their offering of insurance products (usually from third-party providers). High and ultra-high net worth individuals have a vested interest in maintaining their wealth through unforeseen problems – like illness, a death in the family and so forth. Insurance markets in many countries remain relatively small. Figure 19 shows the capitalisation of insurers in a number of countries. Only the US and UK have super-sized insurers (with market capitalisations over $2 billion). These data suggest that insurance offerings should increase in a number of countries. They also suggest that wealthy persons in places like Ghana, Philippines, Oman and others may seek insurance services from abroad.

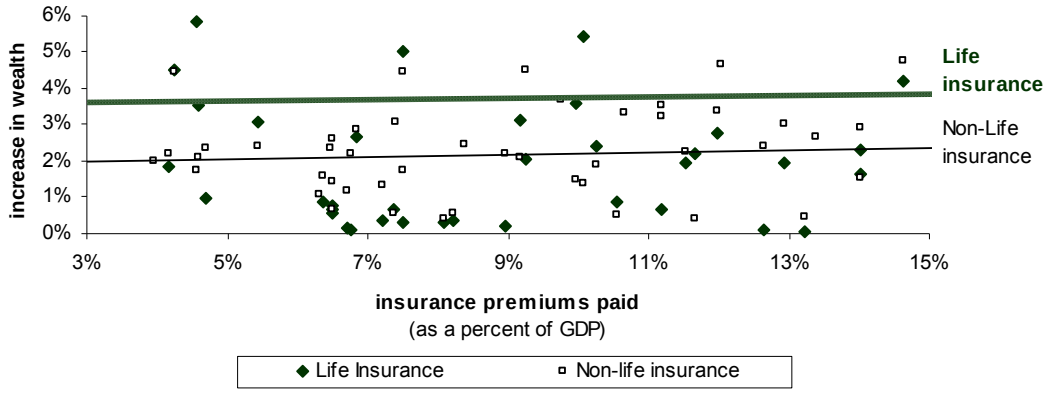
Figure 19: Most Countries Have Small Public Insurance Markets



The figure shows the number of countries whose with publicly trade insurance companies with total US dollar equivalent assets in each category. For example, Czech insurance companies' assets for 2010 totalled between $10m-$50m ($9.6m to be more exact). Source: Compustat (2012).

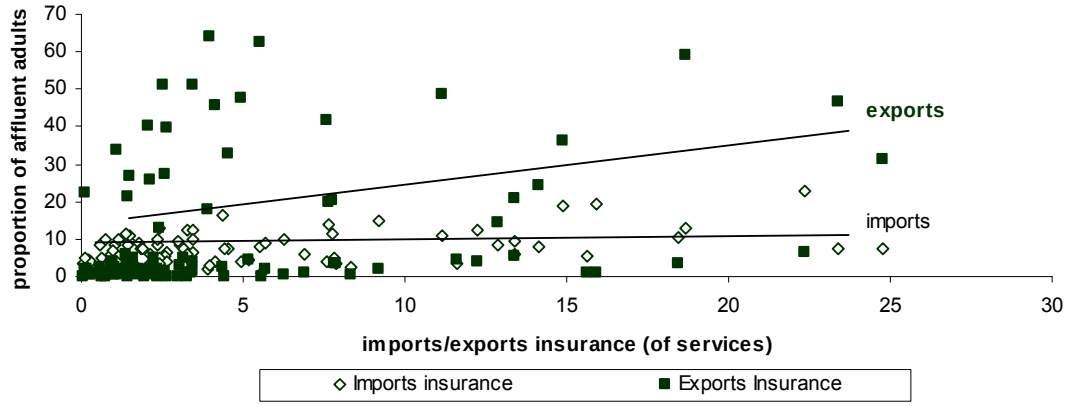
The data fail to show a very clear relationship between the depth of insurance markets and increases in wealth. Figure 20 shows the cross-country relationship between the payment of life insurance premiums (and non-life insurance premiums) and increases in wealth. Insurance provides a basis for the study accumulation of wealth – therefore we look at changes in wealth rather than levels. The relationship between the percent of affluent persons and life-insurance premium payments (as a percent of GDP) does not differ from zero. Yet, Figure 21 shows that the export of insurance products correlates with higher proportions of affluence. In contrast, the import of life insurance services does not correlate with increasing proportions of affluent adults. However, as usual, we can not know if increased affluence leads to the export of insurance services or visa-versa. We also can not know why some countries with relatively high proportions of affluent adults do not import more insurance-related financial services from abroad. However, again, the data suggest some kind of relationship between the overall incidence of affluence in a population and the international trade in insurance-related services.

Figure 20: No relationship between wealth accumulation and insurance premium payments on a macro-level



The data in the figure show the relationship between increases in wealth across countries from 2000 to 2010 and insurance premiums paid (as a percent of GDP) in 2010. Source: Beck et al. (XXXX) and Credit Suisse (2012).

Figure 21: Countries which Export More Insurance Services Have a Higher Proportion of Affluent Adults



The data show the proportion of affluent adults in various countries compared with the level of insurance imports and exports (as a percent of service imports and/or exports). Source: Beck et al (2010) and Credit Suisse (2012).

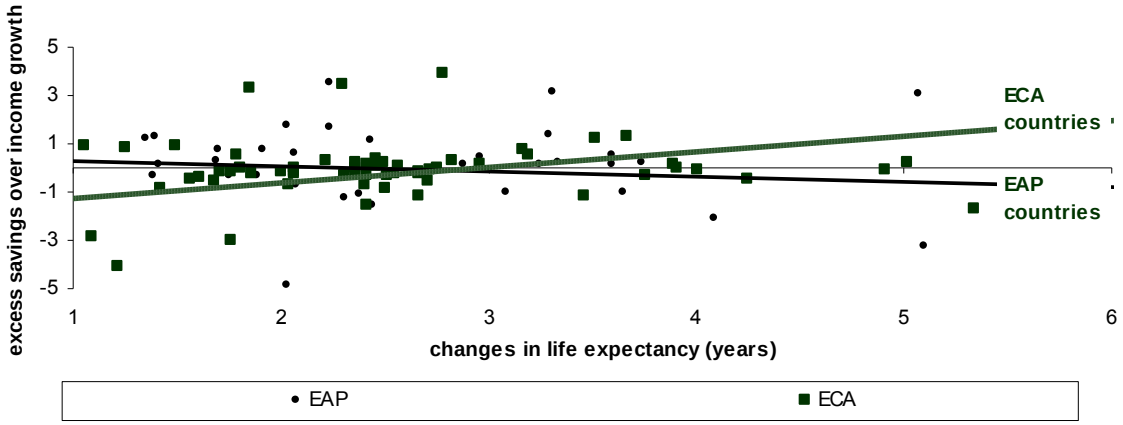
Before conducting any complicated statistical analysis, the data appear to suggest a weak relationship between the offer of insurance and wealth. Given insurance's important role in wealth, we know that "feedback" (what economists call "endogeneity") befuddles the relationship between these two variables. Insurance also proves an important way to keep resources to transfer to future generations through bequests (wills and inheritances). Wealth management firms (and financial advisors working in developing countries) will want to know the extent to which developing insurance-related products helps grow wealth (and a wealthy class more generally).

Growing Markets for Bequests Mean Increasing Roles for Estate Management

Estate management services – namely financial planning for bequests – have served as a growing area of wealth management. Financial advisors (mostly in the US and Western

Europe) help provide advice and investment products aimed at helping clients keep and transfer wealth after their death. However, to what extent do such services help the wealth preserve their wealth – particularly across generations? Figure 22 shows that saving for retirement and leaving bequests seems a weak motive (and market) for wealth management. No reliable cross-country data exist on the extent to which the wealthy save in order to leave money to their heirs. However, we can deduce the strength of this motivation – particularly across countries – by observing actual savings behaviour. In the figure, we show the extent to which individuals in that country save at a higher rate than their earn income. For example, in Romania, households increased their savings by 3% more than they increased their earnings in the same period. We also looked at changes in life expectancy in the same period (2000 to 2010). Individuals in all age brackets interested in saving for their retirement and later leaving an estate to their heirs should increase their savings. We see the possible existence of such a bequest motive in the ECA region. As life expectancies increased, the extent of savings also increased. However, in other countries (EAP countries), such savings decreased. Despite what the lines on the graph indicate, the correlation between these two variables remains extremely weak. We thus can discern very little saving for retirement and/or bequest motive in these data.

Figure 22: No relationship between longevity and savings in international data puts bequest motives into doubt outside of the OECD



The data in the figure how the relationship between changes in average life expectancy and the extent to which savings rates exceeded income growth. Longer lives should encourage more savings -- both for medical purposes and to increase the values of estates left behind after death.

In general, research aimed at retirement and the desire to bequeath money to future generations seems the Achilles heel of wealth research. Economists (despite over 40 years of intense research on the subject) still understand very poorly how people save for retirement and for leaving an planned inheritance after death. We present several findings -- during our literature review – of the kinds of data available. However, no reliance cross-country data yet exist that allow us (and thus wealth managers) to form opinions about the ways their services affect high net worth individuals *en masse*.

Problems with measuring wealth

Measuring wealth remains – despite what the various market sizing exercises suggest – a dodgy task at best. Of the seven wealth reports available publicly, several use proprietary and confidential models – making them unreliable at best (and suspicious at worst). We do not want to discuss the problems with measuring household wealth which other authors have done exceedingly well (Cowell *et al.*, 2012). Estimates of household wealth can vary by trillions of US dollars between sources. We use the rigorous set of estimates available "as is" – without much critical evaluation or attempt to change them. The reader should thus exercise extreme caution when using our analysis.

The way that most market sizings deal with debt though suggest that much more work needs to be done in order to produce reliable estimates. The existing methodologies (including our own accounting shown in equation 1) subtract our debt as a liability on a household's balance sheet. Figure 23 shows the debt-to-wealth ratios in a number of potentially lucrative markets for international wealth management firms. According to the Credit Suisse data, Brazil, India, and Russia have extremely low debt levels (around 4%). The authors attribute these low debt levels to financial market under-development. Yet, comparing these estimates with other data suggests that wealth in these economies might be much less than the Credit Suisse data let on. According to the McKinsey Global Institute, household debt levels in China rest at a far more believable 25%. Even in Russia (with its truly under-developed banking sector), the McKinsey data show twice the amount of private debt as the Credit Suisse.

Figure 23: The Wealth Estimates We Used Probably Over-estimate True Lucre for Wealth Managers in these Markets
(all ratios compared with GDP except debt-to-wealth)

Country	CS Debt to wealth ratios	MGI Household debt	MGI Non-financial corporate debt	WB Private credit by money banks	WN Private bond market	WB loans from non-resident banks
Developing World						
China	**<1%**	25%	101%	-	19%	3%
Brazil	**5%**	15%	35%	58%	22%	7%
India	**3%**	9%	43%	53%	6%	8%
Russia	**4%**	8%	40%	47%	-	11%
Developed World						
UK	**13%**	98%	109%	207%	17%	205%
Canada	**16%**	90%	54%	130%	33%	30%
USA	**15%**	85%	75%	66%	135%	34%
Spain	**14%**	82%	135%	214%	120%	43%
S. Korea	**18%**	81%	107%	116%	69%	24%
Japan	**15%**	68%	98%	93%	37%	12%
Germany	**19%**	59%	45%	98%	38%	36%
France	**19%**	54%	112%	115%	67%	72%
Italy	**6%**	46%	82%	109%	64%	43%

Note: Estimates may be approximate due to rounding.
Sources: World Bank (2012), McKinsey (2012), Suisse Credit (2011).

These data also suggest that the debt estimates for the advanced economies probably grossly under-estimate the true level of wealth – adjusting for part of that wealth that millionaires must return to their creditors. The Credit Suisse data show a debt-to-wealth ratio of 13%. However, all the other indicators show much higher likely debt levels. The McKinsey data show household debt of about 100% and private credit of roughly 200%. At the time of this writing, the advanced economies had drastically reduced their debt levels. However, these discrepancies suggest that we should deeply discount the Credit Suisse wealth estimates in the longer-run.[8] We do not discount these data though – as current assets drive the wealth management industry.

A more serious issue relates to a tragic (though necessary) flaw in the way all these market sizing estimates treat household debt. Forty years of economic theory and practice clearly show that debt serves as a way to generate wealth (particularly in developing countries). Debt helps provide finance for good ideas, helps provide finance during market shocks, and even provides a way for bankers to contribute their ideas and risk management practices. Debt creates wealth. However, taking such effects into account will require far more work than economic viable for most broker-dealer research departments.

Literature Review

Economists have studied the poor for almost 100 years – but not the rich. Since the early 20th century, economists have developed models describing the relation between poverty, economic inequality – and recently – the role that financial intermediation plays in increasing the wealth of nations. Recent surveys of high and ultra net worth individuals have helped us to understand how – and why – the rich become richer (Taylor *et al*, 2008). An entire publishing industry revolves around selling books to readers interested in learning how the rich became rich -- and how to gain such wealth themselves. Some of the many such advisors include rappers (Lionel "Luciano Illuminati" White), pundits (T.J. Rohleder, the "blue jeans millionaire") and anti-gurus like MJ DeMarco. In the same vein, a number of studies show potential wealth managers and private bankers how to build multi-million dollar books of business (Evensky, 1997; Burgstaller and Cocca, 2011). Yet, academic economists have devoted little attention to the concentration of wealth or the role that the burgeoning wealth management and private banking industry play in such concentration. An *EconLit* search yields no substantive results for "high net worth" or "wealth management." A rapidly blossoming practitioner literature has developed in places like the *Journal of Wealth Management*. However, these articles tend to focus on the very narrow interests of daily wealth management – like running a more efficient wealth management operation. None of these article describe how develop these customers in developing countries from an institutional (wirehouse level) and macroeconomic perspective.

[8] In the short-run, wealth managers would not care how debt translates into wealth. Debt produces cash which ultra-high net worth individuals can hand over to financial advisors. Financial advisors will still receive their asset management fees (based partly on cash coming from loans). However, in the longer-run, clients which wipe-out in a blaze of debt-induced liquidations pose litigation and other risks to wealth advisors.

A wave of estimates attempt to provide a glimpse at this emerging market of high net worth and ultra high net worth individuals. Figure 24 shows some of the more popular estimates for wealth across countries. The differences in estimates between the sources can led to some scepticism about the validity of these estimates. For example, for 2010, the Boston Consulting Group (BCG) estimates wealth in North America at about $14 trillion. In contrast, Cap-Gemini and Merrill Lynch estimate wealth at $11.6 trillion in North America for 2010. Both high net worth and less affluent households held about $38 trillion according to BCG. In contrast, Credit Suisse data show total household wealth for North America at about $50 million. Given the enormous difficulties in estimating wealth (particularly wealth held at the upper end of the income distribution), such differences can be easily understood.

Figure 24: Wealth Estimates from Various Practitioner Sources

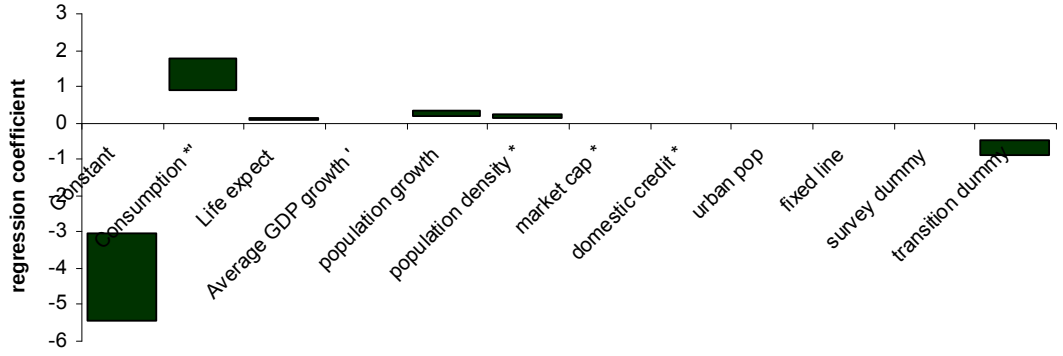
Publisher	Description	Link
Credit Suisse	The Credit Suisse *Global Wealth Databook* contains the most detailed estimates of world worth – often using data from the developed economies and then using regression analysis to provide guesses for developing markets. A leading scholar in the field guides their methodology and we use the *Databook* for our own work.	*
Cap-Gemini-Merrill Lynch	Their *World Wealth Report* represents the practitioners' go-to guide for understanding how wealth evolves around the world. Their less transparent model makes their numbers less reliable for third-party purposes.	*
Wealth-X	Authoritative and intelligently written. Provides data and analysis for understanding the ultra-high-net worth market.	*
Forbes Insights (with Société Générale)	Provides overview of ultra-high net worth individuals world-wide. The study is based on the Forbes rich lists. Wealth-X remains more useful for statistical analysis and in-depth analysis.	*
Oliver Wyman	Provides a wealth of analysis and data. However, their non-transparent proprietary model and lack of specific numbers make their analysis unusable by third-parties.	*
Boston Consulting Group	Their Global Wealth Report focuses mostly on wealth managers. Their thoughtful analysis focuses mostly on the evolution of the wealth management industry – with supporting numbers.	*
Allianz	Just another publication, *Allianz's Global Wealth Report 2011* provides mostly macro-level analysis. We use to illustrate the many kinds of reports issued by banks and consulting companies.	*
Knight-Frank & Citi	Focuses on wealth – and what wealth means for property demand world-wide. Uses non-transparent Citi model to estimate wealth.	*

Sources: see above. Links provide illustrations of the data available in these various reports. We may have used different versions (year of publication) for specific analysis contained in our paper. These reports represent the tip of the iceberg. For a compilation of reports from over 20 consulting, accounting and other advisory firms, see the Privatebanker website.

We use Credit Suisse numbers – provided as described by Davies *et al.* (2009) – because of their transparency and coverage.[9] Davies represents one of the most important sources of estimates about the size of wealth held by millionaires and multi-millionaires (as well as their numbers). Unlike the other wealth sources cited in Figure 24, Credit Suisse provide detailed calculations and methods used in arriving at their wealth estimates. Davies (the lead consultant on the Credit Suisse market sizing project) also has published numerous papers academic, peer-reviewed papers showing his methods. These numbers thus provide the only reasonable source for academic use.

The Davies estimates come from a mix of household survey data and regression analysis. Davies studied household balance sheet and financial balance sheet sources from 45 countries (listed in his Table 1-2). For the other countries, he used regression analysis to estimate wealth levels (and the distribution of wealth) based on several predictors. Figure 25 shows the predictors used in order to estimate wealth levels (and subsequently the distribution of wealth) in many developing countries. These predictors included consumption, life expectancy, GDP growth, population growth, population density, market capitalisation, domestic credit, urban population, fixed landlines, and a couple of dummy variables. As shown (and as expected) consumption serves as the largest (yet positive) predictor for wealth.

Figure 25: Davies et al. Regression Coefficients for Wealth in Each Country



The data in the figure show the range of regression coefficients as listed in Table 5 of Davies et al. (2009). We do not know if these coefficients represent beta or b-values (but hopefully the later). Variables with asterisks denote log values and with single quotations expressed on per capita basis. Source: Davies et al. (2009).

None of these reports provide predictive factors which wealth management firms and private banks can use to position their offerings for the future. Broad factors like cultural change or policy changes do not help broker-dealers target particular markets – because these firms can not change such broad factors like national culture. For example, Saikat and Matti (2010) perform regression analysis of data from Australia, Canada, New Zealand, UK, and the US in order to determine what causes the top 1% of incomes to grow. They claim that asset bubbles largely explain increasing wealth among America's

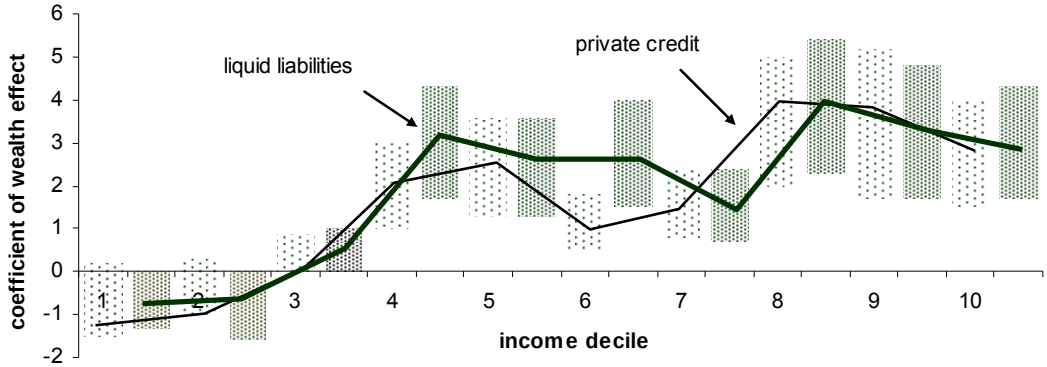
[9] Davies and his colleagues have worked on estimating wealth across countries for over a decade. The Credit Suisse Databook uses his research – packaging the research in a more approachable way than the *NBER* and other treatments.

high net worth individuals. They also find that financial development leads to ambiguous effects on the rich. Yet, these data provide very little guidance for policymakers – and especially wealth managers and private bankers seeking to help grow the incomes (and thus wealth) of these top 1%.

Do financial institutions help high net worth individuals to increase their wealth?

Financial sector (and institution) development plays an ambiguous role in creating wealth and new wealthy individuals. Figure 26 shows the effect that extending credit to various economic deciles has on economic growth in the US. In the top 3 deciles, extending credit has the largest effects on economic growth – as shown by "impact coefficients" above 3. However, these coefficients come close to similar impacts for credit extended to the lower middle class (the 4th income decile for example). These results point to a role played by financial institutions in helping the wealthy generate more wealth for themselves and for other income deciles. However, these impact coefficients do not differ very significantly from those in certain other decile groups. As such, there might be "more to the story" than financial institution credit simply helping the rich to create jobs and earn from investments.

Figure 26: Financial Development Helps the Rich Contribute to Broader Economic Development in the US



The data show the effect (for each wealth decile) of private credit and liquid liabilities to economic growth. The bars show 95% confidence intervals for the averages shown in solid lines. The dotted bars show the confidence intervals for private credit and the more solid bars show intervals for liquid liabilities.
Source: Gaytan and Ranciere (2005).

Other data suggest that financial institutions help make high net worth and ultra-high net worth individuals even richer. Roine *et al.* (2009) look at the extent to which a number of factors explain changes in the top 10% and 1% of income distributions in various upper-income countries. They find – as shown in Figure 27 – a statistically significant role played by financial sector development, marginal tax rates, and the level of economic development. They find that bank crises probably affect ultra-high net worth individuals in the 13 relatively high-income countries they study. However, they find no statistically discernable effect for currency crises. In general, the authors seem relatively hesitant to attribute any specific effects to financial institutions in increasing (or decreasing) the holdings of the top 1% or top 10% of the population in the countries they study.

Figure 27: Wealth Management Likely to Have Uncertain Effects on Wealth at First Glance

Changes in….	Change in Top 1%	Top 1% as proportion of top 10%
Structural Variables		
GDP per capita	X	X
Population		
Government spending		
Financial development	X	X
Openness		
Marginal Tax rates	X	X
Level of economic development	X	n/a
Situational variables		
Bank crisis	X	n/a
Currency crisis		
Financial sector variables		
Bank deposits	?	?
Market capitalisation	?	?
Private credit	?	?

An "X" signifies that the variable has a statistically significant correlation with the dependent variable listed at the head of the column at the 95% confidence level or better.
Source: Roine *et al.* (2009). We have reinterpreted their results for ease of reading. The reader should consult the original for exact variable definitions and results.

The Roine data teach us that we need to understand the role that banks and brokers play in wealth creation – particularly among high-net-worth individuals. The large wealth managers like *JP Morgan* can not determine the rate of population growth or government spending. However, they can affect the level of financial development in the jurisdictions they operate in through their choices of market entry, development and so forth. The Roine data provide a solidly ambiguous message on this level. On the one hand, they find statistically significant relationship for financial development. On the other hand, their specific regression coefficients related to bank deposits, market capitalisation and private credit remain relatively uncertain. Positive regression coefficients would suggest that providing banking services, encouraging investment in equities and extending more credit allows the wealthy to accumulate more wealth. However, the Roine and co-authors data do not allow us to make such a conclusion.

How might wealth management and private banking services help increase the number of high net worth individuals and the amount of their investable funds? Theory suggests a number of factors which may explain how wealth managers and private bankers can increase their clients' wealth (and thereby attract more clients themselves). Figure 28 shows several of these theoretical factors – taken from Demirguc-Kunt and Levine's literature review. They highlight the theoretical importance of three factors brought out in the Roine *et al.* results – the effect of savings, access to equity, and access credit for investment. However, others theoretical factors important for wealth accumulation and enfranchisement include human capital, tolerance for risk, financial literacy and other factors.

Figure 28: Why Might Wealth Management Lead the Production of More Wealth?
(at least among the affluent)

Factor and example authors	Description	Wealth Management Angle
Human capital Galor and Tsiddon (1997a,b)	Differences in wages account for much of the persistent differences in wealth across time.	Education planning and borrowing allow for greater family earning power
Investment opportunities (McKenzie and Woodruff, 2006)	Wealthy investors may have access to particular high-return investments due to lack of liquidity constraints, indiv-isibilities of large projects and so forth.	Wealth managers can offer premium clients higher return investments.
Preferable risks (Bowles and Gintis, 2000	Wealthy investors may have less absolute and/or relative risk aversion.	Wealthy clients can take larger risks that yield higher risk-adjusted returns.
Generates snowballing savings (Levine, 2005).	Banks allow for the store and transfer of wealth.	Large role for retirement savings and estate planning
Insurance (Demirguc-Kunt and Levine, 2009)	Wealthy can purchase insurance (unlike poorer cousins) to protect wealth.	Large role for life, health and disability insurance.
Cross-finance between personal and professional banking	Wealthy families can use private banking returns and/or services for family business.	Offer of small and medium business accounts to complement affluent accounts.
Bequests and inheritances (Townsend and Ueda, 2006)	Financial institutions play pivotal role in transferring money across generations (as money under beds no longer counts as viable inheritance mechanism).	Prospecting of wealthy families increases portfolio and client size.

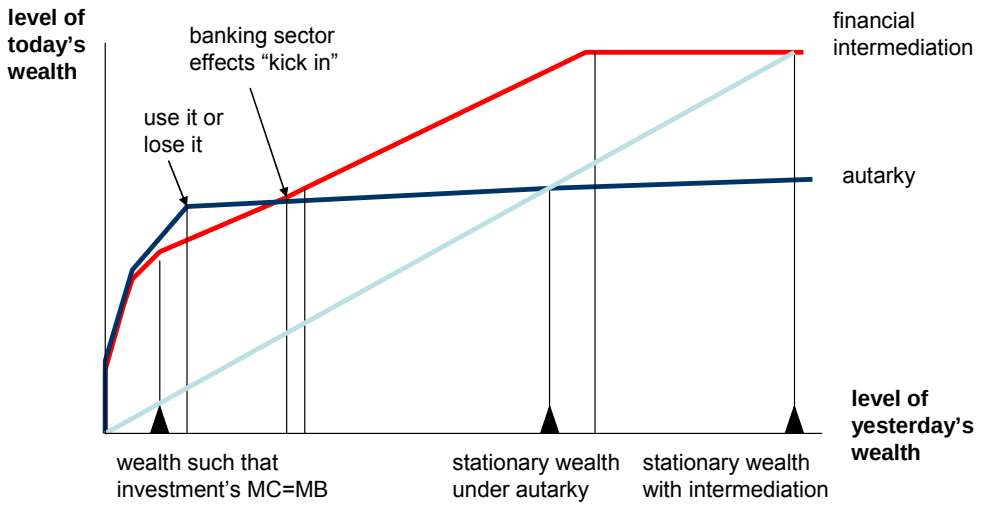
We show the major theoretical factors explaining how financial sector development can explain rising levels of wealth and increased numbers of wealthy adults. The original source describes the role of financial sector development on income inequality and economic growth generally. We reinterpret the original in light of our focus on wealth management and private banking.
Source: based on Demirguc-Kunt and Levine (2009).

Wealth managers and private bankers (in theory) differ from ordinary financial advisors in that they help provide advice and services related to many of the different factors identified in Figure 27. Wealth managers offer their clients regular courses on finance-related topics and they can help arrange financing for future education (and the education of their children). Wealth managers provide access to investment opportunities not available to retail investors (such as access to star fund-managers who have relatively high account minimums). They also offer products which help their clients to save for retirement, obtain credit by collateralizing their securities portfolio, and access special tax-advantaged funds for use in bequeathing money to children and other relatives.

What does economic theory tell us about the role played by wealth management more generally? The basic Gaytan and Ranciere model (shown in Figure 28a) illustrates how financial management (in general) helps expand wealth in general. We spend a bit of time on their model as the model we use in this paper extends on their theoretical framework. Bank accounts serve as a way to "pull" money from the past into the future (as we save what we earned yesterday in order to invest in something tomorrow). The blue and red

lines basically tell us that we must earn a bit more tomorrow in order to put yesterday's earnings into a bank account. Financial advisors – from basic passbook tellers to highly trained family office advisors -- simply help their clients to save and invest. Such financial intermediation – as shown in the figure – basically helps these clients earn a bit more wealth today (using the wealth from yesterday).

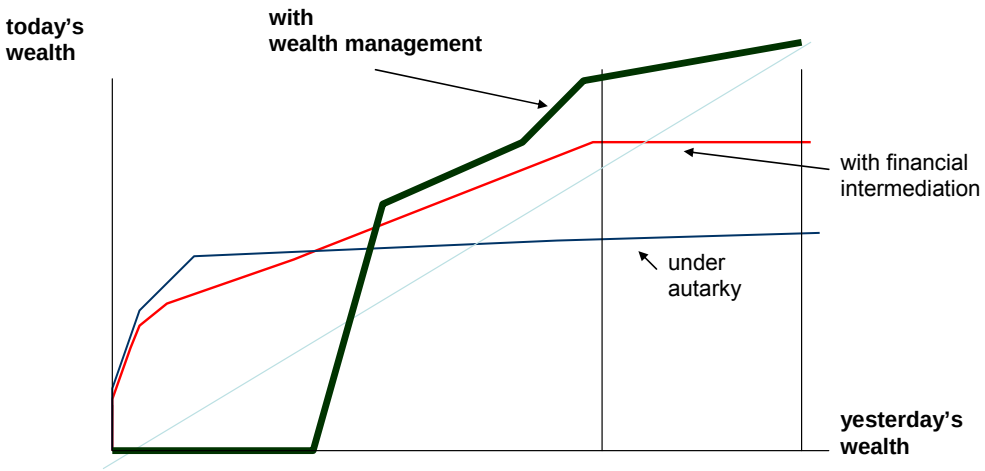
Figure 29a: Financial Management from Poor to Rich Market Segments Just a Way to Make Today's Wealth Go Farther



Source: Gaytan and Ranciere (2004)

Our paper basically tests – using the Gaytan and Ranciere framework – whether (and how) wealth management helps transfer yesterday's affluence into today's wealth. We change their model to reflect three facts about wealth management and private banking. First, banks and broker-dealers do not offer such services without minimum account sizes. Figure 29b shows these account minimums as a relatively long part of the green line where today's affluence does not get transformed into tomorrow's wealth. Second, we postulate that wealth management services provide higher overall returns to clients (including returns related to estate, retirement and education planning). If these accounts failed to provide such higher returns in the long-run, clients would return to their economy-class bank accounts. We show these effects by the green line's relatively rapid climb. Third, we assume – drawing in part from our own experience – that wealth generated by high and ultra-high net worth individuals "spills over." These wealthy individual hire professionals (like lawyers) who become affluent in their own stead. Indeed, wealth management serves themselves have spill-over effects on less affluent customer classes. Wealth managers learn about new investments, fund managers, and ways of lowering costs which benefit retail segments as well. We show this effect by the bump-up the green line shows for higher levels of today's wealth. What is good for Bill Gates is good for the Covington & Burling LLP (one of Microsoft's law firms).

Figures 29b: Adding Wealth Management Distorts the Profile of Savings and Returns



The simple additions to the basic model of financial intermediation have relatively far-ranging implications (which we test in our paper). We describe the model we use more fully in Appendix I. If wealth management does increase returns to investment, then we should observe a correlation between financial intermediation, particular characteristics of that intermediation, and levels of wealth across countries. If such spill-over effects exist, then we should observe – after controlling for other variables – an increase in the numbers of affluent adults as wealth (and wealth management service) increases. We test these two basic hypotheses in this paper.

We can not observe directly the extent to which wealth management and private banking impacts on wealth – and the numbers of affluent investors. We require the income statements and balance sheets of the major firms to conduct such an analysis. However, other models and evidence supports the view that wealth management has effects which differ from normal banking. Favilukis (2012) in particular (using simulation analysis) looks at the way that various variables might impact on banking clients' wealth. Favilukis wanted to know if share ownership led to increased inequality. However, the factors he identifies also apply to wealth management. Figure 30 shows the variables he considered in his analysis -- and the way that the major wealth management firms might develop their markets in light of his finding.

Figure 30: How Can Wealth Management Affect the Development of Wealth in a General Equilibrium Model?

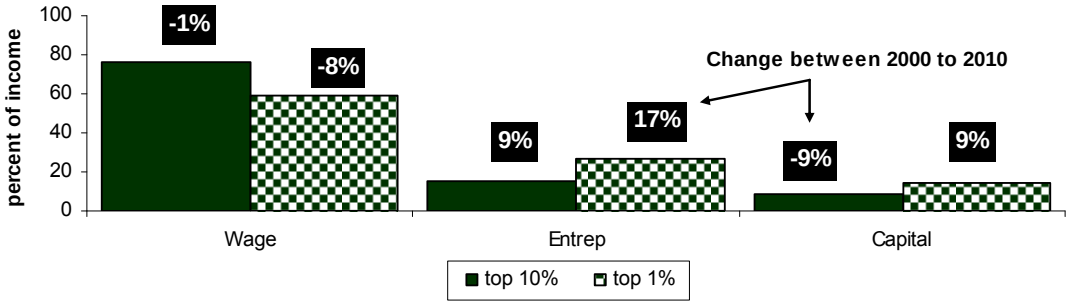
Variable	Description
Main variables	
labour cohort effects	The naturally higher productivity of some workers leads to the generation of more resources for wealth managers. Wealth managers have a strong incentive to identify these higher productivity (and thus higher income-earning) investors.
labour's productivity shocks	Wealth managers need to protect their clients against these shocks before and after they occur.
wages	Provides income to investors – but decreases profits that business owners can place with wealth managers.
desire to leave bequests	Exogenous to the wealth advisor (who simply arranges to maximise the amount transferred inter-generationally).
interest (cost of capital)	Wealth advisor can help find lower cost capital (particularly for family businesses).
adjustment costs	If wealth advisor provides advice to business, can reduce costs of adjusting to new business circumstances.
time value of money	Very weakly endogenous to the wealth advisor (who determines true discount rate by finding better investments).
love of the present	Exogenous to the wealth advisor (unless he also provides consumption opportunities like knowing a guy who sells bargain yachts and so forth).
risk aversion	Exogenous to the wealth advisor (except to extent he or she affects perceptions of risks).[10]
Other factors	
firms' depreciation	Completely exogenous to the wealth advisor. Affects the amount of resources available for placing with wealth management firms.
longevity	Completely exogenous to the wealth advisor. Does not affect wealth management assets under management if death and transfer to beneficiaries relatively costless.
skill premium	Completely exogenous to the wealth advisor. Societies with higher skills premia will reward skills (and thus make more funds available for wealth managers).
persistence of shocks	Affects the depth or height of market changes.
learning about investments	The higher these costs are, the larger the potential market for wealth managers (by lowering the cost of learning about investments… in an efficient market at least)
keeping investment knowledge up-to-date	The higher these costs are, the larger the potential market for wealth managers (by lowering the cost of learning about investments… in an efficient market at least).
borrowing constraint	Wealth managers should be able to reduce these borrowing constraints, making more funds available at a lower cost.

Source: Favilukis (2012) with reinterpretation in a wealth management context by authors.

[10] In theory as well as in practice, the wealth advisor has a very large unintentional and intentional role to play in affecting their clients' risk aversion. The amount of money an investor possesses may affect his willingness to take on risks, as well as the money risked in any particular venture. Wealth advisors help clients to understand the risks they take on – framing them – in ways can affect what economists call these investors' "absolute risk aversion" and "relative risk aversion." See Hackethal (2009) for evidence that financial advisors hurt performance and Kramer and Lensink (2012) for evidence that such advice helps.

These other factors – besides simply investing the wealthy's money in stocks and bonds – can greatly impact on wealth. In a recent set of papers, Piketty and Saez (2003) looked at trends in US wealth over the decade. Their data shows that wages tended to fall during the period for both the top 1% and 10% of wage earners (which in the US at the time basically translated into incomes for ultra-high net worth and high net worth individuals).[11] Wealth managers could do relatively little to help their clients' entrepreneurial spirit – and returns to entrepreneurship grew overall throughout the period. However, returns to capital – an area of intimate interest for wealth managers – showed decidedly mixed returns throughout the decade. Returns to capital for the top 10% fell; whereas returns to capital for the top 1% rose. Such mixed results hint at a strong role for wealth managers. These data also beg the question as to why the richest investors' investments gained ground relative to their close peers.

Figure 31: Capital Lost Part of Its Role in Creating High Net Worth Individuals in the US in the 2000s



The data in the figure show the percent in total income of various types of income for the the top 10% and the top 1% of income-earners in the US.
Source: Piketty and Saez (2003) at Table A7. We use data which Saez updated to include 2010.

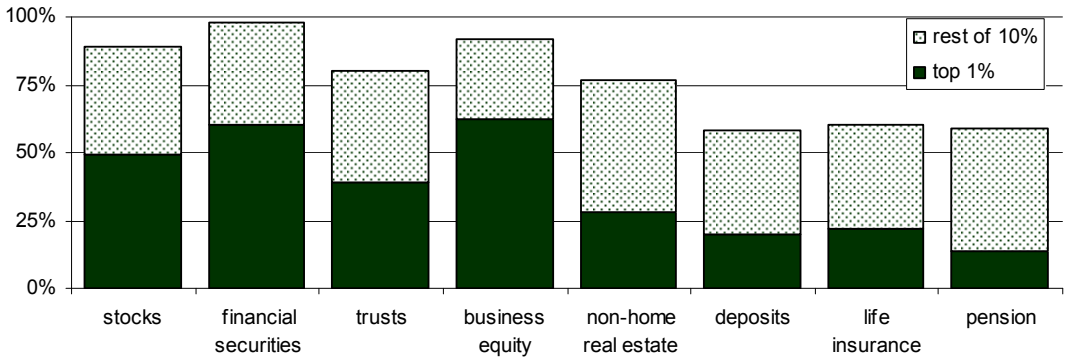
Do financial institutions help the affluent and wealthy accumulate wealth? The models we reviewed suggest they help – but certainly do not play a critical role. We know that financial management – particularly the management of high net worth and ultra-high net worth individuals' wealth – can exacerbate wealth and income inequalities (even at the top of the wealth distribution). We also know that some aspects of wealth management can "spill over" to the broader financial sector – and to the economy in general. The amount of insurance investors buy, their appetite for risk, and even the educational decisions they made, all relate in some way to their financial planning (at the individual as well as aggregate or macro-level).

[11] As we mention elsewhere in the paper, the lowest incomes in the top 10% fell slightly below the $1 million needed to qualify as a high net worth individual (HNWI). The lowest incomes for the top 1% also fell slightly short of the $10 million needed to qualify as a ultra-high net worth individual (UHNWI). However, as the original data do not show enough detail to provide accurate data for HNWIs and UHNWIs, we use data ranked by decile (or centiles).

The Role of Wealth Management and Financial Planning – Domestic and Foreign

The micro-level evidence on wealth (at least in the upper-income countries) suggests that wealth results from planning. The complexity of the wealthy's portfolios clearly indicates that high net worth individuals – and/or their advisors – engage in wealth management. Figure 32 shows the allocation of resources across different types of assets for high and ultra high net worth US households.[12] In the US, roughly 7.2 million households (or 6% of them) have a net worth of $1 million or more (qualifying as high net worth households). Roughly 462,000 of them (or 0.5% of them) have a net worth of $10 million – qualifying as ultra-high net worth households. Their asset holdings clearly show signs of some form of financial planning and wealth management. Roughly 75% of these households possessed some form of trust instruments – financial instruments which the wealthy can not just purchase over the counter. More than half also held life insurance policies and pensions. These data clearly show a degree of investment diversity and depth which can only result from professional planning.

Figure 32: American UHNWIs and HNWIs tend to hold a variety of assets -- likely the result of wealth management



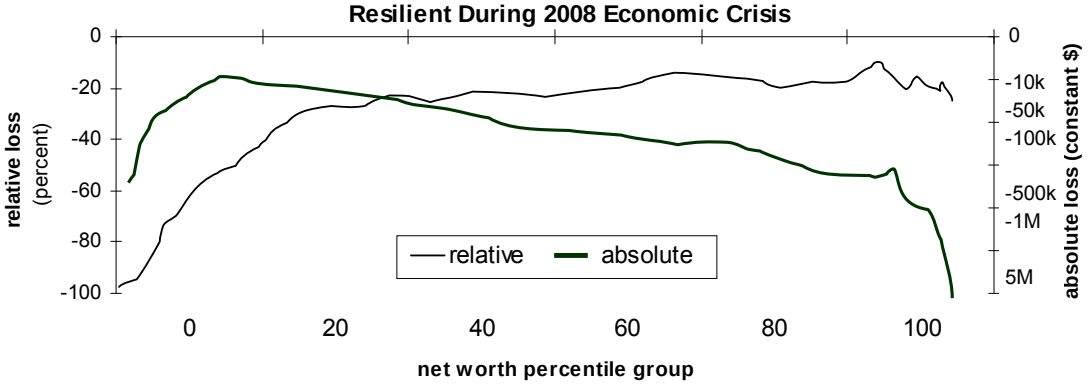
The data in the figure show the ownership of assets by the US's ultra-high net worth individuals (UHNWI) and high net worth individuals (HNWI). The top 1% in 2007 held $8.2 million or more in net worth, making them either UHNWIs (or very close). The top 10% had a net worth of $883 thousand -- again almost qualifying as a whole group as HNWIs. Source: Wolff (2010).

Reactions to the recent economic difficulties in the US also point to the important role of financial management – particularly for the wealthy. Figure 33 shows the effect of the financial crisis on wealth for various net worth deciles in the US from 2007 to 2009. In absolute terms, the wealthiest 10% of the US population lost the most – roughly $5 million. However, as a proportion of their wealth, they lost less than 20% of their net worth. In comparison, the majority of Americans lost about 50% during the same period.

[12] A number of authors – like Davies and colleagues -- also provide estimates of major financial assets and liabilities held by households in the US and elsewhere. Like all our examples in this literature review, we use one example to illustrate the broader literature – rather than trying to provide complete coverage. We use Wolff as an illustration as he provides information on households with more than $1 million and $10 million in net worth. In contrast, many of the other authors only provide data for the top 10% and/or 1% of wealth holders and/or income earners.

Yet, even within the top 10% decile of net worth – financial losses varied rather largely. Relative loses amounted to only about 10% of net worth (for the 93rd percentile group) to about 25% (for the 97th and 99th percentile group). These data beg the question whether these net worth groups have the same financial advisors? Or do losses in one wealth centile relate in some more complex way to gains (or losses) among other centiles in the top 10% of the US's wealthy households?

Figure 33: Upper tiers of US Wealth Distribution Extremely Resilient During 2008 Economic Crisis



The data in the figure show the impacts on net worth for the range of US households ranked by net worth.
Source: Kennickell (2011)

Successful domestic wealth management practices should lead (and have led) bulge bracket wirehouses to expand their books of business into the developing world. As shown in the first figure we presented in this paper (Figure 1), signing up accounts equivalent to even 10% of the value of this wealth could increase assets under management by $30 trillion. Theory points to several reasons why foreign wealth managers and private banks might have a competitive advantage over their domestic rivals in developing markets. Figure 34 shows several of these factors – most of which readers will already know. Some of these factors include better access to international capital markets (and thus investments for clients), economies of scale in servicing clients (like mass mailings about new retirement products), and most importantly the capitalisation to deal with market fluctuations that reduce the firm's ability to repay clients' funds.[13]

[13] Despite the many reasons why the large international broker-dealers may want to enter foreign markets, the literature points to a number of reasons why they may wish to exercise caution. Some of these reasons include limited general development and barriers which can hinder the effectiveness of foreign banks (Garcia-Herrero and Martinez Peria, 2005; Demirguc-Kunt, Laeven and Levine, 2004)m as well as cultural and other factors (Claessens and Van Horen, 2011).

Figure 34: Factors Encouraging Foreign Wirehouses to Enter Wealth Management Markets in Developing Countries

Factor and authors	Description from literature	Wealth management angle
Access to capital (Claessens, Demirguc-Kunt, and Huizinga, 2001	Lower costs of intermediation and gains from breaking up oligopolistic markets.	Competitive advantage consists of providing access to funds to local segments that local banks can not serve as profitably.
Investment know-how (Martinez-Peria and Mody, 2004).	Foreign banks have lower losses and default rates, suggesting more skilled financial analysis.	Clients want more skilled advice and bankers – thus prefer foreign banking options.
Safety	Large foreign banks may provide financial support to local affiliates and subsidiaries.	HNWIs feel more confident to place funds with a safer bank – encouraging entry.
Cheery-picking clients (Detragiache, Gupta, and Tressel, 2008)	Foreign banks may pick lowest risk clients, thereby constraining credit.	Desire for cherry-picking may encourage foreign market entry rather than domestic market deepening.
Militate for better policies (Levine 1996, Dobson, 2005, and Mishkin, 2006)	Foreign banks likely pressure governments to improve regulation and supervision, increase transparency, and more generally catalyze domestic reform	Can engage in policy entrepeneurship to gain first entry and attendant profits.
Economies of scale required (Claessens and Lee, 2003)	Only largest banks can profitable serve certain developing markets.	Only largest wirehouses can consider entering some markets.

Source: Claessens and van Horen (2008). online.

The evidence seems to suggest that foreign financial institution entry promotes economic growth – and thus the creation of wealth. No data yet exist about the effect that foreign bank entry has on the distribution of wealth. However, we do know something about the way that foreign bank entry affects firm revenues and assets. Figure 35 shows the number of models in which one prominent study of foreign bank lending resulted in increases in revenues, assets and increased borrowing. The effect about stock market returns signals an effect every wealthy client knows – wealth managers can extent credit and offer better returns in bull markets. Increases in bank concentration also correlate with higher firm revenues and assets – suggesting an important role for scale. These results apply to firms. However, as many high net worth and particularly ultra-high net worth individuals have roughly the same range of assets as those companies Giannetti and Onegena analysed, these results are instructive.

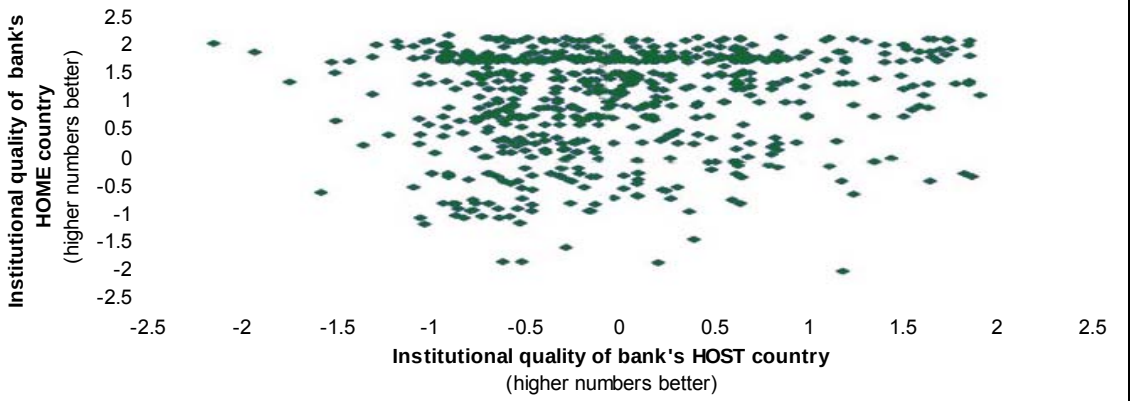
Figure 35: Foreign Entry Suggests More Wealth (for Firms at Least)

	Revenues	Assets	Debts/ Assets	Debt burden (i/D)
Foreign lending	4/4	1/1	1/1	1/1 (neg)
Financial development	3/3	1/1	1/1	1/1
Creditor rights	3/3	1/1	1/1	1/1
Firm size	4/4	1/1	1/1	0/1
Stock market returns	4/4	1/1	1/1	1/1
FDI	4/4 (neg)	1/1 (neg)	1/1	1/1
Concentration (H-H Index)	4/4	1/1	1/1	1/1

The data in the graph show the number of models which each variable is significant at the 95% level or better. We do not report on interaction effects.
Source: Giannetti and Onegena (2009)

We can deduce from the extant studies that foreign wirehouse entry into many of these markets would significantly increase wealth – through increases in the effectiveness of wealth management services. Claessens and van Horen (2008) provide one of the few studies showing why foreign wirehouses would (or would not) enter a market – because these foreign markets have similar cultures, laws and needs as the bank's own home market. Specifically, they look at the extent to which political voice and accountability, political instability and violence, government effectiveness, regulatory quality, rule of law and control of corruption affect a bank's decision to enter a market. The initial data do not show any kind of relationship between the bank's own institutions and those of the foreign markets a wirehouse may wish to prospect in. Figure 36 shows a scatter-gram of their results. If wealth managers like Axa, Deutche Bank and HSBC wanted to compete in markets similar to their own, we would expect to see a strong correlation in these data. However, the randomly dispersed cloud of dots shown in the figure suggest other factors may be at play. We can not say that national institutions drive a broker-dealer to locate in certain markets – something else must be involved. That "something else" must – of course – represent the profit motive.

Figure 36: Wealth Managers Go Everywhere Without Preference for Institutional Quality?



The figure shows foreign bank entry in developing country markets.
Source: Clarssens and van Horen (2008)

The data clearly show that many wealth management firms could have earned money from going abroad (if general patterns in the banking sector serves as a guide). Figure 37 shows the average return on equity in the banking sector from 2000 to 2010. The list – at first glance – tells little. However, we see that newly emerging economies (and highly protected economies) had relatively high returns on equity. Some of these economies included Bulgaria, Bosnia, Azerbaijan, and Yemen. The developed countries – and countries with economic difficulties – had relatively low returns. These include the UK, US, Brazil, Italy, and Egypt (among others). Banks operating in Japanese, US, and British markets had relatively miserable return on equity in general (of course with exceptions). These data suggest that something other than pure profits must account of banks' (and thus wealth managers') profitability.

Figure 37: Developing Countries Provided Bank Return on Equity Too Good for Foreign Wirehouses to Ignore

20 to 35%	10% to 20%	1% to 10%	0% to -5%	-5% to 10%	-10% to -50%
Philippines	China	Paraguay	**Switzerland**	**Norway**	Romania
Bosnia and Herzegovina	Swaziland	Jordan	Moldova	Brazil	**Japan**
Spain	Latvia	**Portugal**	Malaysia	Bahamas	Uruguay
Thailand	Indonesia	**Germany**	Russia	Cyprus	
Azerbaijan	Hong Kong	Kuwait	**Luxembourg**	Zambia	
Kenya	Israel	Georgia	Lebanon	**United States**	
Finland	Saudi Arabia	**Sweden**	**Austria**	**United Kingdom**	
Estonia	Singapore	**France**	Botswana	**Italy**	
Yemen,	Slovenia	Sri Lanka	Oman	Chile	
Tunisia	**Canada**	Malta	Mauritius	Slovak Republic	
Bangladesh	South Africa	**Greece**	Nepal	Egypt	
Armenia	**Australia**	**Turkey**	Kazakhstan		
Algeria	Bahrain	Venezuela	Costa Rica		
Bulgaria	Vietnam	Gabon	**Denmark**		
Lithuania	United Arab Emirates	Belarus			
	Netherlands	India			
		Panama			
		Qatar			
		Belgium			

The figure shows average returns on equity of financial institutions and banks through the 2000s. Source: World Bank (2012). We have marked several OECD member countries (and/or upper-income countries) in bold.

Institutions do – and must -- play some role. Claessens and van Horen find that larger differences in institutional scores result in decreases in investment. As the institutional environment improves in the host country, foreign investment by foreign banks increases (though the scatter-gram does not show this relationship as clearly as refined regression analysis). Entry restrictions also negatively affect such investment. Growth in the bank's own home country also negatively correlates with entry into the foreign market. Figure 37 shows other relationships which simple scatter-grams can not show. Their findings suggest – at the strong risk of our over-interpreting their results – that foreign broker-dealers could profit from market entry in places like China, India and Turkey. They also suggest (if their data reflect broader trends which could affect the wealth management industry) that Russia would represent a poor market for foreign wealth manager entry.

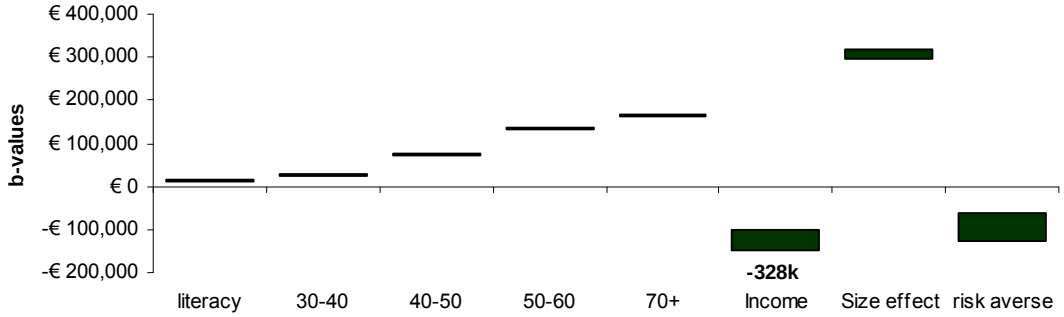
Figure 38: Countries where Entry by Foreign Wealth Management Firms Might (or Might Not) Raise the Bar on Domestic Wealth Management

	Significant	Not
Foreign ownership raises profits for all	**China**, Ecuador, Ghana, **India**, Indonesia, Kazakhstan, Malaysia, Poland, Serbia, Montenegro, Thailand, **Turkey**, Venezuela	Bosnia, Costa Rica, Czech Republic, Egypt, Kenya, Latvia, Morocco, Romania, **Russia**, Tunisia
Domestic ownership better than foreign	Argentina, Armenia, **Brazil**, Colombia, Mexico, Philippines	Chile, Hungary, S. Africa and several under-developed economies

Source: Claessens and van Horen (2009). We have omitted small countries and countries not relevant to wealth managers.

How exactly does foreign wealth management help clients become richer? We can not know from the clients of the wealth management companies themselves – as opinion data result in highly biased conclusions.[14] However, a number of recent studies of point to a number of factors helping to explain how wealth managers might help influence their client's net worth. Recent studies by authors like van Rooji *et al* (2011) point to the important effect that wealth managers can have by educating their clients. They refer to two specific channels, "first, financial knowledge increases the likelihood of investing in the stock market, allowing individuals to benefit from the equity premium. Second, financial literacy is positively related to retirement planning, and the development of a savings plan has been shown to boost wealth" (1).

Figure 39: Financial Advice and Literacy Clearly Influences Net Worth



The figure shows the effect of various factors affecting net wealth in the Netherlands. We show statistically significant parameter estimates (and the range of those estimates). B-values indicate the amount that net worth changes for every unit change in the factors shown on the x-acis. Financial literacy has a positive effect as do a number of other variables.
Source: Rooij *et al*. (2011).

[14] A number of broker-dealers (and the multinational consulting companies which advise them) publish regular studies related to the attitudes of their high net worth clients. We cite less relevant – though more objective – data in order to provide rigour to our review. Some important survey/studies include period studies from the US Trust, Societe Generale, and Koski Research (for Charles Schwab).

In theory, wealth managers – particularly those working for foreign wirehouses – can help their clients generate significant amounts of wealth in developing countries. Wealth managers can bring new techniques and access to capital. Their work can also expand the numbers of individuals with enough investable assets to place with these money managers. However, the country they operate in clearly seems to matter. Does their ability to create new affluent clients also matter?

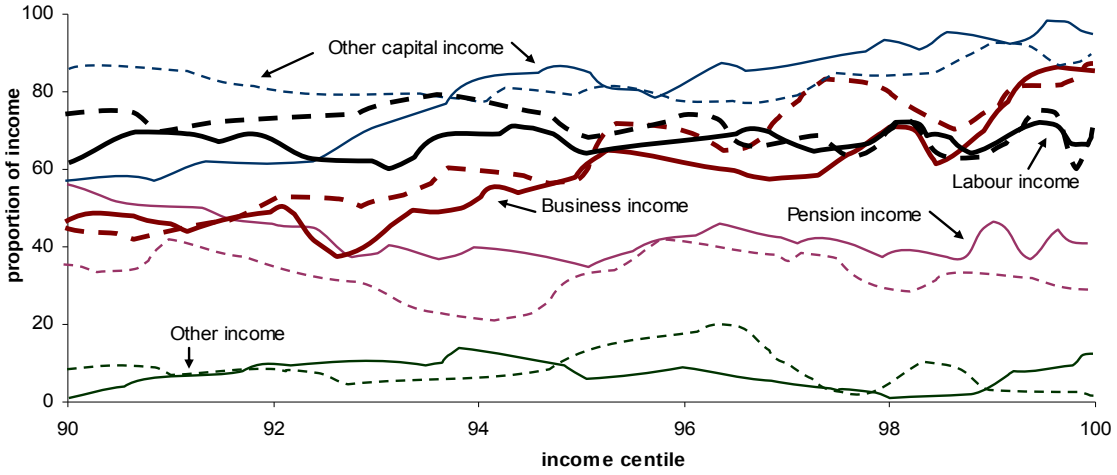
Do wealth managers help create new clients elsewhere in the economy?

Wealth managers and private bankers seek to expand their book of business (client list) by creating new clients. Does successful wealth management create new/more clients? In theory, such wealth can "trickle down" in several ways. First, high net worth individuals can use part of their earnings on other professionals (like lawyers, tax planners, doctors, and other professionals). These professional's incomes – in turn -- rise enough to place them in the affluent or high net worth categories. Second, individuals in the top 10%-25% centile groups can earn enough through compound returns from investments to rise into high net worth status. Third, their investments may fund local enterprise – whose capital-holding directors and managers experience large capital gains. These capital gains (or gains in wages resulting from increased returns on the company's capital) lead to increases in the number of adults becoming high net worth individuals. Existing data can help us guess the extent to which wealth management and private banking help the affluent move into the realm of high net worth (and ultra-high net worth).[15]

We know that the net worth of the top 10% rises as the top 1% rises – at least in certain economies and at certain times. Figure 40 shows the contribution to net worth of various types of income. For the US's top 1% of net worth households, non-business (other) capital income becomes more important than wages and business income. Yet, we want to draw your attention to the fluctuation between of these income sources – and the wide difference even between income centiles (between 90% and 100%). Such a fluctuation shows evidence of intense dependence (economists and statisticians call this "cointegration"). The ways income circulates between these centiles in such a large economy prove too difficult to measure or model. However, even a cursory look at these data – and data like them – suggest important dependence in income between centiles at the top decile of net worth.

[15] The literature on each of these questions can span libraries. Rather than review all the literature, we wish to give the reader examples of recent studies which distil the lessons from many of these long-running academic and empirical debates.

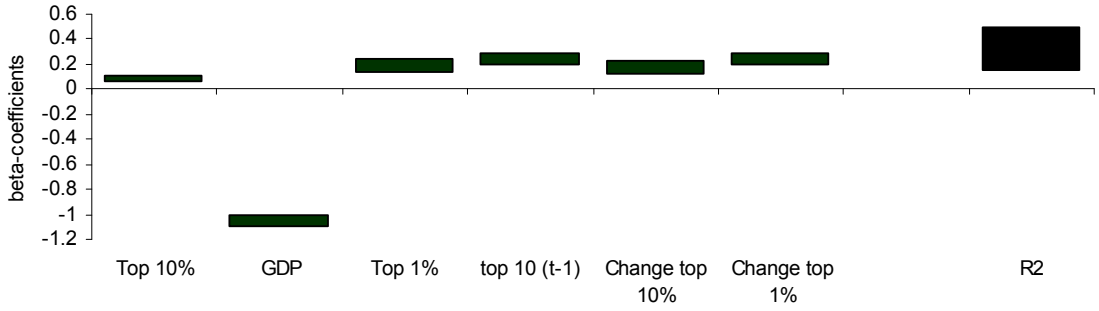
Figure 40: The Contribution of Various Kinds of Income to Net Worth in the Top 10% Fluctuates Wildly



The figure shows income shares of each centile in the top 10% of net worth in the US. We show data from 1989 to 2007. Dotted lines show the relative importance of each kind of income to each centile group in 1989. The solid lines show each income types' importance in 2007. Looking at how these lines shift gives an idea of the types of changes occurring in each centile group's income streams. We have redrawn these lines using a graph provided by the author.
Source: Kennickell (2009)

We can not know if such correlation represents actual trickle down (although more likely "trickle around"). However, we do know at least a correlation exists for the US. For other economies, the relationship appears much less certain. Andrews *et al.* (2009) provide one example in a series of studies assessing whether increases in the top 10% "trickle down" to the rest of the population. If such trickle down occurs, then wealth managers could create new clients for themselves through their actions. They find – as we show in Figure 41 -- that lagged increases in income held by the top 10% and 1% do not correlate with increases in per capita GDP for each period. However, they **do** find that the combined lag **does** have a statistically significant correlation with income. Changes in the top 1% also correlate with increases in average GDP per capita. Such evidence suggests that "trickle around" occurs.

Figure 41: Rising Top Incomes Seem to Lift the Boats of Affluent Investors



The figure shows regression beta coefficient estimates on economic growth since the 1960s We show the range of parameter estimates across models and we do not include estimates not statistically significant at the 95% level or better.
Source: Andrews *et al.* (2009).

Cross-country evidence related to such "trickle around" though remains relatively inconclusive. Roine *et al.* (2009) find no significant correlation in their data of changes in the top 1% to changes in the remaining 9% of the top decile in each year (or what economists call contemporaneous correlation). Yet, our analysis of their data shows significant correlations in the data between time periods (or correlations occurring with a lag). Figure 42 shows the correlation between changes in wealth held by the top 1% in each country and the remaining top 9%. Places like Finland show an almost perfect correlation. Other countries like the Netherlands show very little correlation. On the other hand, a lag correlation (assuming wealth takes one year to filter down from the top 1% to the rest of the top 9% shows a much richer correlation profile. In countries where the correlation is weakest (like France and the Netherlands), the correlation is negative.

Figure 42: The Data Suggest that Wealth Managers Might Create New Clients by Doing a Good Job for their Existing Book

Country	contemporary correlation	lag correlation	Country	contemporary correlation	lag correlation
Finland	0.99	0.94	**Germany**	0.93	0.48
Sweden	0.99	0.79	**Ireland**	0.85	0.74
New Zealand	0.98	0.15	**UK**	0.82	0.62
Canada	0.98	0.97	**France**	0.76	-0.02
China	0.98	0.97	**Spain**	0.52	0.71
United States	0.98	0.87	**Netherlands**	0.11	-0.66
Argentina	0.97	0.86			

The data in the table show the correlation coefficients for the share of the top 1% and top 10% of wealth from 1990 to 2000.
Source: Roine *et al.* (2009) for the original data. Correlation coefficients come from our own calculations.

What role do financial institutions play in influencing this distribution of income? Clarke *et al.* (2006) test whether financial sector development results in changes in income inequality across countries. Such tests tell us a great deal about the development of wealth management and private banking. Wealth management represents a form of banking focused only on a segment of the banking population – high net worth individuals. As such, we could expect that wealth management services (as a segment-targeting strategy) would exacerbate any changes in inequality. Figure 43 shows the extent to which the level of private credit and bank assets correlate with income inequality. The figure shows that the statistical data do not allow us to decide either way. Private credit has statistically significant effects on income inequality in 4 out of 16 regressions Clarke and his colleagues ran. The size effect of private credit on inequality only statistically significantly correlated with income inequality in 2 out of 8 models. Regressions on the size of bank assets correlate more robustly with income inequality. In their panel, they find that 8 of the 16 regressions show a statistically significant effect. The size of bank assets statistically correlates in 2 of the 8 regression models.

Figure 43: Financial Development only weakly tied with changes in income inequality between countries

Variable	OLS	2SLS	Random Effects	IV Random Effects	Total regressions
Private credit	0	1	1	2	**16**
Size effect on private credit	0	0	1	1	**8**
Bank assets	3	1	1	3	**16**
Size effect on bank assets	0	0	1	1	**8**

A size effect refers to the effect that the value of credit and/or asset have as they become very large. Empirically, the authors test for such size effects by regressing the square of the variable. The cryptic labels for columns refer to different statistical techniques the authors used to assess the correlation in their models. The lay-reader can think of these as just different tests.
Source: Clarke et al. (2006).

These results suggest that financial intermediation makes bank clients wealthier – when looking at the data between countries. In their words, they "find a significant negative coefficient on the measures of financial intermediary development…[and the] growth-spurring effects of financial intermediary development are likely to be associated with positive effects on aggregate income distribution as well" (Clarke *et al.*, p. 595). Such results – if they hold for banking only among the richest segments of the banking population – should imply that financial institutions make their existing clients (and clients to be) wealthy.

Recent data though seem to show that financial institutions (and thus probably wealth managers) help to generate new wealth. Figure 44 shows statistical analysis related to the effect that changes in credit and savings have on economic growth (and visa versa). Because of the chicken-and-egg like problem measuring these variable poses (known as "endogeneity"), we cite special analysis aimed at removing feedback and other effects.[16] These data suggest that "spill around" in wealth occurs through the real economy rather than in financial markets. As shown in the figure, in several reasons, credit expansion and/or savings lead to economic growth (in South Asia, ECA, LAC, MENA, and far more in OECD and non-OECD countries). Similarly, economic growth clearly led to increased savings and credit expansion – in both regions. These results suggest a relatively strong role for economic growth as the way wealth spreads wealth.

[16] The authors look at "Granger causality" – which assess the extent to which one variable actually causes changes in another (within the narrow definition of Granger causality). The reader should look up the topic if interested in details.

Figure 44: Economic Growth and Trade Causes Credit and Savings Expansion in Most Regions

	dependent (thing caused)				dependent (thing caused)		
	Growth	**Credit**	**Savings**		**Growth**	**Credit**	**Savings**
EAP				**SA**			
Growth		**x**	**x**	Growth			**x**
Credit			**x**	Credit	**x**		
Savings				Savings	**x**		
Trade	**x**	**x**		Trade	**x**	**x**	**x**
ECA				**SSA**			
Growth		**x**	**x**	Growth		**x**	
Credit	**x**			Credit			
Savings	**x**			Savings			
Trade				Trade	**x**		
LAC				**High OECD**			
Growth		**x**	**x**	Growth		**x**	**x**
Credit				Credit	**x**		
Savings	**x**			Savings	**x**		
Trade	**x**			Trade			
MENA				**Non-OECD**			
Growth		**x**	**x**	Growth		**x**	**x**
Credit			**x**	Credit			
Savings	**x**			Savings			
Trade	**x**			Trade	**x**	**x**	

The figure shows Granger causation of economic (output) growth, private sector credit growth and savings growth by the factors shown in the chart. An "x" indicates that the variable Granger causes the dependent variable listed with 95% confidence or better. The authors find an important role of government policy (and levels of inflation) which we omit to keep the figure readable.
Source: Hassan *et al.* (2011).

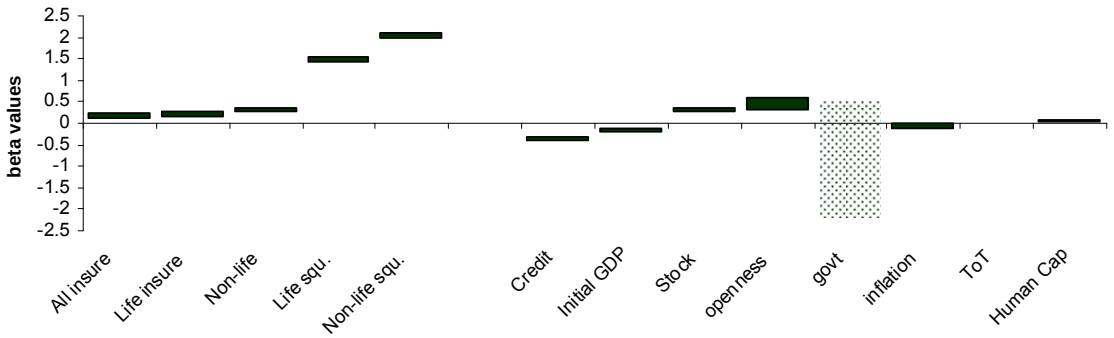
Do can wealth managers and private bankers grow their book of business by making their existing clients richer? The literature indicates they can – but probably indirectly. High and ultra-high net worth individuals likely use their funds (particularly in the OECD) to engage in trade and productive activity. Such productive activity provides incomes for others – some of whom become affluent and/or high net worth individuals themselves. Yet, other factors, like insurance, estate management and other services probably partly account for expanded affluence in many economies.

Specific Wealth Management Services and Wealth: Insurance and Estate Planning

A number of studies have found a role for insurance in promoting economic growth. As economic growth often translates into wealth, we can expect that these findings point to a positive role for life and other forms of insurance in creating wealth. Arena (2006) provides one illustration from the relatively sparse literature showing a role for insurance. He summarised the ways that insurance help promote economic growth through "(i) promoting financial stability, (ii) facilitating trade and commerce (the most ancient insurance activity), (iii) mobilizing domestic savings, (iv) allowing different risks to be managed more efficiently encouraging the accumulation of new capital, (v) fostering a

more efficient allocation of domestic capital, and (vi) helping to reduce or mitigate losses" (Arena, 2006, 2). His study looks at the relationship between insurance premiums (the same data we use for our study) and economic growth. Figure 45 the results of his statistical analysis – showing a positive role for insurance premiums and economic growth.

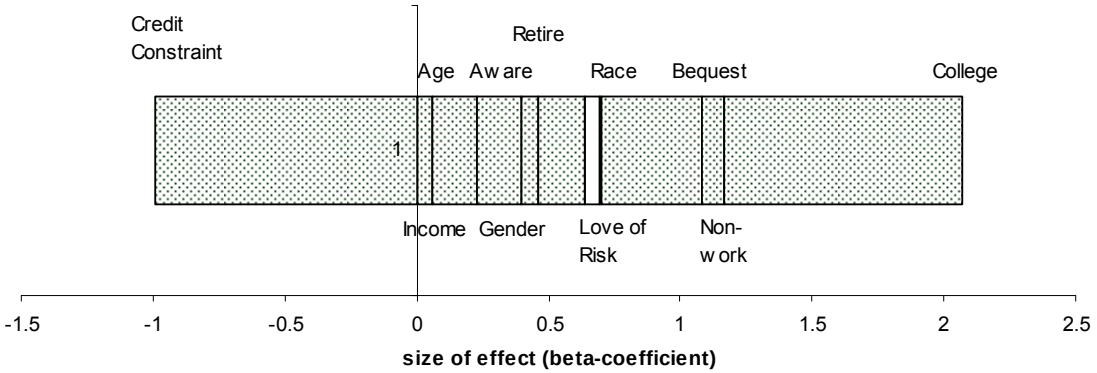
Figure 45: Life and other Types of Insurance Correlate with Economic Growth, Why Not Wealth As Well?



The figure shows regression coefficients of various factors' effect on economic growth from 1976 to 2004. We sjhow the range of parameter estimates for variables in solid green which have a statistically signifcant correlation with economic growth at the 95% level or better.
Source: Arena (2006).

Other studies suggest that wealth depends on other life-cycle factors – like the desire to bequeath wealth and save for college. Bilias (2005) conducts one of the more comprehensive studies in this area. Figure 46 shows effect of each factor he analysed in assessing the extent to which various factors affected wealth in the US. For example, he finds that credit constraints (unsurprisingly) negatively correlate with wealth. Bequest motives correlate more strongly with the accumulation of wealth in the US – though less than the desire to save in order to pay for university. Studies like Bilias' show the importance of the wealthy's own preferences and needs when accumulating wealth. The need to save for retirement – and to bequeath money for future generations serves as a key motivation.

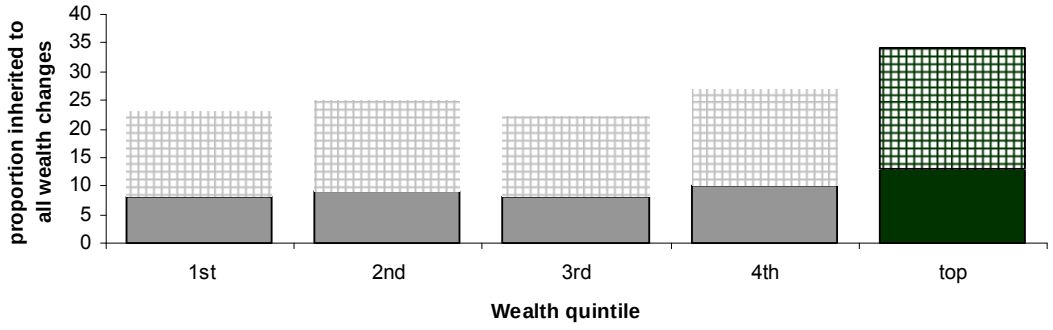
Figure 46: Wealth Depends on Who You Are - and Who You Inheret From



The figure shows the strength of parameters explaining equity holdings in the US in 2001. For example, bequest motives had a much surer correlation with equity holdings than the race of the holder.
Source: Bilias (2005).

Legacy planning and inheritance represents a growing area of wealth management and private banking. A number of studies show that high net worth individuals keep their wealth through legacy and estate planning. Figure 47 shows the value of inheritances in the UK relative to all households. Households with estate planning managed – across the wealth distribution – to transfer more assets than households overall. Households in the top quintile managed to transfer and inherit the most (compared with other quintiles). Of their overall change in wealth, bequests accounted for a bit more than 30% of that transfer. Households without estate plans managed to pull about 10% of their total change in wealth through inheritance.

Figure 47: High Net Worth Individuals Manage to Transfer a Larger Share of Wealth to their Off-Spring (in the UK)

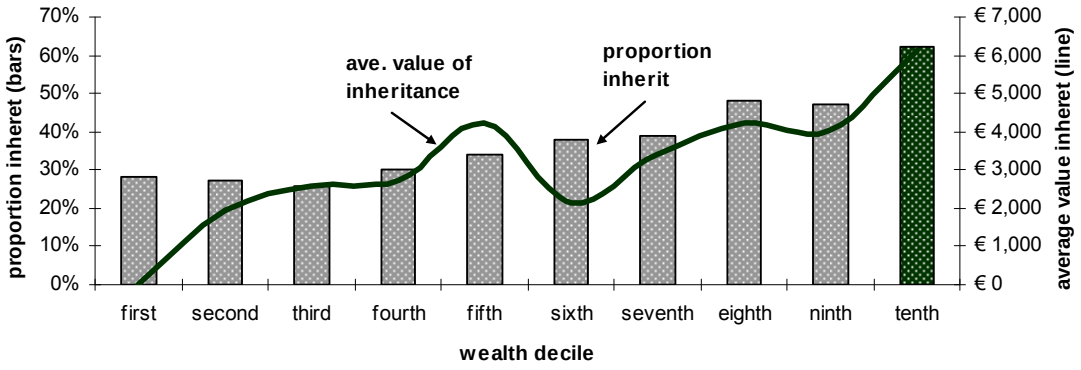


The figure shows the proportion of inhereted wealth to the total change in wealth. For example, the top quntile in the UK inhereted 13% of all their change in wealth for ALL households (as shown in solid green). Of only the inhereting households, these inheretences contributed 34% of the change in total net worth.
Source: Karagiannaki (2011).

The Austrian and the US data tell a similar story. Figure 48 shows the proportion of Austrian households inheriting wealth – and the average value of those inheritances. As shown, the more than 60% of households in the top wealth decile managed to inherit wealth (compared with about 15% fewer in even the ninth decile). As shown in Figure

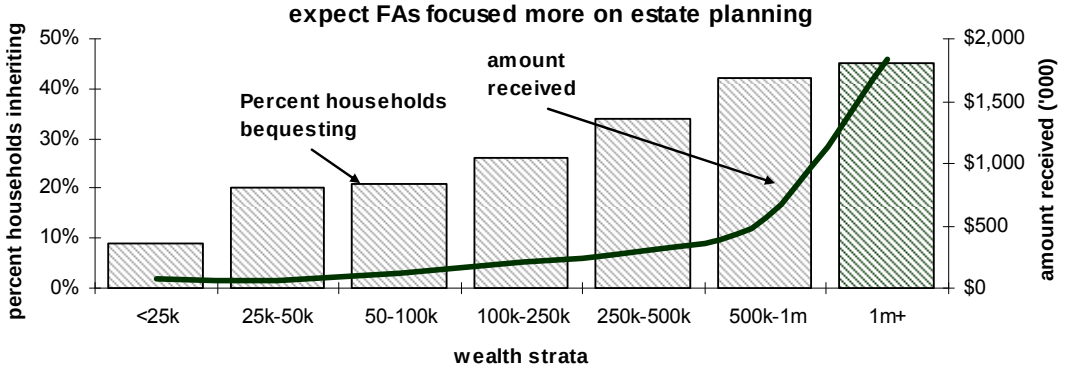
49, roughly half of American high net worth households (with more than $1 million) managed to inherit wealth. The amounts of money in both the US case especially clearly shows that – in absolute terms – these amounts are not trivial. These two examples strongly suggest that financial advising (and wealth management) has played an important role in preserving the wealth of these high net worth households.

Figure 48: High Net Worth Clients Transfer A Higher Share of their Larger Wealth through Estate Planning in Austria



The figure shows the proportion of households bequeathing assets in Austria and the average value of those assets. Source: Fessler *et al.* (2007).

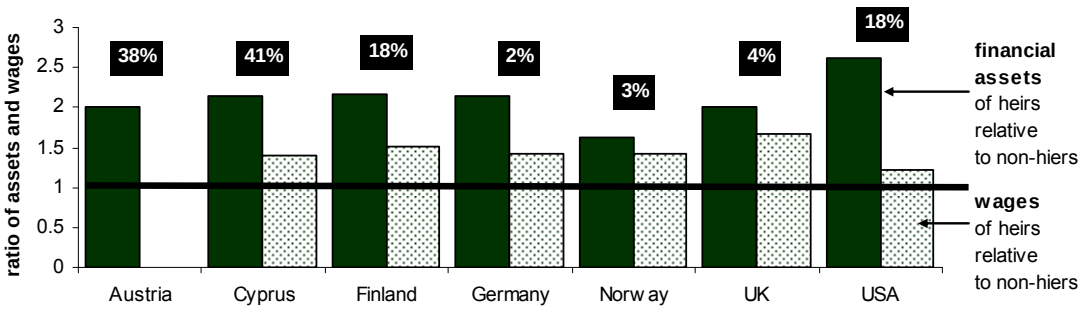
Figure 49: If Trends Abroad Follow the US (like usual), we can expect FAs focused more on estate planning



The data in the figure show the proportion of bequeathing households in the US and the average amounts inherited. Source: Wolff and Gittleman (2011).

International data show an important role for inheritance in increasing wealth over time. Figure 50 shows assets held by households who receive bequests as compared with households that do not. In the 7 countries the authors study, households inheriting wealth had larger amounts of wealth than those that did not. Wages earned by individuals in these households tend to exceed those from households which do not transfer wealth through bequests. Such a pattern suggests that the wealthy tend to transfer their wealth more than the less affluent. Yet, the proportion of households transferring wealth through bequests differs greatly across countries. Inheritance rates in Austria and Cyprus hover at about 40% of households. In contrast, a much smaller proportion of German, Norwegian and UK households transfer wealth through estate planning – around 2%-4%.

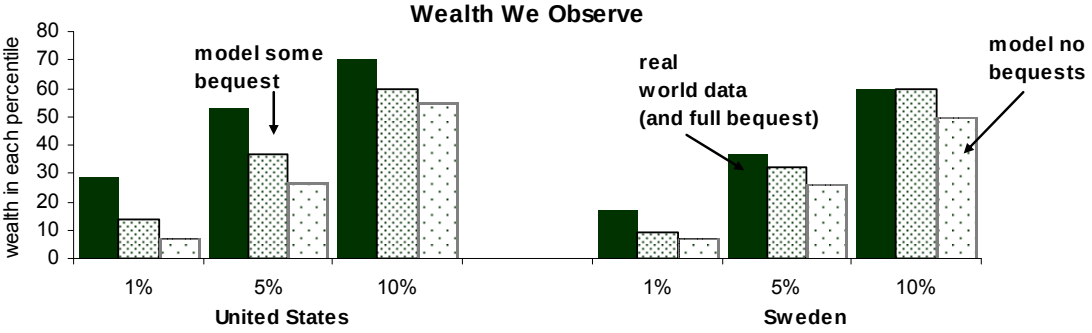
Figure 50: Estate Planning Provides a Path Wealth -- to an Already Affluent Class



The data in the figure show the ratio of assets of inhereting to non-inheriting households in a number of countries (with solid green bars). The dotted bars show relative wages. We draw a line at a ratio of 1, as at this point, assets and wages of inhereting households would equal those of non-inhereting households. The proportions shown in the black boxes above the bars shows the percent of households inheriting.
Source: Fesseler *et al*. (2007).

Bequests clearly represent an important area of wealth management (and explanation for wealth across countries). How important exactly are these bequests? De Nardi (2002) tries to answer this question – by modelling wealth with and without bequest motives. She finds that – without bequests – other factors like returns to investment can not explain the levels of wealth we observe in practice. For example, in the US, the top 1% hold about 30% of US wealth. Models without bequests predict their wealth at less than 10% of US wealth. Models with some degree of bequests increase the predicted level of their wealth at about 10%.

Figure 51: Only Estate Management Explains the Distribution of Wealth We Observe



The data in the figure show the extent to which bequests explain wealth in the top wealth brackets in the US. In models without bequests, predicted wealth serious undershots the wealth we actually observe. Only bequests can explain the levels of wealth we observe in practice.
Source: De Nardi (2002).

The literature related to financial sector development provides several insights and predictions for scholars seeking to understand the role of wealth management and private banking in developing countries. First, financial sector development --- and financial institutions in general – have different effects on wealth accumulation across regions. OECD and upper-income countries tend to have a different relationship with wealth (and

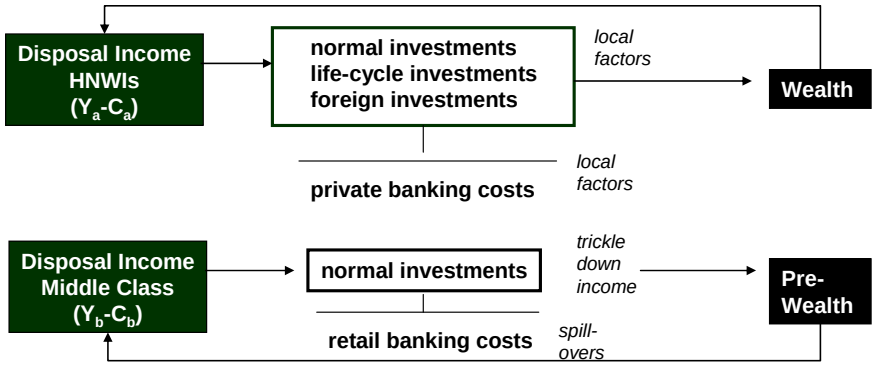
wealth management) than other jurisdictions. Second, the future of financial advice to the rich probably lies in "life cycle management" style services – like saving for education, retirement, bequeathing wealth to relatives, and so forth. The advisors working in financial institutions also have an important role to play in providing education and opportunities to high and ultra-high net worth individuals. Third, financial institutions play a role in "trickling around" wealth among the top wealth centiles. Yet, academic researchers understand very poorly the mechanisms by which such "trickle around" occurs. Fourth, other actors – besides financial institutions – may play a key role in fostering the growth of wealthy (and the numbers of wealthy). Governments (and their policies) may play such an important role.

The Model and Its Results

The Model in Simple Form

Our model of wealth accumulation follows the standard savings approach we described in the first parts of our paper. Figure 52a presents – in simplified form – the model we use in our paper. We start by assuming two types of saver-investors – those with enough savings to place their money with a private banker (wealth manager) and those that do not. As shown in the upper part of the figure, these private bank clients will divide their funds over "normal" (domestic) investments, special services (like IRAs, saving for education, health insurance and so forth) and foreign investments. Local factors – like the rule of law – affect the ultimate pay-off in wealth as well. We assume that human capital and other factors enter the model by affecting the rate of return to financial investment (a simplification of real life). In the lower part of the figure, we show investments made by economy-class (non-premium) clients. These saver-investors have only normal, domestic investments to choose from.

Figure 52a: A Simple Model of Wealth Management and Private Banking Leads to the Financial Sector Development which Creates HNWI Clients



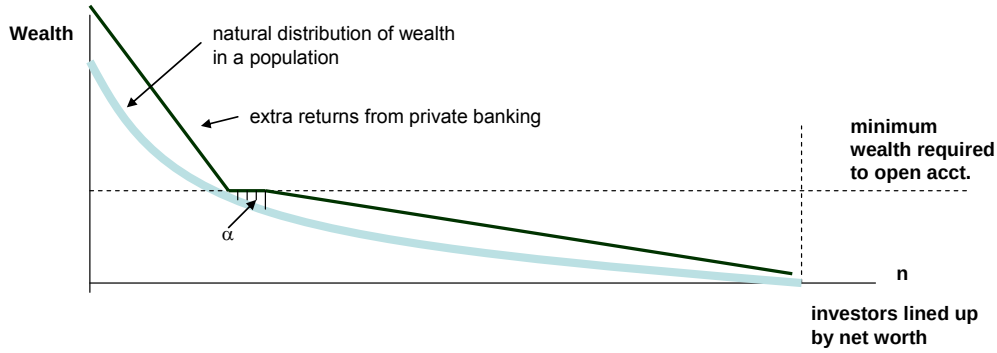
The wealth management industry generates wealth in our model in three ways. First, wealth managers find higher yielding investments (where some of these investments may come from insurance products or lower risk-adjusted returns coming from increased diversification. Second, wealth managers find better investments – which become

available to ordinary bank customers and savers as well. Income may "trickle down" through increased incomes of the wealthy – which translate into increased incomes for the less wealthy. In practice, the exact mechanism is not important for our model. Third, the wealth manager or private banker's costs fall for all customers with increases in assets under management in their private banking segment. Such cost efficiencies can occur within the same institution – or across institutions. Again, the exact mechanism of propagation does not matter. As we described in the literature review, our model follows Gaytan and Ranciere (2004) – with the amendments we have just described.

To prove the three effects we hypothesize, we do not need to observe the effects the wealth management service has on other parts of the bank's and/or broker-dealer's deposit base. The best empirical study would correlate changes in assets under management and performance measures (like cost per account) with changes in client wealth at the micro-level. However, the large broker-dealers do not provide this data. We only require that the returns to financial institutions increase and costs fall. Yet, if higher financial institution returns, lower costs and/or other indicators related to financial sector institutional development correlate with changes in wealth, we can deduce that financial institutions play some part in these changes in wealth.

How do wealth management and private banking help push ordinary savers into the ranks of the high-net worth individuals? Figure 52b shows the way that we hypothesize the wealth management industry leads to increased numbers of high net worth individuals (or at least affluent investors). Most studies show wealth geometrically distributed in most populations (which we show as the light blue line). Wealth management has two effects. First, wealth management services increase returns (and thus wealth) to all classes of investors. As shown in the figure, wealth management has the effect of "pushing" individuals normally unable to deposit the account opening minimum into the class of the affluent. We show this part of savers as the area α. Those with wealth management accounts also earn higher rates of return – thereby creating higher numbers of affluent investors. Many individuals with private bank accounts may not be HNWIs. However, they will almost certainly be affluent investors (having a net wealth of over $100,000).

Figure 52b: Modelling How Wealth Management and Private Banking Helps Middle Class Investors Rise into the Ranks of HNWI Clients



The model then tests whether changes in changes in wealth push a higher proportion of adults into the affluent wealth bracket. In Figure 52b, an easy way to think about such an effect would be to imagine the light blue line shifting outward (to the right). As wealth increases, clearly a higher proportion of adults with enough savings to open a private banking account (n) would qualify as a proportion of all adults ($\underline{n}$). Another way to think about the models would be to imagine that the green lines become steeper – giving each group of potential wealth holders more "bang for the buck." Remember that the green lines shows actual levels of wealth when a wealth management industry operates in a country.[17]

Our model thus consists of two parts. First, we test the extent to which changes in financial institutions affect wealth (through their ability to allocate resources to different investments cheaply and profitably). Second, we test the extent to which changes in financial sector institutions affect the proportion of adults "pulled" into affluent status. As a model, our work simplifies the real world. However, we hope that our simplification tells us something useful about the ways the wealth management industry can grow its client base (in assets and head count) over time.

Empirically testing the model

Any empirical test of a model consists of three parts – variables we want to explain (or dependent variables), variables we know about (independent variables), and variables whose effects we need to watch out for (or control variables). Our independent variables consisted of levels of wealth and changes in those levels. We also used the level and changes in the proportion of affluent adults in a country to measure the extent to which financial institutions (and other factors) helped create the private banking clients of tomorrow. Our independent variables basically consisted of four groups: variables related to the distribution of wealth and income, variables measuring financial institution and sector development, variables related to the coverage and depth of life and other kinds of insurance and variables related to each countries' macroeconomy and institutional quality. We tested whether four possible theories best explained the evolution of wealth across countries. Figure 53 shows each of these theories – and the way each theory translates into an empirical test. Realistically, our model of wealth management and private banking only comprises one of a range of possible explanations for the way wealth (and the number of wealthy) grows in a country. We tested the various theories in order to see which one best fit the data by running four sets of panels – with levels of wealth and levels of affluent investors (as a proportion of the adult population) as the factors we tried to explain.

[17] Readers with a bit of economics background will see figure 52b as a reformulation of the Gaytan-Ranciere model we discussed previously. We show "today's wealth" (from figure 29b) as function of yesterday's wealth – and overlay it on a geometric wealth distribution.

Figure 53: General Modelling Strategy Adopted in Our Paper

Models	Description
Independent variables	Levels and rates of change of wealth and proportion of affluent adults in a population **Variables:** level of wealth in 2000 and 2010, rates of change from 2000 to 2010 in wealth, proportion of affluent adults in a population, rate of change of the proportion of affluent adults from 2000 to 2010.
Panels of Models	
Distribution of wealth model	Assesses extent to which levels and rates of change of wealth and the proportion of affluent individuals depends on the distribution of income. **Variables:** Gini coefficient, proportion of income held by the top 1% relative to the top 10%, proportion of income held by the top 10% relative to the whole population, GDP per capita.
Financial sector development models	Targets the main hypotheses tested in this paper – that quality of financial institutions determines (or at least explain) wealth across countries. **Variables:** banks' overhead costs-to-total assets ratio, banks' net interest margins, bank's returns on assets, bank's returns on equity, and bank's cost-income ratios.
Insurance models	Assesses the extent to which insurance helps to lock-in wealth – therefore allowing wealth to grow. **Variables:** life insurance premiums (as a percent of GDP), non-life insurance premiums (as percent GDP), export and import of insurance services.
Macro and institutional factors models	Assesses the extent to which macroeconomic and institutional factors primarily determine the extent to which wealth accumulates across countries. **Variables:** an indicator which proxies countries' rule of law, an indicator which proxies their economic freedom, foreign direct investment, consumption, the size of the economy (wealth-to-GDP), returns to equity investment (and/or bank deposits when no local stock exchange exists).

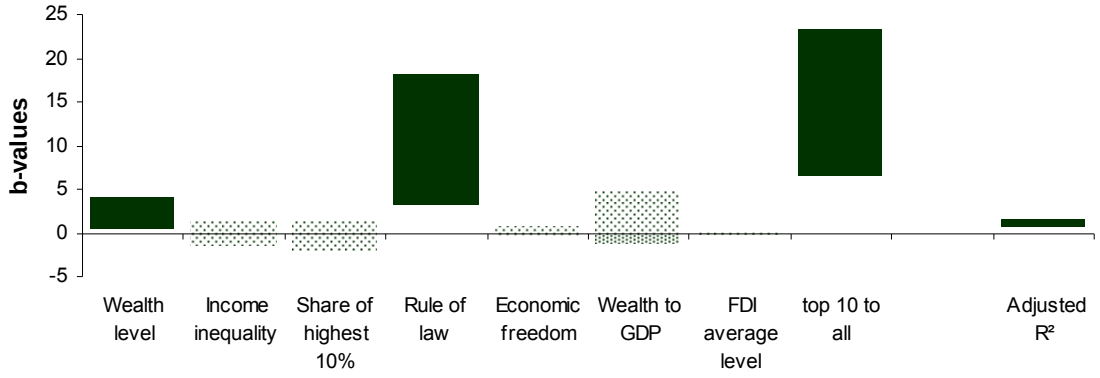
A number of variables could interfere with our analysis. We had to analyse and remove their effects (in other words "control" for their effects). We have a dummy variable to control for regional effects (for the 6 major World Bank regions), a control for the size of wealth (as wealth divided by GDP), annual population growth rate, local equity returns (or bank interest when no domestic stock market index exists), level and change in consumption, Gini coefficients, insurance imports, income of the top 10%, firms using bank finance, rule of law, economic freedom, foreign direct investment, and change in overall GDP per capita. In general, we had to "pull away" some of the variance in our analysis caused by these variables. As such, most of our models included these controls in one form or another.

We also had to take a number of factors into account during our analysis. First, wealth grows geometrically. Such geometric growth means that changes in wealth depend on levels of wealth. In other words, we had to look at changes in our variables as well as levels. We also had to look at the way the level of wealth actually affects its rate of change. Second, we dealt with a dataset – part of which came from surveys and reliable information and part from regression analysis. As such, we had to exercise care in the way we used regression analysis on a dependent variable which primarily came from regression analysis itself. As such, because the Davies data we use relied on stock market capitalisation in order to arrive at many estimates of wealth, we do not use stock market capitalisation as a predictor. We also had to look at errors in our analysis and make sure no regular patterns emerged which signalled that we had committed errors in our analysis. Econometricians know these problems by names like omitted variable bias, heteroskedasticity, serially correlated residuals and so forth. In practice, we just looked at our residuals to see any patterns and used *Statistica*'s residual analysis suites to take a closer and more rigorous look when possible patterns emerged in the unexplained bits of our regression analysis.

Do changes in wealth lead to more potential private banking clients (or visa versa)?

The number of affluent persons in a country correlates with the level of wealth. Figure 54 shows that one increase in the log value of wealth corresponded to a one percent increase in the proportion of affluent persons in a country. Having a larger percent of national wealth controlled by the top 10% corresponded to increases in the proportion of affluent individuals – with increases of 1% corresponding to 10% increases in the number of affluent. Institutions also mattered – with strong effects on the rule of rule (though surprisingly not for economic freedom). These regressions explained the percent of affluent potential investors across countries relatively well – explaining between 64% and 86% of the variation in the proportion of affluent persons (depending on the model).

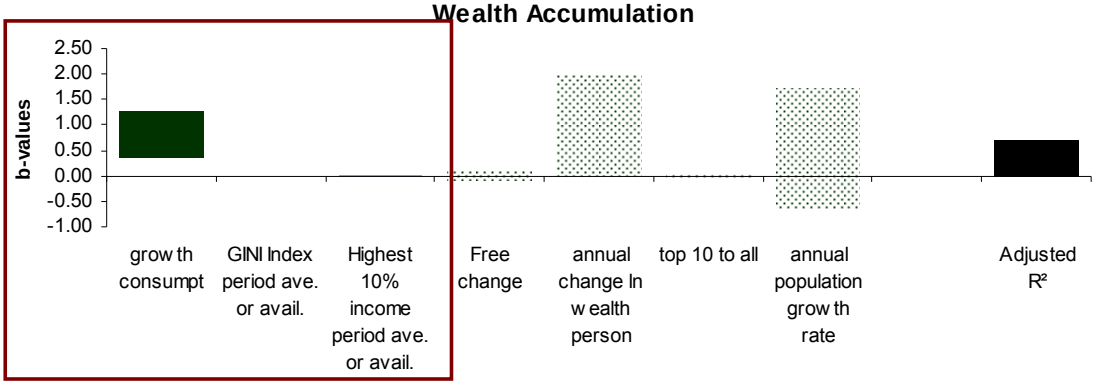
Figure 54: Proportion of Affluent Depends on Levels of Wealth and Wealth Shares of High Net Worth Individuals



The graph shows the extent to which a number of independent variables affect proportion of affluent adults (relative to the total adult population) in 2010. The bars show the range of b-value estimates across models. Variables in solid shading statistically singifcant at the 95% level. We left out annnual population change and annual change in wealth due to large -- but statistically insignificant-estimates. Wealth per person had no impact.

Creating more affluent clients appears to have a limited impact on the overall accumulation of wealth. Figure 55 shows the association between changes in national wealth and increases in the proportion of affluent adults. The only four variables that explain changes in national wealth relate to the growth of consumption during the period (with roughly half to a full correspondence with changes in wealth). Changes in the Gini efficient have a -1% effect on changes in wealth (with more equality translating into faster wealth accumulation overall). Changes in the highest 10% bracket though, corresponded to a 1% increase in changes in wealth. Overall these regressions relatively poorly explained the change in wealth in the period (explaining roughly 30% of the variance in the data related to changes in national wealth).

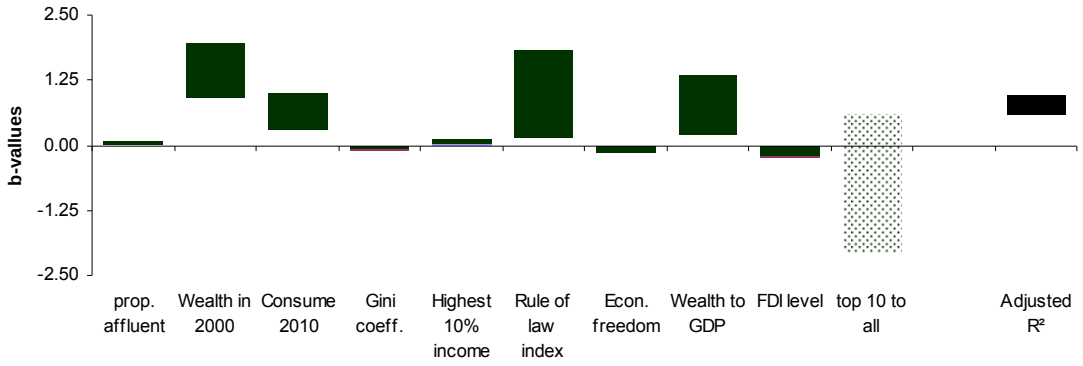
Figure 55: Changes in the Distribution of Wealth Have Microscopic Effects on Wealth Accumulation



The graphs shows the change in wealth from 2000 to 2010 as the dependent variable. Variables in solid colours significant at the 95% level. Bars show the range of our parameter estimates. We do not show the proportion of affluent adults, the change in the rule of law indicator, the level of total wealth in 2000 and the change in FDI over the period as they had negligible effects on wealth.

The distribution of wealth – while only very slightly affecting changes in wealth in the 2000s – correlates rather strongly with wealth levels. The proportion of affluent persons in each country correlates with wealth (a one percent increase in that proportion correlates with an increase in wealth of one log level). Wealth in 2010 also strongly (and unsurprisingly) correlated with wealth in 2000 – as well as with consumption in 2010. Economies with a higher proportion of the population earning the top 10% of incomes correlated with wealthier economies (in absolute terms). The rule of law has a large – though variable – likely impact on wealth levels.

Figure 56: Distribution of Income (and other factors) Affect the Level of National wealth



The figure shows the effects of various factors on the level of wealth in 2010. The bars in the graph show the range of parameter estimates in our regressions. Variables shown in solid colour statistically siignificant at the 95% level (or better). We do not show results for wealth per person in 2010 and geographical area as they have no statistical or practical correlation with wealth levels across countries. The dummy variable measuring differences between high-income countries and other countries is significant.

In summary, we know from these figures that affluence tends to correlate with affluence – as we postulated. More wealth correlates with higher proportions of affluent and HNWIs (as measured by those holding the top 10% of the national income). Thus, we can speculate that **increasing assets (through better portfolio management) increases the number of potential clients for wealth managers.** The distribution of wealth affects the level of wealth – but not changes to that wealth. We can thus speculate causality does not work the other way -- that increasing the number of affluent investors would not significantly increase assets under management (as more HNWIs would naturally correlate with higher levels of wealth). These results are also consistent with our model – as marginal increases in the number of investors entering into affluence does not contribute greatly to national wealth (at the margin).

Does financial institutions' quality affect the accumulation of wealth?

At first glance, the depth and profitability of financial institutions appears not to correlate with levels or changes in the level of wealth in 2010. Figure 57 shows the possible influence of a number of factors in explaining differences in wealth levels across countries in 2010. The factors relate to indicators of financial sector development across countries. Wealthier countries managed to hold a larger proportion of wealth (as a

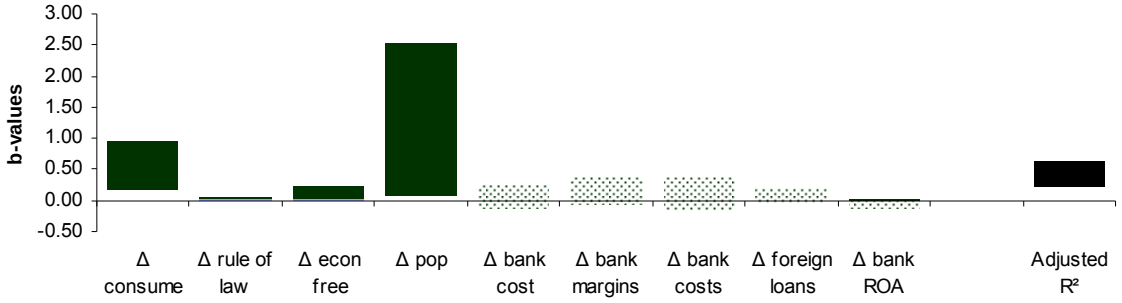
proportion of income). The initial level of wealth strongly, positively, and unsurprisingly correlates with the final level of wealth in 2010. Countries with higher rule of law had higher levels of wealth (though we can not know the extent to which having more wealth allowed these countries to rule by law). Higher investment returns and higher levels of foreign direct investment (as a percent of GDP) correlated with lower wealth levels. Such results may reflect the rapid growth of developing economies in the 2000s. Proxies for the quality and depth of financial sector development – including banking costs, return on assets and profitability – did not correlate with the level of wealth over the period.

Figure 57: Financial institutions have little apparent role in explaining wealth levels across countries

The data in the figure show the factors affectiing level of w ealth across countries in 2010 (expressed in log values). Variables w hich statistically significantly correlate w ith the depedent variables at the 5% level appear as solid green bars. Statistically insignificant variables appear as dotted bars. Each bar show s the range of parameter estimates in our analysis. The figure omits bank returns on assets, bank overhead costs (as a proportion of total assets), net interest margins and the effect of geographical region staitstically insignificant effects as w ell as either excessively high or low variance in parameter estimates.

Changes in the quality of financial institutions also did not correlate with changes in wealth. Figure 58 shows the relationship between changes in wealth and changes in the quality (cost, profitability, depth and so forth) of financial institutions. Changes in wealth passed through into changes in consumption. Changes in wealth also correlated with changes in population growth. The only other statistically significant variables relate to changes in the quality of institutions. Changes in the rule of law proxy and proxy for economic freedom positively and significantly correlated with changes in wealth.

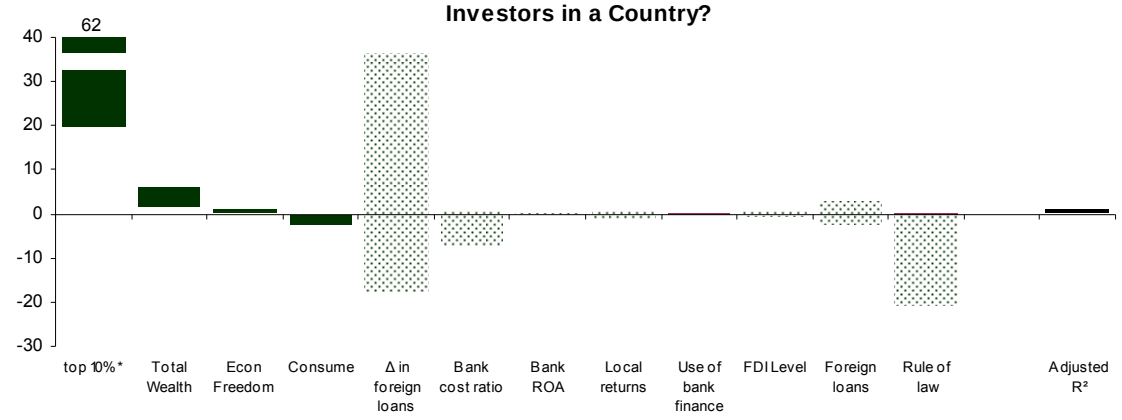
Figure 58: Changes in the Financial Institution Quality Have Little Effect on Generating Wealth?



The figure shows the effect of changes in a number of variables on changes in wealth between 2000 and 2010. The bars show the range of parameter estimates in our analysis. We do not report the effect of change in FDI, local returns, geographic grouping, wealth-to-GDP, and firms using bank finance (as they had no negligable effects on the change in wealth). Solid green bars show statistically significant factors affecting changes in wealth which at the 95% level (or better).

Similar results hold for the effect of financial institutional quality on the proportion of potentially affluent clients. The proportion of affluent clients (expressed as a percent of the adult population) correlates with incomes held by the 10% of income earners. Such a correlation suggests that income inequality may lead to the creation of more potentially affluent investors (though much more research is required). Wealthier countries also – unsurprisingly – have more affluent adults. Higher levels of consumption also correlate (unsurprisingly) with fewer affluent investors. All the variables related to the quality and depth of financial institutions do not correlate with the proportion of affluent adults in a population. The level of economic freedom – and membership in the OECD – does significantly correlate with the proportion of affluent investors.

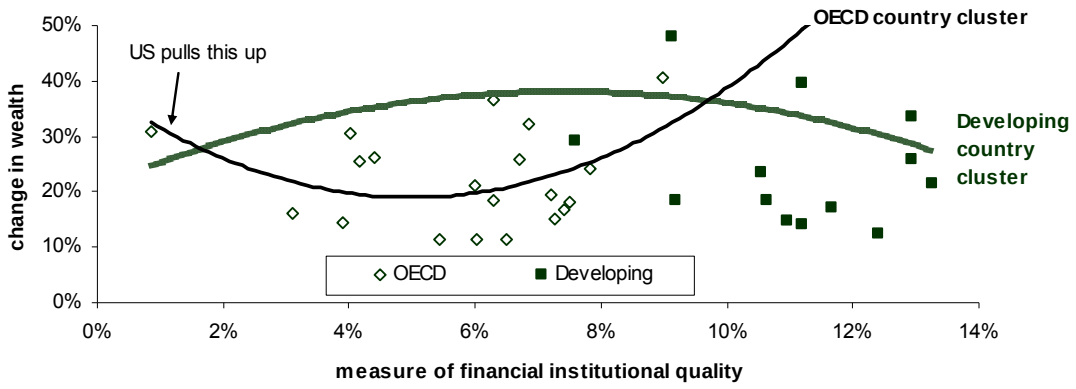
Figure 59: Financial Institutions Do Not Seem to Effect the Proportion of Affluent Investors in a Country?



The figure shows the effect of a number of factors on the proportion of affluent adults in a county. Each bar represents the range of parameter estimates in our analysis. The parameter estimate for the effect of wealth held by the top 10% of the population ranges from about 20 to 62. We omitted geographic classification, bank overhead cost ratios, net interest margins, annual population growth, changes in bank overheads, bank ROAs and change in equity market capitalisation (as a percent of GDP) due to statistically insignificant and large parameter variance estimates.

The strong role played by membership in the OECD suggests that institutions play a larger role in explaining changes in wealth over time. Figure 60 shows the relationship between changes in wealth and changes in a composite of financial variables during the 2000s.[18] A positive relationship exists between changes in wealth and changes in the quality of financial institutions for upper-income OECD member countries. For other countries, the relationship is mostly negative. These data also tend to support mounting evidence for a "non-linear relationship" between finance, financial sector development and various growth-related outcomes -- like increases in wealth (Rioja and Valev, 2004).

Figure 60: Large Wealth Management Practices in Lower Income Countries May Harm the Overall Development of Wealth?



The graph shows changes in wealth and corresponding changes in a cluster proxying financial institutional quality by creating a composite of changes in net interest margins, changes in life insurance premiums (as a percent of GDP), and changes in stock market total traded value (as a percent of GDP).

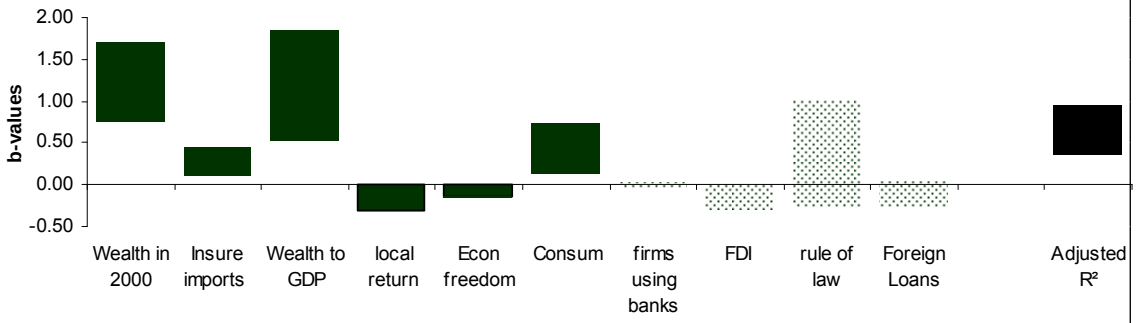
These data lead to several tentative conclusions. First, the quality of financial institutions has a relatively small influence on the accumulation of wealth – at least outside of the OECD. Wealth management firms (and wealth managers) likely will play a relatively small role in wealth accumulation in the upcoming years (if past trends serve as a guide). Second, the quality of public institutions and laws matter far more than the quality of a wealth manager's firm. Across groups of countries, the extent of the rule of law and economic freedom explained levels and changes in wealth far more than the quality of financial institutions (as measured by their depth and profitability). Membership in the OECD represented the most important predictor of wealth. Third, multi-national wealth management firms need different service offerings for OECD versus non-OECD markets. In the OECD, the wealth management firms can focus on the traditional factors (their costs, gathering assets, and so forth). In the developing world, wealth management firms would do well to focus on helping clients with a broader range of services which proxy the services they might receive throughout the OECD. These wealth management firms might help client resolve legal issues, deal with government, campaign for the liberalisation of investment regulations and so forth.

[18] As explained in the graph, and further in Appendix II, the composite represents a factor which combines the variance of variables related to the quality and depth of financial institutions in each country.

What is the role for insurance, lending and other wealth management services?

The data provide a very mixed picture of the effect that insurance (and non-insurance) offerings have on wealth. Figure 61 shows the extent to which a range of factors correlate with wealth levels across countries. The proportion of life insurance premiums (and non-life insurance premiums) to GDP does not statistically significantly correlate with levels of wealth across countries. However, insurance imports do correlate – suggesting that the wealthy prefer to import their insurance rather than use domestic insurers.[19] Previous levels of wealth and wealth-to-GDP strongly correlates with wealth levels in 2010 – as do consumption levels. Surprisingly, economic freedom negatively correlates with wealth levels in this analysis – as do local investment returns. These data suggest a strong interaction in the way insurance markets affect the accumulation of wealth. However, the limited tools of statistical analysis provide no further explanation.[20]

Figure 61: Insurance Imports Better Predictor of Wealth than Domestic Financial Products



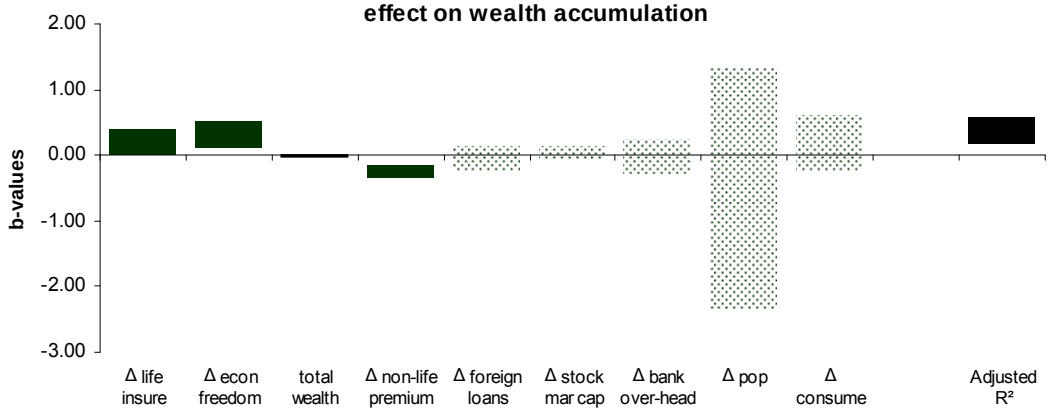
The data in the figure show the range of b-values for factors affecting the level of wealth across countries in 2010. The bars show the range of parameter estimates across our analysis. Variables which statistically significantly correlate with the depedent variables at the 5% level appear as solid green bars. Statistically insignificant variables appear as dotted bars. Life insurance and non-life insurance premium levels (as a percent of GDP) did not statistically significantly correlate with wealth levels. However, a country's geographical classification did statistically signficiantly help to explain differing levels of wealth after taking other factors shown in the figure into account).

The proper specification – looking at the way changes in insurance affect changes in wealth – does provide much more explanatory power. Figure 62 shows b-value estimates related to the way that changes in life insurance and non-life insurance premiums (as a percent of GDP) relate to changes in wealth. Changes in life insurance premiums correlate positively with changes in wealth. Changes in non-life insurance premiums correlate negatively. Like with the other analyses, changes in economic freedom correlate with changes in wealth – as does membership in the OECD. Other banking and financial variables do not statistically significant correlate with changes in wealth.

[19] Insurance regulation usually strongly discourages cross-border competition in life and other types of insurance. These results require more research.

[20] In slightly more technical language, these results suggest an omitted variable bias – as insurance-related variables draw away variance and cause the other variables to exhibit unusual behaviour. As analysis focused on levels, rather than rates of change, we would expect our analysis to be highly mis-specified. Thus, these unusual patterns are not particularly remarkable.

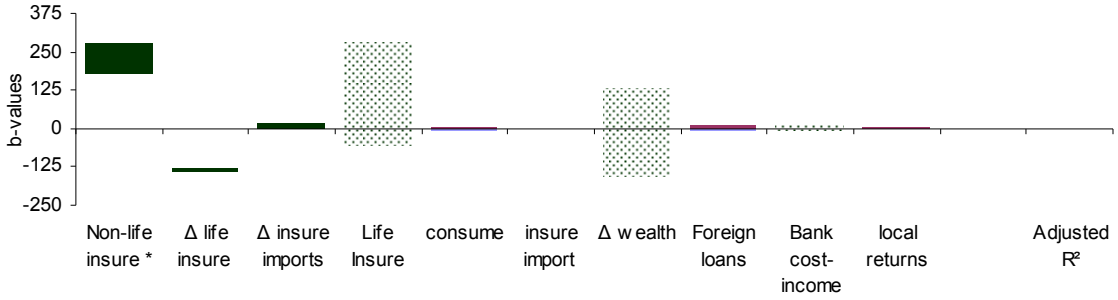
Figure 62: Insurance (and non-insurance) does have an effect on wealth accumulation



The data in the figure show the range of b-values for factors affecting changes in wealth across countries in 2010. Bars show the range of parameter estimates across models. Variables which statistically significantly correlate with the depedent variables at the 5% level appear as solid green bars. Statistically insignificant variables appear as dotted bars. Changes in FDI, local returns and insurance imports did not statistically significantly correlate with changes in wealth. Mermbership in the OECD did statistically signficiantly help to explain differing growth rates in wealth (after taking other factors shown in the figure into account).

Life insurance (and other kinds of insurance) seem to have the strongest effects on the proportion of affluent adults in a country. Figure 54 shows the relationship between the proportion of affluent adults in a country and various explanatory variables. Non-life insurance premiums positively correlates with the proportion of affluent potential investors. Changes in life insurance premiums negatively correlate with this proportion. Such a relationship – if correct – suggests that life insurance payments generally impoverish the upper middle classes. The level of life insurance payments has no statistically significant relationship with the proportion of affluent adults. However, changes in insurance imports do statistically significantly correlate with this proportion. Such a relationship implies that foreign insurance tends to better protect the affluent. Or the affluent could prefer to consume foreign insurance rather than their domestic variety (particularly in developing countries).

Figure 63: Life (and other) Insurance Appears to Have an Effect on the Proportion of Affluent People in a Country



The data in the figure show the range of b-values for factors affecting the proprtion of affluent adults across countries in 2010. Bars show the range of parameter estimates in our analysis. Variables which statistically significantly correlate with the depedent variables at the 5% level appear as solid green bars. Statistically insignificant variables appear as dotted bars. The level of FDI, economic freedom, membership in a particular geographical grouping, and changes n non-life insurance premiums paid as a percent of GDP did not statistically significantly correlate with the proportiion of affluent adults across countries. Mermbership in the OECD did statistically signficiantly help to explain differing proportions of affluent adults (after taking other factors shown in the figure into account).

* The b-value related to non-life insurance premiums as a proprtion of GDP maxes out at 1156 -- clearly an unstable parameter estimate.

These results suggest that insurance products could play a role in increasing assets under management and client numbers. The level and changes in wealth correlate – to a limited extent – with the depth and growth of insurance markets. If such trends hold at the micro-level, then insurance products could provide a way to make clients wealthier. The proportion of affluent adults correlates with the depth of insurance markets. Thus, offering insurance could also lead to the development of more affluent clients.

Conclusions

The quality of institutions matters more than the quality of financial institutions for wealth accumulation at the national level. For wealth management firms entering emerging markets outside of the OECD, the quality of institutions matters greatly for the likely number of private banking clients and the amount of money they will place with wealth managers. In these relatively under-developed markets, wealth managers would best grow their book of business by providing insurance-related and "life-cycle management" products and services. Our results also tend to debunk the myth that wealth accumulates from equity market gains or changes in foreign investment.

How can private bankers and wealth managers (and their firms) in developing countries best grow their books? Our results show that they should encourage the governments in the countries where they work to establish more efficient institutions – particularly focused on the rule of law and economic freedom. In the upper-income OECD member countries where wealth management firms operate, the quality of their service offering (in terms of cost, return on assets and so forth) likely impacts on the volume and value of clients. In lesser developed countries, overall institutional quality plays a larger role.

In the developing world, wealth management firms would do well to focus on helping clients with a broader range of services which proxy the services they might receive

throughout the OECD. These wealth management firms might help clients resolve legal issues, deal with the government, campaign for the liberalisation of investment regulations and so forth. The most successful wealth management firms already see their role as life-coach to their high and ultra-high net worth clients. In the developing world, this remit will likely extend much further than in the OECD. For wealth management firms that rise to the challenge, they may be able to command higher premiums on their services than their OECD-only based competitors.

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Appendix I: The Model

Our paper hopes to answer very practical questions confronted by senior managers in wirehouses by looking at broader trends affecting the wealth management industry internationally. Our paper (as we already mentioned) extends the Gaytan and Ranciere (2004) model to explain the wealth management segment of financial intermediation. However, for readers less interested in theory – we can explain our model using a simpler example. Imagine (hypothetically) a wealth manager (let's call him Carlos) works for a large international wealth management firm in Mexico City. He wants to know, if he manages his clients' money better, will his effort bring him more business? In theory, his current clients should get richer and newly rich prospects should walk into his office. We can not tell Carlos for sure about the effects on his own particular book of business – we don't have data about his current book, the extent to which his current book generates referrals or the way his current clients make other potential clients more wealthy. But we do have data about the extent of financial sector development over time and across countries as well as the amount of wealth and the number of affluent people in Carlos' economy (and many others). We can guess – using statistics – whether more money placed with financial institutions correlates with changes in wealth and changes in the number of affluent persons. We can – in other words – provide broad conclusions which may help wealth managers like Carlos' senior managers focus their institution's effort.

Modelling and Specifying the Estimation Method of Wealth Accumulation

We start our model assuming two kinds of investors – wealthy investors who meet the minimum requirements for opening a wealth management account and those who do not. We assume – particularly at the beginning of our modelling exercise – these two classes of investors have resources W_{it} for $i=(a,b)$, where a represents high-net worth individuals as a group and b represents other investors at time t. We assume exogenously-given first-period wealth to keep the model simple. We assume that each group has exogenously given consumption wants and needs, C_a for high net worth investors and C_b for other investors. We further assume, for simplicity sake, that each group's wealth comes from reinvesting any returns on invested wealth minus wealth they have consumed in that period. These individuals sweep their savings each year into a wealth management account (or ordinary account if they do not have enough wealth to qualify to open a wealth management account). Affluent persons' investment, at least in the first period of their lives, equals the difference between their exogenously-given wealth and their consumption, or $I_{at}=W_{at} - C_{at}$ at $t=1$. For less affluent investors, they invest $I_{bt}= W_{bt} - C_{bt.}$ They invest less than the high net worth group in the first stage of their productive life ($I_b<I_a$). Each investor's membership in group a or group b depends on the value of their investment. Individuals who invest above a certain threshold amount (I^*) belong to group a and those who invest less belong to group b.[21]

[21] Readers unfamiliar with this kind of modelling may ask why we choose such a simple formulation. In general, economists prefer to model from the ground up (or from micro-foundations in the language of economics).

Membership in each group affects each group member's access to investment opportunities and returns. Members of both groups of investors earn a normal return on domestic investments r_1. However, the high net worth members of group *a* place their funds with a professional private banker who has access to investment products and services unavailable (or only available at great information cost) to other investors. High net worth members of group *a* meet the private banker's minimum investment requirements – and have access other life-cycle management related investments (like insurance, educational planning, retirement plans and so forth) which earn a return of r_2. The high net worth members of group *a* also have access to foreign investments which earn a return of r_3. The wealth manager will allocate I_{at} among the three types of investments in order to maximise the overall risk-adjusted return. We assume that $r_3 > r_1$ and $r_2 > r_1$ – otherwise, these allocations would equal zero. The parameter λ_i represents the allocation of funds between three types of investments – domestic investments, life-cycle related investments (like education and retirement planning) and foreign investments. Wealth managers allocate the high net worth investor's funds across the three types of investments λ_i such that $i=(1,3)$ and fully allocates the portfolio such that $\lambda_1 + \lambda_2 + \lambda_3 = 1$. Wealth managers charge their clients a fee *c* for their services (expressed as a proportion of the investment). To keep the model simple, we assume that wealth managers do not adjust their fees based on assets under management, the size of the investment or other factors. We also assume that wealth managers work in a competitive market such that commissions cover their costs and no extra-normal profits accrue to wirehouses or their account representatives.

High net worth clients' investments depend on four factors. Investment in period $t+1$ equals wealth in the previous period (Wt), returns on domestic investments r_1, returns to life-cycle investment r_2, returns to foreign investments r_3, asset managers' fees *c* and the amount of spending on personal consumption *C*. Investment for these high net worth individuals at the beginning of the following period thus equals:

$$W_{a(t+1)} = I_{a(t+1)} = W_{at} + [(r_1\lambda_1 + r_2\lambda_2 + r_3\lambda_3)]W_{at} - c_a W_a] - C_{at} \qquad (2).$$

Readers with a background in economics will see this equation basically repeats equation (1) from the text. Wealth equals income and savings minus consumption. We could complicate the model by including wages (returns to labour) which come from changes in high net worth individuals' changes in human capital. Financial investments will affect their human capital – as wealth allows these investors to attend better schools, insure against unfortunate events, and learn important skills through the process of monitoring their investments. We do not include human capital or wages in the model. Returns from work would just exacerbate the effects already present in the model. In practice (particularly for high net worth individuals) investments in financial capital serve as complements rather than substitutes for investments in human capital. Any returns to human capital (in the form of wages) would simply accrue in addition to the financial returns we have already modelled.[22]

[22] For non-affluent investors, financial and human capital investments may well serve as substitutes (as a middle class investor must decide whether to invest in the stock market or attend a master's course to make him or herself more marketable on the labour market). However, we leave these issues aside for now.

Non-affluent investors have fewer investment opportunities – but benefit from positive spill-over effects from wealthy investors' placements. Non-affluent investors do not have access to advice about life-cycle management investments or foreign investments (thus $\lambda_2=0$, $\lambda_3=0$ and so $\lambda_1=1$ for these investors). These investors must still pay for putting their money in a bank. However, their banking and investment costs clearly fall below those of the affluent (such that $c_b<c_a$). At first glance, these investors appear to be doomed to a life of comparatively low return investments. However, as we discussed in the paper, these investors can expect three positive spill-over effects from private banking markets.

Three positive spill-overs will affect investments made by non-affluent investors. First, overall access to investments increases – as wealth managers find higher return domestic investments for their clients which become the talk of the financial press.[23] Returns to domestic investments r_1 may also increase for both classes of investors. Second, middle class non-affluent investors they will have more investable funds because of increased consumption and investment in the domestic economy by high net worth individuals. These "trickle around effects" result in higher returns to domestic investments (including investments made by non-affluent investors in their businesses and other commercial activities). We can model these trickle around effects as a simple "top-up" (or additional returns) to investments made domestically. If α represents these extra returns (for example a 2% extra return accruing to domestic investment), then $(1+\alpha)r_tW_{bt}$ represents the extra return to non-affluent investors investing their wealth locally. Third, their banking costs decrease as more investments by high net worth individuals grow. Most banks and investment houses offer both private banking and retail banking. As they acquire more assets under management (AUM), they develop procedures, bureaucratic systems and their staff gains experience dealing with client accounts. More organisational capital and learning effects reduce the already relatively low costs of servicing these accounts. The parameter φ can represent the decrease in the cost of servicing these accounts, where $0<\varphi<1$.

The total wealth of a country – the amount reported in reports like the *Global Wealth Report* or the *Credit Suisse Global Wealth Databook* -- represents the wealth of these two groups. National wealth thus equals:

$$W_{t+1} = W_{at} + [(r_1\lambda_1 + r_2\lambda_2 + r_3\lambda_3)]W_{at} - cW_{at}] - C_{at} + W_{bt} + [r_1(1+\alpha)W_{tb} - (c\varphi)W_{bt}] - C_{bt} \qquad (3).$$

Several modifications can make the model more realistic – and simpler. First, the returns on financial services related to the investor's life-cycle depend on the costs paid by the high net worth investor. More costly services should result in better investments and planning – and thus higher returns. More wealth should also result in more and better investments in these life-cycle investments. These effects make r_2 a function of

[23] If the reader does not believe in the first effect, higher returns to domestic investments may come from greater liquidity and availability of funds which finance domestic investments in local companies. The exact mechanism by which these spill-overs propagate is relatively unimportant in our model – as we do not have the data to test specific propagation (spill-over) mechanisms.

commissions c and overall wealth W. Second, we can assume that middle class investors' consumption represents a relatively fixed and unchanging proportion of consumption by the wealthy (as least over a 5-10 year horizon). The parameter τ represents this proportion and $C_t = C_{at} + C_{bt} < W_t$ and $C_t = (1+\tau)(C_a+C_b) < Wt$ (where C_t equals total consumption and W_t equals total wealth across both classes of investors). In other words:

$$W_{t+1} = W_{at} + [(\lambda_1 r_1 + \lambda_2 r_2(c, W_{at}) + \lambda_3 r_3)]W_{at} - cW_{at}] - C_t + W_{bt} + [r_1(1+\alpha)W_{tb} - (c_b\varphi)W_{bt}] - \tau C_t \quad (4)$$

Defining the impact of financial services like retirement planning on wealth requires a bit of thought. Financial advisors who earn higher commissions should, in theory, spend more time in planning and finding the best types of retirement, education, estate and other plans. The parameter q represents the effect of such commissions on wealth and μ the decreasing effect of such commissions on their ability to translate into wealth. Similarly, wealth invested in these plans actually creates insurance, educational and other markets. We use g to denote the effect on these markets (and π to represent the diminishing effect that wealth has on the development of these markets).

$$W_{t+1} = (W_{at} + W_{bt}) + [(\lambda_1 r_1 + cq^{(1+\mu)/\mu} W_{at} + g^{1/\pi} W_{at}) + \lambda_3 r_3)]W_{at} - cW_{at}] - C_{at} + [r_1(1+\alpha)W_{tb} - (c_b\varphi)W_{bt}] - \tau C_{at} \quad (5)$$

Equation (5) says that next period's total national wealth equals this period's wealth of group a and group b. Additional wealth accrues from returns on domestic investments and life-cycle services for high net worth individuals and returns on their foreign investments. We subtract the consumption of these high net worth individuals (and at the end of the equation the fraction of ordinary investors' consumption expressed as a proportion of the consumption of high net worth individuals). Other wealth accrues from the domestic investments made by ordinary investors (and trickle down effects). We remove the fees these ordinary investors pay to their financial services companies (which represent a proportion of fees paid by the rich).

We can do a bit more rearranging to simplify the model. The parameter p can represent the proportion of wealth held by group a as opposed to group b. As such, $W_t = pW_{at} + (1-p)W_{bt}$. We can also assume that some preference for consumption drives consumption – which we denote by the parameter ω and such a preference is given exogenously. With this bit of rearranging, we arrive at an expression for national wealth we can use in empirical analysis. By linking the way HNWIs and ordinary investors behave, we can express both groups using only one set of variables, or:

$$W_{t+1} = W_t + [(\lambda_1 r_1 + cq^{(1+\mu)/\mu} pW_t + g^{1/\pi} pW_t) + \lambda_3 r_3)]pW_t - cpW_t] + [r_1(1+\alpha)(1-p)W_t - (c_b\varphi)(1-p)W_t] - (1+\tau)\omega C_t \quad 6)$$

or with a bit of rearranging variables,

$$W_{t+1} = W_t + \{\lambda_1 r_1 (pW_t) + cq^{(1+\mu)/\mu}(pW_t)^2 + g^{1/\pi}(pW_t)^2 + \lambda_3 r_3 (pW_t) - cpW_t] + [r_1(1+\alpha)(1-p)W_t - (c_b\varphi)(1-p)W_t] - (1+\tau)\omega C_t \quad (6').$$

At this point, the reader may wish to keep the model variables in mind for the following analysis. Figure A shows the variables shown in equation (6), along with explanations of their meanings. To use the equation, we need to look at how the equation acts under different parameter and variable values (known in economics as comparative static analysis). Preparing for this analysis requires us to group variables together in way that makes sense for our subsequent regression analysis.

Figure A: Overview of Model Variables

Variable	Short Name	Description
λ_1	normal investments	Proportion of wealth invested in the "domestic" asset
λ_2	life-cycle investments	Proportion of HNWIs' wealth invested in life-cycle management investments (like educational planning, 401(k), estate planning and so forth).
λ_3	foreign investments	Proportion in foreign investments
r_i	rates of return	rate of return on each of the 3 classes of investments
c	costs	costs and commissions paid to wealth manager
α	trickle down effect	represents the "trickle down" effects as middle class have more money to invest due to returns earned by HNWIs
φ	cost efficiencies	cost of servicing middle class accounts decreases by a factor
q	advisor motivation factor	represents the effect the payment of commissions has on wealth manager's effort finding life-cycle management products
μ	life-cycle returns	represents the diminishing effect that payment has on advisors' incentive to improve overall wealth through life-cycle investments (can also reflect diminishing returns to life-cycle investments in contributing to overall wealth)
τ	middle class consumption factor	represents the proportion of consumption of middle classes in comparison with consumption of HNWIs
g	sectoral complementarity effect	represents the effect of insurance market development on other markets which affect wealth
π	life-style effects factor	represents the decreasing effect that expanding insurance and other markets have on "real" economic sectors
p	division of economic pie	represents the proportion of wealth held by HNWIs rather than ordinary investors
ω	love of consumption	represents an externally given preference for consuming some proportion of wealth
θ	wealth to GDP ratio	adjustment factor which makes variables defined in GDP terms comparable with model terms expressed as a percent of wealth.
γ_1	business factors	refers to the effect of macroeconomic factors on the "normal" rate of return – like the distribution of wealth or GDP growth.
γ_2	institutional factors	refers to the effect of institutional factors on the "normal" rate of return – like the extent of the rule of law

As a first step, we need to see how future wealth depends on existing wealth. Recalling from equation (6). Rearranging equation (6) a bit yields:

$$W_{t+1} = [1 + \lambda_1 r_1 p + \lambda_3 r_3 p + cp + [r_1(1+\alpha)(1-p)] - (c\varphi)(1-p)]W_t + cq^{(1+\mu)/\mu}(pW_t)^2 + g^{1/\pi}(pW_t)^2 - (1+\tau)\omega C_t$$

and more rearranging,

$$W_{t+1} = [1 + \lambda_1 r_1 p + \lambda_3 r_3 p + cp + [r_1(1+\alpha)(1-p)] - (c\varphi)(1-p)]W_t + [cq^{(1+\mu)/\mu} + g^{1/\pi}](pW_t)^2 - (1+\tau)\omega C_t,$$

$$W_{t+1} = [p^2 cq^{(1+\mu)/\mu} + p^2 g^{1/\pi}]W_t^2 + [1 + \lambda_1 r_1 p + \lambda_3 r_3 p + cp + [r_1(1+\alpha)(1-p)] - (c\varphi)(1-p)]W_t + -(1+\tau)\omega C_t$$

, and finally

$$W_{t+1} = [p^2 cq^{(1+\mu)/\mu} + p^2 g^{1/\pi}]W_t^2 + [1 + (\lambda_1 r_1 + \lambda_3 r_3 + c)\mathbf{p} + [r_1(1+\alpha) - (c\varphi)](\mathbf{1}-\mathbf{p})]W_t + -(1+\tau)\omega C_t \quad (7).$$

We know several things about this equation. First, wealth grows geometrically as a function of the proportion of wealth W^2 held by HNWIs (because the function relates geometrically to the proportion of wealth held by this group of investors, or p^2). Thus, the costs of asset management *c*, advisor motivation *q* and the effect of investments in life-cycle related products *q* have a very strong effect on wealth. We know that the returns earned by HNWIs affect wealth (as shown by the terms before *p*). We also know that spill-overs have an effect on wanna-be affluent investors (thought less then the effects impacting on HNWIs). In brief, we know that tomorrow's wealth equals a function of today's wealth – and grows geometrically with today's wealth.

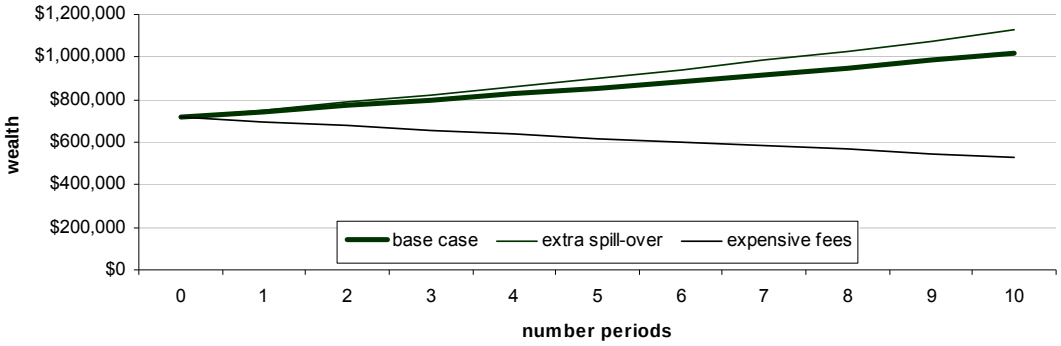
We can re-arrange terms a bit to see what the equation predicts for the ways that differences in financial institutional characteristics impact on wealth. Dividing tomorrow's by today's wealth gives us a rate of change (expressed as a ratio) which we can use to assess the way that wealth changes over time. After doing such a division, we see:

$$\frac{W_{t+1}}{W_t} = 1 + (\lambda_1 r_1 + \lambda_3 r_3 + c)p + [r_1(1+\alpha) - (c\varphi)](1-p) + [p^2 cq^{(1+\mu)/\mu} + p^2 g^{1/\pi}]W_t - \omega\frac{(1+\tau)C_t}{W_t} \quad (8).$$

As for our comparative statistics, we can look at how the growth of wealth (W_{t+1}/W_t) relates to the variables in our model. Differentiating equation (8) yields $\frac{\partial(W_{t+1}/W_t)}{\partial c} = p + \varphi(1-p) + p^2 q^{(1+\mu)/\mu}$. Solving numerically, using a model, proves much easier than trying to find analytic solutions. Plugging in simple (but believable) values for the model's variables provides some insights into the way the model should behave. Figure B shows the growth of wealth over a hypothetical 10 year period. We set up the model so roughly 4 out the 10 deciles (or a *p=.4*) qualified for wealth management services. In the base case, we assume a relatively low market rate of 2% -- with the benefits from insurance-like products of 1% and returns from foreign investments bringing the total portfolio returns up another 1%. In the model looking at higher spill-over effects, we increase the effect of insurance to 3% and foreign investment by 1.5%. We charge an

extra 1% in fees for these extra investments. In this case, the benefits exceed the costs – and the market grows. However, a service-heavy wealth management firm does not do as well. The third variation of the model shows what happens to wealth when commission fees increase to 3%. In this case, with insurance benefits increasing to 5% and returns to foreign investment at 2% -- the wealth manager can expect his clients to become poorer. These results suggest that non-OECD markets must exhibit at least some of these traits (as many became poorer of the 2000s).

Figure B: Wealth Managers Can Strangle their Own Markets With Excess Fees



The data in the figure simulate -- using the parameters mentioned in the model in the text - the growth of overall wealth for changes in broker-dealer costs (commissions).

In order to turn our model into a useable regression equation, we need to add several variables which reflect the real-world. In practice, we know that population growth can affect wealth – as total national wealth will increase automatically as the number of productive workers rises. If we allow (for a moment) that lower case variables reflect wealth per person (where n_t represents the population in time t), then $W_t=w_t n_t$ or simply that $w_t=W_t/n_t$. Then, modifying our basic equation (3), we see that:

$$n_{t+1}w_{t+1} = n_a w_{at} + [\{r_1\lambda_1 + r_2\lambda_2 + r_3\lambda_3)]n_a w_{at} - cn_a w_{at}] - n_a c_{at} + n_b w_{bt} + [r_1(1+\alpha)w_{tb} - (c\varphi)w_{bt}] - c_{bt} \quad (9)$$

substituting values per person in equation (6), we see that,

$$W_{t+1} = [p^2 cq^{(1+\mu)/\mu} + p^2 g^{1/\pi}](n_t w_t)^2 + [1 + \lambda_1 r_1 p + \lambda_3 r_3 p + cp + [r_1(1+\alpha)(1-p)] - (c\varphi)(1-p)](n_t w_t) - (1+\tau)\omega C_t$$

and differentiating,

$$\frac{\partial W_{t+1}}{n_t} = 2[p^2 cq^{(1+\mu)/\mu} + p^2 g^{1/\pi}]n_t w_t + [p^2 cq^{(1+\mu)/\mu} + p^2 g^{1/\pi}]w_t^2 + [1 + \lambda_1 r_1 p + \lambda_3 r_3 p + cp + [r_1(1+\alpha)(1-p)] - (c\varphi)(1-p)]w_t - (1+\tau)\omega c_t \quad (10)$$

which we can arrange, with a bit of maths, as:

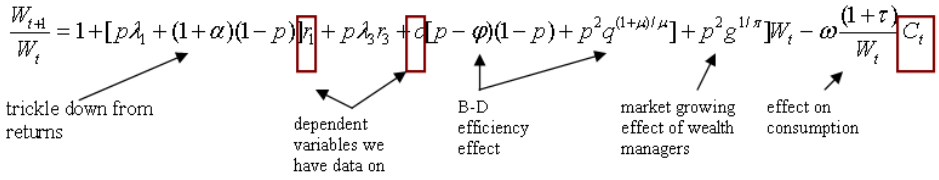
$$\frac{\partial W_{t+1}}{n_t} = [p^2 cq^{(1+\mu)/\mu} + p^2 g^{1/\pi}]w_t^{\,2} + [1 + \lambda_1 r_1 p + \lambda_3 r_3 p + cp + [r_1(1+\alpha)(1-p)] \qquad (10')$$
$$-(c\varphi)(1-p)]w_t - (1+\tau)\omega c_t + \zeta$$

Even a cursory look at the resulting equation (called a first-order condition) shows that we can express wealth as a linear function of population growth. Most of the other terms remain as they are. We can thus simply treat population growth as a separate factor – which we re-label in equation (10') as ς, such that $\zeta = 2[p^2 cq^{(1+\mu)/\mu} + p^2 g^{1/\pi}]n_t w_t$. The main point we want to draw to the reader's attention is that the effect population growth has on different variables can be "sequestered" into a separate term. The reordering of the model into these separate terms helps us to define control variables for our empirical analysis.[24]

We know from the literature review that, in the real-world, other variables besides those we defined in our simple model, will affect wealth. We need to control for these real-world factors which affect our basic model. Some of these variables include the rule of law, economic freedom, foreign direct investment, and so forth. Including each of these variables into our model would turn our simple model into a large and unwieldy piece of mathematics. In the case of foreign direct investment, we can treat these flows as some function of W_t. If $\gamma_1 W_t$ represents wealth attributable to foreign investment, then $\gamma_1 W_t$ clearly is function of W_t. Like we population growth, we can "sequester" the results of such foreign direct investment on wealth into a separate variable (which we might call $f(\gamma_1)$ or simply γ_1.

Our final regression tests the main variables we have defined in our model. Figure C shows how we have rearranged equation (8) into parts which we can shove into a linear regression model – remembering that all linear equation must consist of $y=a+bx_1+b_2x_2+b_3x_3+\varepsilon$.[25] Between the Beck *et al.* data, Davies *et al.* data (from Credit Suisse) and the World Bank data, we have dependent variables pertaining to wealth (and the growth of wealth), financial returns, financial institution costs (bank overhead-costs-to-total assets as well as bank cost-income ratios), financial institution revenues (bank ROAs, bank ROEs, and net interest margins), consumption and bank concentration indices and other variables.

Figure C: Grouping Model Variables Together into Linear Regression Form



[24] We hint throughout our description that such "sequestration" often changes the other variables. We do not describe in detail how each variable changes. In this way, we can focus our exposition on the underlying economics and not turn this appendix into a maths paper.

[25] In many cases, we have had to shove geometric growth into the linear regression model by changing variables which grow geometrically – such that $ln\ y$ may equal $a + b*lnx_1 + b_2x_2 + b_3x_3 + \varepsilon$., where the error term may contain some of variance from b_2. We have dealt with these issues in the usual way.

If our model represented the way wealth (and the numbers of wealthy) actually grow, some "slippage" will occur between our model and our econometric analysis. We had to figure what this so-called slippage would be, and correct for it. As shown in Figure D, most of the variables from our model translate relatively directly into variables for which we have real-world data available. For example, the amount of bank revenues due to returns from domestic and foreign investments would equal, in absolute terms, $(\lambda_1 r_1+\lambda_3 r_3)W_t$. However, returns and net interest margins are given as a percent of GDP. If GDP equalled wealth, then net interest/Y = $\lambda_3 r_3 + [r_1(1+\alpha)]$/Y. However, because wealth exceeds GDP, we need to adjust our independent variable by a correction factor in our econometric analysis. If we define θ = wealth/GDP, then if a variable x_1 equals net interest margins (from Beck *et al.*), then we make these data comparable to the variable from our model by setting $x_1/\theta = \lambda_3 r_3 + [r_1(1+\alpha)]$. In practice, we do not really need to worry about these effects – because wealth is never less than GDP. If we fail to correct for the difference between defining variables in terms of GDP rather than wealth, our parameter estimates might be off by a bit. But the sign of the effect would not be wrong.

We have already hinted at another set of transformations we needed to do in order to conduct our empirical analysis. The general issue involves the way we analyse data which grow geometrically. To take an example, for regressions on changes in wealth and bank profitability, we mix an average log value (as the geometric average of the rate of growth in wealth from 2000 to 2010) and a ratio (interest margin to assets). The final parameters need readjusting – to make sure that log values are compared with log values – and so forth. Providing a derivation of each regression we ran – showing the maths behind the transformation we had to make – would take about 40 pages. We thus omit further discussion of the maths – using Figure D as an illustration of how we had to match regression coefficients with our predicted model coefficients. We should also mention that, in most cases, the "rigorous" regression usually provided the same qualitative results as one done using short-cuts. As such, we really do not wish to concern the reader with such minutiae.

Figure D: Effects Captured by Each Regression Coefficient

Beta coefficient	effects from model	Independent Variable(s)	Empirically available independent variables
Financial Institution Indicators			
β_1	$\lambda_3 r_3 + [r_1(1+\alpha)]$	$\frac{W_t(r_1+r_3)}{\theta}$	Bank revenues (net interest margins and returns on assets/equity) given as a percent of GDP. We need to correct by θ.
β_2	$p+\varphi(1-p)+p^2 q^{(1+\mu)/\mu}$	$\frac{cW_t}{\theta}$	Bank costs (cost ratios) given as a percent of GDP.
Insurance Indicators			
β_3	$\frac{(1+\mu)}{\mu} p^2 cq^{\frac{(1+\mu)}{\mu}-1} + \frac{1}{\pi} p^2 g^{\frac{1}{\pi}}$	$\frac{pq+pgW_t}{\theta}$	We use life and non-life premiums. Both in theory should contribute toward trickle down effects.
Control Variables			
β_1	$p\lambda_1 + \lambda_3 r_3 + (1+\alpha)(1-p)$	r_1 and r_3	rates of return in each of the economies (ri) will translate into wealth and also change the unobservable proportion of investments li.
β_8	$\omega \frac{(1+\tau)}{W_t}$	C_t	Looks at preferences for changing consumption based on wealth
γ1	γ1	Z_1	doing business figures are going to be integrated with rates of return and changes in GDP per capita. In practice, these likely drop out due to collinearity problems.
γ2	γ2	Z_2	institutional factors are going to be integrated with rates of return and changes in GDP per capita. In practice, these likely drop out due to collinearity problems.
γ3	γ3	Z_3	picks up effect of region
ε	ε	–	random country-specific shocks and other factors

Modelling and Specifying the Method of Rising into the Affluent Class

Before we discuss our model looking at the rise into affluence, let us investigate what the core model of wealth tells us about the way changes in wealth filter into the creation of HNWIs. Recall from above, we defined *p* as the proportion of wealth held by HNWIs as opposed to ordinary investors. Looking at how equation (6), we can differentiate with respect to changes in the proportion of wealth held by the wealthy. Such a differentiation (as shown in equation 11) shows (most importantly) that changes in the proportion of wealth held by the wealthy depend on that proportion itself. The factors affecting the wealth of HNWIs also play a determining role.

$$\frac{\partial W_{t+1}/W_t}{\partial p} = (\lambda_1 r_1 + \lambda_3 r_3 + c) + [r_1(1+\alpha) - (c\varphi)] + 2[r_1(1+\alpha) - (c\varphi) + [cq^{(1+\mu)/\mu} W_t + g^{1/\pi} W_t]p \qquad (11).$$

If we let Δw equals the rate of change in wealth, we can see from equation (8) that,

$$\Delta w + \omega \frac{(1+\tau)C_t}{W_t} - [r_1(1+\alpha)] - + c\varphi - 1 = p^2 W_t [cq^{(1+\mu)/\mu} + g^{1/\pi}] + \quad (8')$$
$$p[\lambda_1 r_1 + \lambda_3 r_3 + c + r_1(1+\alpha) - c\varphi)]$$

and finding the differential with respect to p when wealth does not change yields,

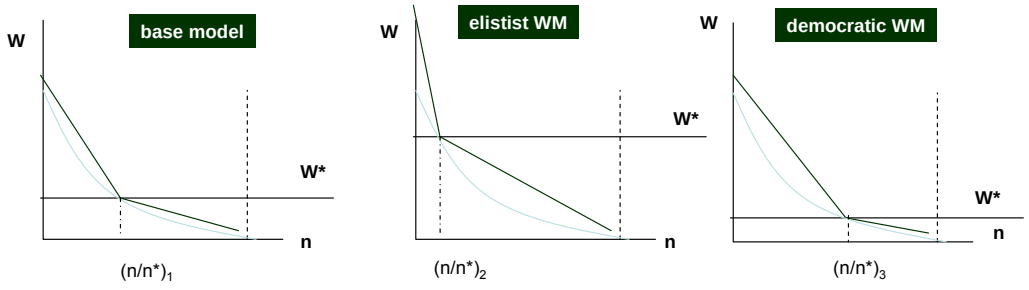
$$0 = 2pW_t [cq^{(1+\mu)/\mu} + g^{1/\pi}] + [\lambda_1 r_1 + \lambda_3 r_3 + c + r_1(1+\alpha) - c\varphi)] \quad \text{or}$$

$$p = \frac{[\lambda_1 + (2+\alpha)]r_1 + \lambda_3 r_3 + c(1+\varphi)}{2W_t [cq^{(1+\mu)/\mu} + g^{1/\pi}]} \quad (12).$$

The proportion of wealth increases with the amount of investment in domestic assets (λ_1), the amount of spill-overs (α), foreign investment returns (r_3), and increases in the way insurance and other life cycle investments contribute to wealth. General wealth and growth in other sectors tend to drag down the number of HNWIs, as affluence seems to trickle to less wealthy people faster than they can change status into HNWIs. Such a result may seem slightly paradoxical.

These results are less paradoxical than they sound. Before we discuss the algebra behind our model, let us discuss the model a little bit more in order to find out what kind of comparative statics might emerge. Figure E shows the distribution of the population belonging to the class of HNWIs as a percent of the total population. We have ranked the population by wealth per capita (w) such that the richest (n_1/n) have the highest wealth per capita – where n_i represents the number of people in strata i and n represents the total number of people in the population. As we see from the figure, $w_i = f(n_i/n)$ and $W_t = \Sigma f(n_i/n)$.

Figure E: Wealth Management Could Decrease or Increase the Number of Affluent Investors



The effect of wealth management on the number of affliuent investors depends on spill-over effects and account minimums (other factors equal). We do not consider the possibility of negative wealth in this model.

Our model describes the way that ordinary investors can pass into high net worth status. The base model shows the distribution of wealth under two assumptions. The light blue line shows the "normal" geometric distribution of wealth. The green line shows the effect

that wealth management has such "naturally occurring wealth." Like we saw in our modification of the Gaytan and Ranciere model, wealth management (private banking) shifts out wealth for all strata of the wealth distribution. Wealth management makes the potential clients who do not have the minimum assets needed to open an account richer because of the spill-over effects we described earlier. Wealth management (of course) makes the wealthy wealthier as well (ignoring the effects of adverse market conditions and so forth).

In theory, changes in account minimums and changes in the proportion of the population becoming affluent would shift the speed by which non-affluent could become affluent. Both factors (in theory) have the same effect. The two panels labelled "elitist" and "democratic" wealth management show these effects. Under the "elitist" wealth management model (shown above), high account minimums would keep a relatively small proportion of the population wealthy. We could also imagine such a set-up in a relatively poor country (in which the majority of the population have few resources). Small changes in wealth will not push many people into high net worth status. In the "democratic" wealth management model, even small changes in wealth (or decreases in the amounts needed to open a wealth management account) bring in relatively large numbers of potential clients. The degree of "curviness" in the blue line basically determines how changes in wealth affect the number of potential new clients.

We do not have information on account minimums or the way that banking leads to relative affluence among different populations world-wide. Nevertheless, our simple model makes several important predictions. First, middle class segments of the population should benefit more from the spill-over effects of wealth management than the poor (which we have already seen in the data during the literature review). Second, the introduction of wealth management services on a relatively large scale should correspond with increases in the speed by which wealth accumulates among most of the higher deciles of the income distribution. Such an "event study" would need to wait for future research (as we do not wish to track when various banks introduced wealth management services in particular jurisdictions world-wide).[26] Third, we have assumed (for the sake of simplicity) that wealth management actually smoothes out the wealth distribution – making wealth more linear rather than geometric. This assumption stems from the natural diminishing returns to scale in wealth management and other factors which are too complex to address here. We mention the point only to signal that this is an area of possible interest to future researchers.

The equations we defined earlier provide predictions about who will rise into the affluent class – and how quickly. In our model, we test two effects related to the distribution of wealth – looking at the proportion of the wealthy to middle class persons, as well as the number of affluent investors. In simple words, we look at the proportion of wealth that HNWIs control, and their numbers (as a proportion of the adult population).

[26] In theory, a *Factiva* search (or similar search) could define a proxy for when wealth management services because available in a particular country on a wide-scale. Researchers pursuing this thread of research would need to make sure that the banks they found offering private banking had sufficient coverage (or exposure to large amounts of affluent prospective clients).

Modelling the proportion of wealthy individuals in a population draws on the equations we have mentioned previously. Plunking the amount of wealth of high net worth individuals as a ratio of wealth in the non-wealthy section of society gives:

$$\left[\frac{W_{at}}{W_{bt}}\right]_{t+1} = \frac{W_{at} + \{\lambda_1 r_1 + cq^{(1+\mu)/\mu} W_{at} + g^{1/\pi} W_{at}) + \lambda_3 r_3)]W_{at} - cW_{at}] - \omega C_{at}}{W_{bt} + [r_1(1+\alpha)W_{tb} - (c_b\varphi)W_{bt}] - \omega\tau C_{at}} \qquad (13)$$

However, there is one complicating factor – the distribution of income. The distribution of income (as shown by the downward "bending" blue line in Figure E), partly affects the size of group *a* and group *b* – as well as the speed by which wealth management services would affect the proportion of wealth to non-wealthy affluent population. If $W_b = W_a e^{-\rho i}$, where ρ equals the inequality of income, then:

$$\left[\frac{W_a}{W_b}\right]_{t+1} = \frac{W_{at} + \{\lambda_1 r_1 + cq^{(1+\mu)/\mu} W_{at} + g^{1/\pi} W_{at}) + \lambda_3 r_3)]W_{at} - cW_{at}] - \omega C_{at}}{W_a e^{-\rho i} + [r_1(1+\alpha)W_a e^{-\rho i} - (c_b\varphi)W_a e^{-\rho i}] - \omega\tau C_{at}} \qquad \text{or}$$

$$\left[\frac{W_a}{W_b}\right]_{t+1} = \frac{W_{at} + \{\lambda_1 r_1 + cq^{(1+\mu)/\mu} W_{at} + g^{1/\pi} W_{at}) + \lambda_3 r_3)]W_{at} - cW_{at}] - \omega C_{at}}{W_a e^{-\rho i} + [r_1(1+\alpha)W_a e^{-\rho i} - (c_b\varphi)W_a e^{-\rho i}] - \omega\tau C_{at}}. \qquad (14).$$

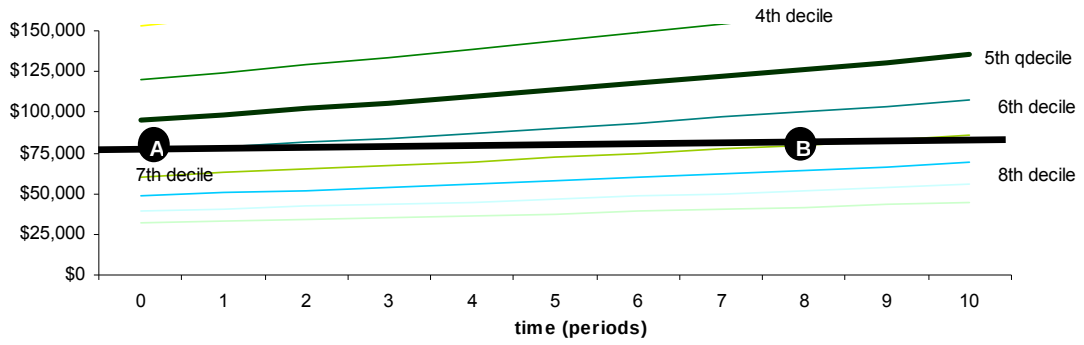
The proportion of wealth depends on the level of wealth and Gini coefficient (or inequality in income). Solving out equation 14 analytically (by finding the exact solution to the way changes in the distribution of wealth for example lead to changes in the ratio of HNWIs-to-everyone else) would again extend this appendix beyond its reasonable lengths. To illustrate what happens using a simpler example, consider equation below (which drops most of the terms in order to make our analysis simpler),

$$\left[\frac{W_a}{W_b}\right]_{t+1} = \frac{W_{at}}{W_a e^{-\rho i}} = W_a * [W_a e^{-\rho i}]^{-1} \qquad \text{and differentiate w.r.t } \rho \text{ which gives}$$

$$\left[\frac{W_a / W_b}{\partial\rho}\right]_{t+1} = -2\frac{W_{at}}{W_a e^{-2\rho i}} * \rho W_a^2 e^{=\rho i}.$$

Clearly, as the distribution of income ρ becomes more unequal, the distribution of wealth in our model also becomes more unequal. We can put in reasonable parameter estimates for equation (14) in order to show how quickly changes in wealth would translate, under various conditions, into changes in the proportion of affluent investors in our model. Figure G shows one such simple simulation. The financial industry generally grow incomes for all decile groups. At point A, the 6th decile have enough wealth to open a private banking account. However, spill-over effects from their investments (and the investments of other HNWIs) do not pull up the 7th decile until 8 periods later (at point B). The 8th decile seems rather unlikely to rise into affluence in any reasonable time-frame.

Figure G: Model Simulation Shows that Wealth Management Can Affect Maybe Ten Percent of the Investing Population



The simulation shows the growth in wealth in each decile of a hypothetical population using the equation for wealth growth we describe in the paper. In period zero, the 6th decile has enough wealth to open a wealth management account. The 7th decile must wait 8 periods before being eligible.

As our model illustrates (in Figure G and in the main body of the paper), wealth accumulates differently for HNWIs and for other people. The main goal of the less affluent consists of saving enough money to qualify to open a wealth management account (having a minimum wealth w^*). In this case, the number of affluent persons increases. Recalling from equation (8) that,

$$\left[\frac{W_a}{W_b}\right]_{t+1} = \frac{W_{at} + \{\lambda_1 r_1 + cq^{(1+\mu)/\mu} W_{at} + g^{1/\pi} W_{at}) + \lambda_3 r_3)]W_{at} - cW_{at}] - \omega C_{at}}{W_a e^{-\rho i} + [r_1(1+\alpha)W_a e^{-\rho i} - (c_b\varphi)W_a e^{-\rho i}] - \omega\tau C_{at}}$$

and if we define the wealth of group b in terms of the difference between their actual wealth and wealth needed to open a wealth management account,

$$W_b = W^* - [W_a e^{-\rho i} + [r_1(1+\alpha)W_a e^{-\rho i} - (c_b\varphi)W_a e^{-\rho i}] - \omega\tau C_{at}$$

where $W_{at} + \{\lambda_1 r_1 + cq^{(1+\mu)/\mu} W_{at} + g^{1/\pi} W_{at}) + \lambda_3 r_3)]W_{at} - cW_{at}] - \omega C_{at}$

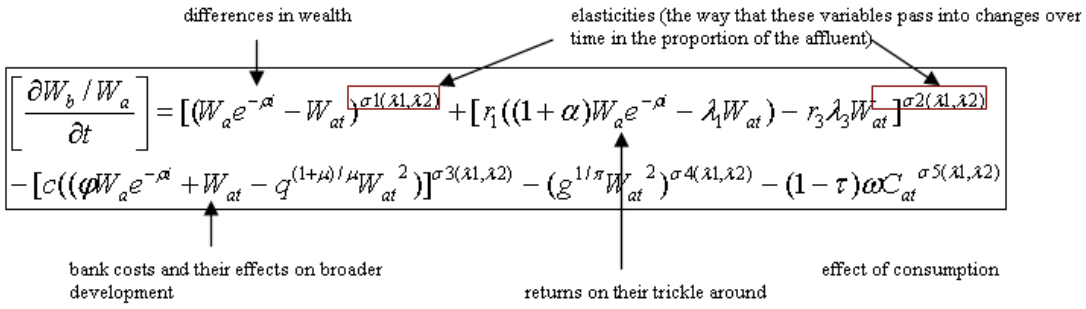
then,

$$W_{bt} = W^* - [1 + [r_1(1+\alpha) - (c_b\varphi)][W_{a(t-1)} + \{\lambda_1 r_1 + cq^{(1+\mu)/\mu} W_{a(t-1)} + g^{1/\pi} W_{a(t-1)}) + \lambda_3 r_3)]W_{a(t-1)} - cW_{a(t-1)}] - \omega C_{a(t-1)}]e^{-\rho i} - \omega\tau C_{a(t-1)} \quad (15).$$

This equation says that (basically) that the less affluent depend on HNWIs to rise into the ranks of the affluent. Spill-over effects play an important role – as does the distribution of income in the country ρ. As such, we would expect that persons close to the threshold (W*) would pass into affluence relatively quickly. However, as interesting as equation (15) is, the equation does not provide "motion." In other words, we do not know how long it takes for non-HNWIs to rise into affluent status. We have not specified a functional form for $\left[\frac{W_a}{W_b}\right]_{t+1} / \left[\frac{W_a}{W_b}\right]_t$ or namely $\left[\frac{\partial W_a / W_b}{\partial t}\right]$ -- the same we did for the way that levels of wealth change.

We need to see how the proportion of affluent behaves over time. We know from our literature review, that the time required for the non-affluent to rise into the ranks of the wealthy depends largely on political and economic institutions. These institutions interact (in some way) with financial institutions (and with the wealth management practices they house). Figure H provides "model of motion" for the passage from non-affluence into the wealthy class. The "distance" from having enough wealth to qualify to open a wealth management account basically depends on the banking, insurance and other variables we described previously. Economic and political institutions play a key role in this process (as shown by the way our variables affect the proportion of affluent persons in an economy through economic and political institutions – or $\sigma f(\lambda_1,\lambda_2)$.

Figure H: Changes in the Proportion of the Affluent Must Depend on Institutions



Turning the equation shown in Figure H into a useable linear regression requires "linearizing" the way affluence changes over time (by taking log values). We do not want to do the maths here. However, we should point out that each coefficient will have institutional quality mingled with the effect the coefficient is trying to pick up. For example, imagine that $\beta_1=\beta_1\sigma f(\lambda_1,\lambda_2)$ -- where β shows the regression coefficient given during econometric analysis. Our estimate of β_1 will pick up three effects – the effect of differences in wealth, the effect that macroeconomic institutions has, and the effect that rule of law and/or other institutions have. We thus need to remove these effects.[27] We conducted analysis with these constructed variables and with the normal variables. We found that using these constructed variables did not heavily impact on our analysis. We could just use proxies for macroeconomic factors and institutional factors as additional variables. We thus used the original independent variables – and leave the reader with a warning that the use of the original variables gives less accurate parameter estimates than using constructed variables. We show our variables in Figure I, along with their correspondence to model variables.

[27] The statistics involved in removing these effects are rather complicated. They involve "orthogonalizing" these variables through a process of 2-stage regression. This removes spurious various which affects all our parameter estimates. Naturally, we do not describe the details here.

Figure I: Effects Captured by Each Regression Coefficient

Beta coefficient	effects from model	Independent Variable(s)	Empirically available independent variables
Financial Institution Indicators			
β_1	$\sigma 3(\lambda 1, \lambda 2) f[(1+\alpha) W_a e^{-\rho i} - \lambda_1 W_{at}) - r_3 \lambda_3 W_{at}]$	$r_1(W_a e^{-\rho i} + \lambda_1 W_{at}) + r_3 \lambda_3 W_{at}$	Bank revenues (net interest margins and returns on assets/equity) given as a percent of GDP. Both independent variable and parameter need adjusting in ideal empirical specification.
β_2	$\sigma 3(\lambda 1, \lambda 2) f([(\varphi W_a e^{-\rho i} + W_{at} - q^{(1+\mu)/\mu} W_{at}{}^2)]$	c	Bank costs (cost ratios) given as a percent of GDP. Both independent variable and parameter need adjusting in ideal empirical specification.
Insurance Indicators			
β_3	$\sigma 4(\lambda 1, \lambda 2) f(q^{(1+\mu)/\mu} W_{at}{}^2, g^{1/\pi} W_{at}{}^2)$	$r_2 \lambda_2 W_{at}$	We use life and non-life premiums. Both in theory should contribute toward trickle down effects. Both independent variable and parameter need adjusting in ideal empirical specification.
Control Variables			
β_4	$\sigma 1(\lambda 1, \lambda 2)$	$[(W_a e^{-\rho i} - W_{at})$	Differences in the distribution of wealth – proxied by Gini coefficients, or ratios between a wealthiest strata of the population (10% or 1%) and the rest.
β_5	$r_1(1+\alpha) W_a e^{-\rho i} - \lambda_1 W_{at}) - r_3 \lambda_3 W_{at}$	r_1, r_3	rates of return in each of the economies (ri) will translate into wealth and also change the unobservable proportion of investments li.
β_6	$\sigma 5(\lambda 1, \lambda 2) f((1-\tau)\omega)$	C_t	Looks at preferences for changing consumption based on wealth
$\gamma 1$	$\gamma 1$	Z_1	Effect of macroeconomic variables. These enter into other coefficients. However, we can arrange our test model so that institutional factors become separable variables.
$\gamma 2$	$\gamma 2$	Z_2	Effect of institutional variables (like rule of law). These enter into other coefficients. However, we can arrange our test model so that institutional factors become separable variables.
$\gamma 3$	$\gamma 3$	Z_3	picks up effect of region
$\varepsilon 2$	ε	–	random country-specific shocks and other factors

All the preceding analysis has aimed at generating an empirical model useful for understanding the way that wealth management services and private banking contributes to the growth of wealth across countries (and the numbers of affluent in a country's population). We have built our model from microeconomic foundations – and shown how the expected effects will show up during econometric analysis.

Appendix II: Tables and Regression Results

Translating the model into an empirical analysis required decisions related to both the choice of variables and the way we defined changes in these variables. Figure A shows the variables we used in our analysis. Our dependent variables consisted of measures of national wealth and changes in that wealth over the last decade (2000-2010). We also used the proportion of affluent adults to test hypotheses about the way the distribution of wealth changes over time.

Figure A: Variable definitions

Variable	Empirical variable	Description
Dependent Variables		
Level of wealth	W_t	We created two variables – one taking wealth levels in 2000 and one in 2010. We used the levels of wealth as reported in Credit Suisse 2010.
Average annual change in wealth levels	ΔW_t	We found the geometric annual growth rate from 2000 to 2010 of wealth as reported in Credit Suisse 2010 – or $[(W_{2010}*W_{2000})^{\wedge}.1]$. We compared with arithmetic change as a "reality check" (or $((W_{2010}+W_{2010})/W_{2000})/10$.
Wealth per person	W_t/n_t	We divided wealth levels (W_t) by the population for that year (n_t) as reported by the World Bank's Development Indicators.
Annual change in wealth per person	$\Delta W_t/n_t$	We took the geometric growth rate of wealth per person from 2000 to 2010, such that $((W_{2010}/N_{2010})*(W_{2010}/N_{2000}))^{\wedge}.1$.
Proportion of affluent adults	n_{aff}/n_t	We used the proportion of affluent adults from Credit Suisse in 2010.
Change in proportion of affluent adults	$\Delta(n_1/n_k)$	We took the proportion of affluent adults x_{2010} from Credit Suisse in 2010 or $[(x_{2010}/x_{2010})^{1/10}]*100$ and subtracted th
Proportion of wealth held by the top 10% relative to total wealth	W_{top10} / ΣW_t	We looked at the proportion of wealth held by the top 10% (as reported in the Credit Suisse Databook) and divided by total wealth for time *t*. The original data gave each country's share of top 10% as a percent of global wealth for the top 10%. We thus had to use the country's weight in global wealth to find each country's top 10%.
top 1% compared with top 10%	$W_{tp\ 1}/\ \Sigma W_t$	We found the ratio of the top 1% of wealth for each country divided by the top 10%. The original data gave each country's share of top 1% as a percent of global wealth for the top 1%. We thus had to use the country's weight in global wealth to find each country's top 1%.
Financial Sector Development Variables		
Banking quality panel	$[\mathbf{X}]_i$	These include the "usual" variables related to financial sector development from the Beck *et al*. (2010) database -- bank overhead costs-to-total assets, net interest margins, bank ROAs, bank ROEs and bank cost-income ratios. We indicate where the variables are expressed as a percent of GDP.
Change in banking quality	$[\Delta\mathbf{X}]_i$	Measures the change in each of Beck *et al.*'s indicators from 2000 to 2010. Each variable represents the annualised geometric growth rate (such that $(b_{2010}/b_{2000})^{\wedge}.1$). As explained in the text, we also use the geometric change in the share of market capitalisation to GDP over the period only for graphs.
Insurance market panel	$[\mathbf{I}]_i$	Variables related to the volume of insurance transactions – namely life insurance premium volumes and non-life insurance premium volumes (both as percent GDP). From Beck *et al.* (2010).
Change in insurance market	$[\Delta\mathbf{I}]_i$	We use average geometric growth rates in order to "smooth out" the data and provide for comparability.

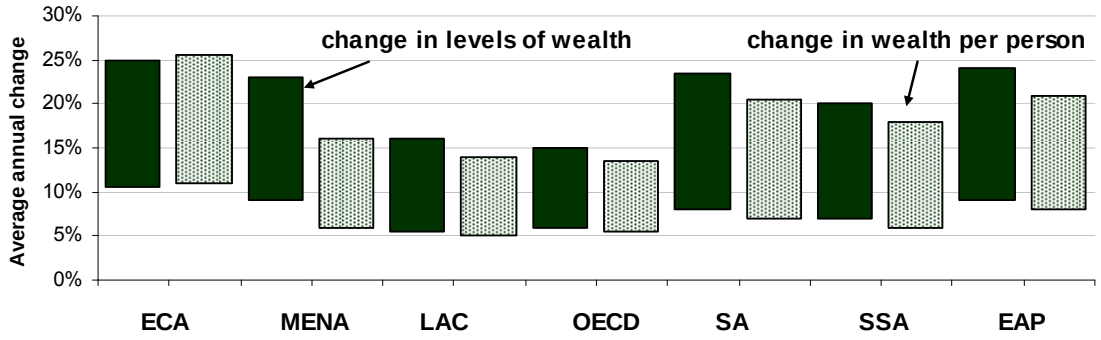
Control variables		
Control for region-specific factors	D	We control for changes in the way financial institutions affect wealth due to 7 region-specific factors using a regional dummy variable. Regions come from World Bank.
Size effect (wealth to GDP)	Wt/Yt	We divided wealth (from the Credit Suisse data) by current nominal GDP (from the World Bank and both in USD).
Annual population growth rate	Δn	Controls for increases in the amount of productive labour which would increase absolute levels of wealth.
Local returns	r_1	We use the annual geometric average of changes in each country's stock market index between 2000 and 2010. For countries where no stock market data exist, we use the average deposit rate. Stock market indices come from WRDS's Global Compustat service. The World Development Indicators database provide deposit rates for the decade.
Consumption	Ct	We use the natural log of consumption as reported by the World Bank for 2000 and 2010. Controls for changes in wealth caused by preferences to consume rather than save as wealth.
Change in consumption	ΔC	Measures the annual average geometric change in consumption from 2000 to 2010, defined by (C2010*C2000)^.1). We check with arithmetic averages just to make sure our numbers looked right.
Insurance imports	Qi	We used insurance imports from World Development Indicators during the "discovery" phase of our analysis to see if the variable had any interesting variance requiring further analysis.
Gini coefficient	G	We use Gini coefficients to assess the extent to which generally uneven income distribution affects wealth, We use the latest Gini coefficient available as reported by the World Bank.
Income of highest 10% of the population	$(Y_{10}/Y_{100})_t$	As a proxy for the distribution of income (rather than wealth), we used income of the highest 10% as reported by the World Bank.
Firms using bank finance	T	Controls for general bank use – as reported by Development Sources.
Rule of law indicator	Z_1	Controls for differences in political and administrative institutions. From Kaufmann *et al* (2012), settling on the "rule of law" indicator. We use period averages and arithmetic averages when looking at rates of change.
Economic freedom indicator	Z_2	*From Freedom House* scores (2012). We use the period average for data analysis requiring levels. We use arithmetic averages when looking at rates of change.
Foreign direct investment	I_f	Controls for extent to which foreign investment causes resource inflows and/or asset bubbles which lead to changes in wealth.
Change in GDP per capita	$\Delta(Y/_{Pop})_i$	Controls for the extent to which wealth "trickles down" in general from 2000 to 2010. We use the average compound growth rate over the decade (2000-2010).

We analyse changes in our variables as the annual geometric average over the decade. We chose such a variable definition for two reasons. First, the wealth estimates from Credit Suisse (and originally from Davies and colleagues) come either from household surveys or regression analysis. Household surveys have notorious problems with accuracy and comparability. Regression analysis has the obvious problem that variance in the dependent variable simply reflects variance in dependent variables which may (or may not) actually reflect wealth. Looking at annual changes would generate too much noisy and misleading variance. So, we use averages to smooth out much of this year-on-year noise. Second, the use of annual averages also smoothes out variations caused by

temporary economic shocks. We want to know what effect financial sector development has on wealth levels in the longer-run. Taking decade averages smoothes out variations due to economic crisis, party politics and so forth.

Emerging markets tended to account for most of the change in wealth in the 2000s. Figure B shows the change and dispersion of growth rates in wealth between countries in each geographic region. On average, countries in Europe, Central Asia, South Asia, East Asia and the Pacific saw the fast growth in wealth. In general, changes in levels of wealth corresponded with changes in wealth per person (reassuring from a "trickle down" point of view). The OECD, while having the most wealth, saw some of the slowest rates of change over the decade.

Figure B: Changes in Wealth Across Regions



The Figure shows the 95% confidence intervals for changes in the levels of wealth and wealth per capital among countries in each region (using the World Bank definition of regions). These confidence intervals describe the spread in the growth of wealth (and wealth per person) across countries in that region. ECA refers to Europe and Central Asia, MENA stands for Middle East and North Africa, LAC refers to Latin America and the Carribean, OECD refers to upper-income economies, SA refers to South Asia, SSA as Sub-Saharan Africa and EAP as East Asia and the Pacific.

In the rest of the figures, we show mostly "diagnostic" data of interest to economists interested in checking the interpretations we have given to many of our results. Figure C shows descriptive statistics for our data set – allowing the reader to get a feel for the dataset as a whole. Figures D-I provide bi-variate correlations – again to show roughly how groups of variables change in relation to each other over the period. The rest of the figures provide information on each model we tested in our econometric analysis. This material – to boring to read – has been relegated to this appendix. Figure T (lastly but not leastly) shows the cluster analysis we used to divide wealth management markets only using the natural variance in the data itself (rather than our subjective impressions). Not all the countries in the so-called OECD group of countries actually belong to the OECD. As such, the qualitative interpretation we have given our groups differs slightly from the data. However, given the amount of noise – and the imperfect nature of statistical analysis in general – we think our interpretations fair.

Figure C: Descriptive Statistics of Variables Related to Wealth

All Groups	N	Mean	s
Annual change of wealth	96	0.10	0.05
Ln wealth 2010	101	12.31	2.08
Ln wealth 2000	98	11.45	2.21
annual change wealth person	98	0.07	0.12
affluent per adults	103	12.82	18.02
top 10 to all	80	0.71	0.27
Proportion of 1-10	94	0.31	0.36
Size effect (Wealth to GDP in 2010)	102	2.08	1.11
local returns	98	3.22	4.33

OECD	N	Mean	s
Annual change of wealth	31	0.1	0
Ln wealth 2010	31	14.0	2
Ln wealth 2000	31	13.3	2
annual change wealth person	31	0.1	0
affluent per adults	31	34.0	18
top 10 to all	21	0.9	0
Proportion of 1-10	31	0.5	0
Size effect (Wealth to GDP in 2010)	31	3.1	1
local returns	31	0.2	1

ECA	N	Mean	s
Annual change of wealth	18	0.12	0.0
Ln wealth 2010	18	10.86	1.2
Ln wealth 2000	19	9.66	1.1
annual change wealth person	19	0.07	0.3
affluent per adults	19	1.77	2.8
top 10 to all	15	0.67	0.3
Proportion of 1-10	16	0.09	0.1
Size effect (Wealth to GDP in 2010)	19	1.46	0.9
local returns	17	6.85	5.3

South Asia	N	Mean	s
Annual change of wealth	5	0.12	0.0
Ln wealth 2010	6	12.40	1.8
Ln wealth 2000	5	11.39	2.0
annual change wealth person	5	0.10	0.0
affluent per adults	6	0.75	1.4
top 10 to all	5	0.42	0.3
Proportion of 1-10	5	0.09	0.2
Size effect (Wealth to GDP in 2010)	6	1.79	0.5
local returns	6	2.05	3.3

MENA	N	Mean	s
Annual change of wealth	12	0.1	0
Ln wealth 2010	14	11.8	1
Ln wealth 2000	12	10.8	1
annual change wealth person	12	0.1	0
affluent per adults	14	7.6	11
top 10 to all	13	0.7	0
Proportion of 1-10	13	0.2	0
Size effect (Wealth to GDP in 2010)	14	1.8	1
local returns	12	4.4	4

SSA	N	Mean	s
Annual change of wealth	8	0.1	0.0
Ln wealth 2010	9	9.7	0.8
Ln wealth 2000	8	8.6	0.8
annual change wealth person	8	0.1	0.0
affluent per adults	9	1.3	1.6
top 10 to all	4	0.7	0.4
Proportion of 1-10	5	0.6	1.1
Size effect (Wealth to GDP in 2010)	9	1.3	0.7
local returns	8	7.1	3.5

LAC	N	Mean	s
Annual change of wealth	14	0.1	0.0
Ln wealth 2010	15	11.8	1.7
Ln wealth 2000	14	11.1	1.7
annual change wealth person	14	0.1	0.0
affluent per adults	15	2.8	2.0
top 10 to all	14	0.7	0.1
Proportion of 1-10	15	0.3	0.2
Size effect (Wealth to GDP in 2010)	15	1.5	0.4
local returns	15	4.3	4.6

EAP	N	Mean	s
Annual change of wealth	8	0.1	0.1
Ln wealth 2010	8	13.6	1.4
Ln wealth 2000	9	12.7	1.4
annual change wealth person	9	0.1	0.1
affluent per adults	9	7.5	9.4
top 10 to all	8	0.6	0.2
Proportion of 1-10	9	0.3	0.2
Size effect (Wealth to GDP in 2010)	8	2.5	1.2
local returns	9	0.9	2.5

Figure D: Correlation of Wealth and Basic Indicators of Financial Sector Development

	Wealth 2010	Wealth per person (2010)	affluent per adults	top 10 to all	Bank Profits	Bank cost ratios	Life Insurance Market Depth	Foreign loans
Wealth Levels (1)	X							
Wealth per person	0.23	X						
Proportion of affluent adults (2)	0.32	0.98	X					
Proportion of top 10% wealth to total population	0.23	0.88	0.82	X				
Financial institution profitability (3)	0.13	-0.24	-0.26	-0.06	X			
Bank cost ratios (4)	0.00	-0.08	-0.12	-0.10	0.26	X		
Depth of Life insurance markets (5)	0.31	0.26	0.22	0.26	-0.21	0.12	X	
Foreign loans (6)	-0.51	0.48	0.35	0.40	-0.40	-0.16	0.07	X

Shaded cells show statistically significant correlations at the 5% level.

(1) The wealth indicator shows the natural log of levels of estimated wealth across countries in 2010.

(2) The proportion of affluent adults shows the proportion of adults with over $100,000 in wealth as a proportion of total adults

(3) Financial institution profitability as measured by net interest margins

(4) Shows the World Bank cost-income ratio

(5) Life insurance premiums as a percent of GDP

(6) Loans from non-resident banks (amount outstanding) as a percent of GDP

Figure E: Correlation of Financial Sector Development Indicators with Broader Indicators of Economic Development

	Wealth Size Effect (7)	Consumption Levels (8)	Insurance Imports (9)	Income Inequality	Spread of Bank Finance	Rule of Law indicator	Economic Freedom Indicator	Level of FDI
Wealth Levels (1)	X							
Wealth per person	-0.05	X						
Proportion of affluent adults (2)	0.04	0.17	X					
Proportion of top 10% wealth to total population	-0.27	0.50	0.19	X				
Financial institution profitability (3)	-0.43	-0.21	-0.03	-0.04	X			
Bank cost ratios (4)	0.28	0.00	-0.13	-0.24	0.48	X		
Depth of Life insurance markets (5)	0.18	0.30	0.01	0.23	0.29	0.70	X	
Foreign loans (6)	-0.04	-0.16	-0.10	-0.37	0.28	0.37	0.21	X

Shaded cells show statistically significant correlations at the 5% level.
(7) Effect of the size of wealth (as a percent of GDP)
(8) Natural log of consumption in 2010.
(9) Insurance Import 2010
(10) Gini Index period ave. or avail.
(11) Firms using banks to finance investment (% of firms)

Figure F: Correlation of Broader Indicators of Economic Development with Each Other

	Wealth Size Effect (7)	Consumption Levels (8)	Insurance Imports (9)	Income Inequality	Spread of Bank Finance	Rule of Law indicator	Economic Freedom Indicator	Level of FDI
Wealth Size Effect (7)	1.00	-0.05	0.04	-0.27	-0.43	0.28	0.18	-0.04
Consumption Levels (8)	-0.05	1.00	0.17	0.50	-0.21	0.00	0.30	-0.16
Insurance Imports (9)	0.04	0.17	1.00	0.19	-0.03	-0.13	0.01	-0.10
Income Inequality	-0.27	0.50	0.19	1.00	-0.04	-0.24	0.23	-0.37
Spread of Bank Finance	-0.43	-0.21	-0.03	-0.04	1.00	0.48	0.29	0.28
Rule of Law indicator	0.28	0.00	-0.13	-0.24	0.48	1.00	0.70	0.37
Economic Freedom Indicator	0.18	0.30	0.01	0.23	0.29	0.70	1.00	0.21
Level of FDI	-0.04	-0.16	-0.10	-0.37	0.28	0.37	0.21	1.00

Shaded cells show statistically significant correlations at the 5% level.

Figure G: Correlation Between Changes in Wealth and Changes in Financial Sector Development

	Δ level of wealth	Δ Bank profitability	Δ Bank cost ratios	Δ Life insurance market depth	Δ Foreign loans	Δ stock values (2)
Δ level of wealth	1.00					
Δ Bank profitability	-0.13	1.00				
Δ Bank cost ratios	-0.14	0.42	1.00			
Δ Life insurance market depth	0.48	-0.34	-0.05	1.00		
Δ Foreign loans	0.36	-0.56	-0.15	0.50	1.00	
Δ stock values (2)	0.26	-0.31	-0.12	0.56	0.20	1.00

Shaded cells show statistically significant correlations at the 5% level.

Δ denotes the geometric (or arithmetic where applicable) annual average from 2000 to 2010.

(2) Davies et al. (2009) use the level of stock market development (as proxied by STOCK MARKET TOTAL VALUE TRADED / GDP) to construct the estimates we use for wealth across countries. We therefore omit the variable from our own analysis. However, we do look at changes in the indicator which, in theory, may be completely independent from changes in levels across countries.

Figure H: Changes in Financial Sector Development on Broader Macroeconomic Changes

	Average domestic returns	Δ Consumption	Δ Insurance imports	Δ rule of law indicator	Δ economic freedom indicator	Δ FDI
Δ level of wealth	0.24	0.34	-0.30	0.27	0.39	-0.20
Δ Bank profitability	-0.57	-0.30	-0.17	-0.27	-0.43	-0.01
Δ Bank cost ratios	-0.11	-0.38	0.08	-0.01	0.07	-0.21
Δ Life insurance market depth	0.53	0.48	0.00	0.45	0.06	-0.07
Δ Foreign loans	0.55	0.27	0.11	0.03	0.40	-0.04
Δ stock values (2)	0.09	0.43	0.02	0.11	0.07	-0.40

Shaded cells show statistically significant correlations at the 5% level. – meaning the figure shows no statistically significant correlations.

Figure I: Changes in Macroeconomy Do Not Correlate with Other Changes in the Macroeconomic Environment

	Average domestic returns	Δ Consumption	Δ Insurance imports	Δ rule of law indicator	Δ economic freedom indicator	Δ FDI
Average domestic returns	1.00	0.12	0.02	0.51	0.28	-0.05
Δ Consumption	0.12	1.00	-0.02	0.13	-0.06	0.05
Δ Insurance imports	0.02	-0.02	1.00	-0.03	-0.04	-0.05
Δ rule of law indicator	0.51	0.13	-0.03	1.00	-0.14	-0.20
Δ economic freedom indicator	0.28	-0.06	-0.04	-0.14	1.00	-0.11
Δ FDI	-0.05	0.05	-0.05	-0.20	-0.11	1.00

Shaded cells show statistically significant correlations at the 5% level.

Figure J: Regression Panels for Levels of Wealth Attributable to the Distribution of Income

(level of wealth across countries as dependent variable)

	t(46)	t(45)	t(56)
Proportion of affluent adults (relative to total adult pop)	**0.04**	**0.04**	0.00
	0.02	*0.02*	*0.01*
Total wealth in 2000 (log values)			**0.98**
			0.03
Proportion of wealth held by top 10% relative to total wealth	-0.73	-0.26	
	0.66	*0.61*	
Consumption in 2010 (in log values)	**0.50**	**0.53**	0.01
	0.10	*0.09*	*0.03*
Gini Index (period average or latest available)	0.12	0.06	**-0.05**
	0.08	*0.07*	*0.02*
Highest 10% income (period ave. or avail.	-0.13	-0.08	**0.06**
	0.09	*0.08*	*0.03*
Rule of law indicator (average)	**0.91**		
	0.38		
Economic freedom indicator (average)	**-0.08**	-0.03	
	0.03	*0.03*	
Size effect (Wealth to GDP in 2010)		**0.68**	
		0.23	
FDI average level		**-0.11**	
		0.05	
Wealth per person (2010)			0.00
			0.00
Geographic region dummy variable			0.00
			0.02
Adjusted R^2	**0.59**	**0.63**	**0.97**

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Figure K: Regression Panels for Levels of Wealth Attributable to Financial Sector Development

(level of wealth across countries as dependent variable)

	t(45)	t(45)	t(49)
Bank overhead costs as a percent of total bank assets	-0.07		
	3.84		
Banks' net interest margin	7.22		
	5.73		
Size effect (Wealth to GDP in 2010)	**1.08**		
	0.21		
Local returns	**-0.09**		
	0.04		
Level of consumption in 2010 (in log values)	**0.42**		
	0.09		
Firms using banks to finance investment (% of firms)	**0.02**	0.00	0.02
	0.01	*0.00*	*0.01*
Rule of law indicator (average)	**0.71**	0.02	**1.24**
	0.30	*0.12*	*0.39*
Economic freedom indicator (average)	**-0.09**	-0.02	**-0.10**
	0.03	*0.01*	*0.04*
FDI levels (average)	**-0.10**	0.02	**-0.15**
	0.05	*0.02*	*0.07*
Wealth in 2000 (in log values)		**0.97**	
		0.04	
Banks' return on assets		0.00	0.00
		0.00	*0.01*
Banks' cost-to-income ratios		-0.03	0.48
		0.12	*0.44*
Level of consumtopion in 2010 (in log values)		0.02	**0.45**
		0.03	*0.10*
Geographic region dummy variable			-0.07
			0.11
Adjusted R^2	**0.7**	**0.96**	**0.44**

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Figure L: Regression Panels for Levels of Wealth Attributable to Development of Insurance Markets

(level of wealth across countries as dependent variable)

	t(39)	t(20)	t(40)	t(40)
Wealth in 2000 (in log values)	**0.85**			
	0.05			
Life insurance premiums (as a percent of GDP)	1.00	29.24	3.05	10.45
	2.07	*15.09*	*6.59*	*7.21*
Loans from non-resident banks (as a percent of GDP)	-0.11			
	0.08			
Size effect (Wealth to GDP in 2010)	0.05		**0.93**	**0.70**
	0.08		*0.20*	*0.20*
Consumption in 2010 (in log values)	0.04	0.14	**0.37**	
	0.04	*0.16*	*0.12*	
Insurance imports (period average)	0.01		-0.01	**0.22**
	0.02		*0.03*	*0.06*
Insurance import in 2010		**0.17**		
		0.09		
Non-life insurance premiums (as a percent of GDP)		15.92		28.13
		26.29		*18.38*
Local returns		**-0.15**		
		0.08		
Firms using banks to finance investment (% of firms)		-0.01		
		0.02		
FDI average level		-0.13		
		0.07		
Average rule of law			0.31	0.37
			0.33	*0.32*
Free average			-0.05	**-0.08**
			0.03	*0.03*
FDI average level				**-0.04**
				0.01
Geographic region dummy variable				**0.28**
				0.13
Adjusted R^2	**0.95**	**0.37**	**0.5**	**0.61**

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Figure M: Regression Panels for Levels of Wealth Attributable to Various Macroeconomic and Other Factors
(level of wealth across countries as dependent variable)

	t(11)	t(35)	t(70)
Bank overhead costs as a proportion of total assets	-1.41	-0.81	
	7.56	*1.60*	
Banks' net interest margin	21.84	0.47	
	17.18	*2.43*	
Non-life insurance premiums as a percent of GDP	17.63		
	39.92		
Loans from non-resident banks as a percent of GDP	-3.17	-0.01	
	1.76	*0.14*	
Local returns	-0.10		
	0.09		
Level of consumption in 2010 (in log values)	0.13	0.05	0.04
	0.19	*0.04*	*0.03*
Insurance imports (average from 2000 to 2010)	0.21		
	0.13		
Gini Index (period average or latest available)	-0.10		
	0.06		
Firms using banks to finance investment (% of firms)	-0.02	0.00	
	0.02	*0.01*	
Rule of law indicator (average)	1.48	0.02	0.02
	0.78	*0.14*	*0.09*
Economic freedom indicator (average)	-0.05	-0.02	**-0.02**
	0.07	*0.01*	*0.01*
FDI (average levels)	-0.21	0.02	0.00
	0.11	*0.02*	*0.00*
Wealth in 2000 (in natural logs)		**0.94**	**0.92**
		0.06	*0.04*
Size effect (Wealth to GDP in 2010)		0.08	0.08
		0.11	*0.06*
Annual population growth rate		1.30	6.95
		7.79	*3.49*
Local return		0.00	0.01
		0.02	*0.01*
Geographic region dummy variable		0.02	
		0.04	
Adjusted R^2	**0.57**	**0.93**	**0.97**

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Figure N: Regression Panels for Changes in Wealth Attributable to the Distribution of Wealth

(average changes in wealth from 2000 to 2010 across countries as dependent variable)

	t(52)	t(52)	t(52)
Intercept	0.05		
	0.03		
Proportion of affluent adults (to total adult population)	0.00	0.00	0.00
	0.00	*0.00*	*0.00*
Growth rate of consumption	**0.52**	0.00	**0.64**
	0.13	*0.04*	*0.15*
Gini Index (period average or latest available)	**-0.01**	0.00	
	0.00	*0.00*	
Wealth held by top 10% (period average or latest available)	**0.01**		
	0.00		
Change in rule of law indicator	0.00		0.00
	0.01		*0.01*
Change in economic freedom indicator	0.01	-0.01	0.05
	0.04	*0.01*	*0.04*
Total wealth in 2000 (in log values)		0.00	
		0.00	
Annual change in wealth per person (in log value)		**0.98**	
		0.04	
Change in FDI		0.00	
		0.00	
Wealth held by top 10% as a proportion of total wealth			-0.01
			0.02
Annual population growth rate			0.54
			0.60
Adjusted R^2	**0.38**	**0.38**	**0.30**

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Figure O: Changes in Wealth and Changes in Financial Sector Development
(b coefficients reported and standard deviations in italics)
(average changes in wealth from 2000 to 2010 across countries as dependent variable)

	t(33)	t(40)	t(61)	t(48)
Intercept	0.06			
	0.02			
Change in bank overhead costs (as a percent of total assets)	0.07	0.05	0.03	
	0.10	*0.09*	*0.07*	
Change in banks' net interest margins	0.02	0.14	0.02	
	0.12	*0.11*	*0.09*	
Change in banks' cost-to-income ratios		0.12		0.14
		0.14		*0.10*
Change in loans from non-resident banks (as percent of GDP)	-0.03	0.08		
	0.07	*0.06*		
Local returns	0.00	0.00	0.00	0.00
	0.00	*0.00*	*0.00*	*0.00*
Average annual growth rate of consumption	**0.47**	**0.39**	**0.61**	**0.51**
	0.15	*0.14*	*0.12*	*0.13*
Firms using banks to finance investment (% of firms)	0.00			
	0.00			
Change in rule of law indicator	0.01	**0.03**		
	0.01	*0.01*		
Change in economic freedom indicator	**0.12**	**0.09**		
	0.05	*0.05*		
FDI period change	0.00	0.00		0.00
	0.00	*0.00*		*0.00*
annual population growth rate		**1.27**	0.18	0.51
		0.60	*0.52*	*0.55*
Change in banks' return on assets		-0.05		0.02
		0.03		*0.02*
Geographic region dummy variable				0.00
				0.00
Size effect (Wealth to GDP in 2010)				0.00
				0.00
Adjusted R^2	**0.23**	**0.39**	**0.28**	**0.34**

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Figure P: Changes in Wealth and Changes in Insurance Markets
(average changes in wealth from 2000 to 2010 across countries as dependent variable)

	t(32)	t(19)	t(16)
Intercept	0.05		
	0.02		
Change in life insurance premiums (as a percent of GDP)	**0.20**	0.18	0.13
	0.10	*0.11*	*0.11*
Annual population growth rate	0.86	-0.51	-1.05
	0.93	*0.92*	*0.93*
Local returns	0.00	0.00	0.00
	0.00	*0.00*	*0.00*
Consumption growth rate	0.18	0.15	0.22
	0.21	*0.21*	*0.24*
Insurance imports (period growth)	0.00		0.00
	0.01		*0.01*
Change in economic freedom indicator	0.07	**0.19**	**0.26**
	0.06	*0.08*	*0.08*
FDI (period change)	0.00	0.00	
	0.00	*0.00*	
Wealth in 2000 (in log values)		**-0.01**	-0.01
		0.00	*0.01*
Change in non-life insurance premiums as a percent of GDP		**-0.41**	**-0.60**
		0.19	*0.21*
Change in loans from non-resident banks (as a percent of GDP)		-0.04	
		0.10	
Change in the ratio of total stock market value to GDP		0.01	0.04
		0.05	*0.05*
Change in bank overhead costs (as a percent of total assets)			-0.01
			0.13
Adjusted R^2	**0.17**	**0.34**	**0.47**

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Figure Q: The Proportion of Affluent and the Composition of Wealth
(proportion of affluent adults across countries as dependent variable)

	t(64)	t(66)	t(53)
Annual change wealth in totals	-46.76		
	33.68		
Total wealth in 2010 (in log values)	**2.12**		
	0.75		
annual population growth rate	95.45	-5.91	12.53
	96.79	*67.26*	*45.02*
Gini index (period average or latest available)	-0.08	-0.16	
	0.68	*0.12*	
Wealth held by highest 10% (period average or latest available)	-0.36		-0.13
	0.84		*0.10*
Rule of law indicator (averages)	**9.14**		
	2.94		
Economic freedom indicator (average)	0.20	0.18	
	0.27	*0.15*	
Wealth per person in 2010		0.00	0.00
		0.00	*0.00*
Size effect (Wealth to GDP in 2010)		1.78	
		1.48	
FDI (average level)		0.03	
		0.03	
Geographic region dummy variable			0.42
			0.36
Wealth held by top 10 as a percent of all wealth			**11.64**
			2.62
Adjusted R^2	**0.64**	**0 .80**	**0.86**

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Figure R: Distribution of Affluent to Banking Indicators
(proportion of affluent adults across countries as dependent variable)

	t(40)	t(44)	t(2)
Intercept	-15.11		
	12.43		
Bank overhead costs as a percent of bank's total assets	-5.97		-4.35
	29.87		*51.97*
Banks' net interest margin	-38.70		185.26
	48.52		*119.40*
Change in proportion of the value of loans from non-resident banks expressed as a percent of GDP	9.36		
	13.52		
Bank cost-to-income ratios		-3.13	
		1.94	
Level of wealth in 2010 (in log values)		**2.98**	
		0.62	
Banks' return on assets		-0.02	-0.10
		0.06	*0.15*
annual population growth rate	-76.24		
	149.64		
local return	-0.33	0.04	
	0.31	*0.25*	
ln(C) 2010	0.05	**-1.08**	-2.31
	0.71	*0.56*	*0.87*
Firms using banks to finance investment (% of firms)	-0.05	-0.03	-0.01
	0.09	*0.06*	*0.11*
Free average	**0.43**	**0.45**	
	0.16	*0.13*	
FDI average level	-0.51	0.01	
	0.43	*0.33*	
Loans from non-resident banks (expressed as a percent of GDP)		0.22	
		1.36	
Geographic region dummy variable		-0.14	
		0.47	
Wealth held by the top 10% as a percent of all wealth			40.96
			10.54
Change in bank overhead costs as a percent of total assets			-45.08
			42.99
Change of bank return on assts			-23.52
			11.54
Change in the ratio of stock market total traded value to GDP ratio			-33.30
			14.32
Rule of law indicator (average value)			-10.23
			5.19
Adjusted R^2	0.11	0.39	0.81

Figure S: The Extent of Affluence and Insurance Markets
(proportion of affluent adults across countries as dependent variable)

	t(36)	t(30)	t(40)
Life Insurance Premium Volume to GDP ratio	97.27	114.46	108.38
	102.80	*82.59*	*59.08*
Change in Life Insurance Premium Volume to GDP ratio	**-71.31**	**-76.45**	-52.23
	29.43	*37.39*	*30.00*
Consumption in 2010 (in log values)	-1.10	-0.75	
	1.80	*1.74*	
Insurance imports (average 2000 to 2010)	-0.62	-0.55	
	0.98	*0.74*	
Insurance imports (average growth rate over the 2000s)	**7.54**	6.68	
	3.52	*3.71*	
Index of economic freedom (average)	0.70		
	0.40		
FDI (average level)	0.10		
	0.18		
Wealth (annual change of totals)		-12.74	
		72.43	
Non-life Insurance Premium Volume to GDP ratio		**666.95**	**825.22**
		244.63	*228.75*
Loans from Non-Resident Banks as a percent of GDP		1.77	
		3.14	
Change in Non-life Insurance Premium Volume to GDP ratio		-8.04	-68.32
		81.69	*70.00*
Geographic region dummy variable			1.11
			1.60
Bank Cost-to-Income Ratio			1.67
			4.23
Local investment returns			-0.01
			1.01
Adjusted R^2	**0.34**	**0.41**	**0.42**

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Figure T: Two-Cluster Distances Establishing the Upper-Income Group and Other Group

	Case No.	Group	Annualized change wealth in totals	Δ Net Interest Margin	Δ Life Insurance Premium Vol/ GDP	Δ Stock Market total / GDP	Distance to centroid
Argentina	3	1	-0.022	0.024	-0.039	0.105	**0.537**
Austria	6	1	0.078	0.003	-0.005	0.265	**0.240**
Belgium	12	1	0.043	-0.08	0.069	0.165	**0.263**
Cyprus	25	1	0.041	-0.067	-0.061	-0.07	**0.255**
Denmark	27	1	0.072	-0.055	0.055	0.13	**0.194**
Finland	32	1	0.074	-0.050	-0.026	0.167	**0.167**
Germany	36	1	0.065	-0.006	-0.006	0.148	**0.114**
Greece	37	1	0.062	-0.008	-0.040	-0.06	**0.186**
Ireland	42	1	0.068	0.041	0.0817	0.094	**0.320**
Israel	43	1	0.054	-0.009	-0.006	0.202	**0.115**
Italy	44	1	0.072	-0.018	-0.004	0.195	**0.149**
Japan	46	1	0.008	-0.022	-0.035	0.142	**0.307**
Luxembourg	55	1	0.040	-0.023	-0.001	-0.235	**0.306**
Mexico	60	1	0.060	-0.056	0.013	0.119	**0.113**
Netherland	65	1	0.039	-0.048	-0.029	0.160	**0.145**
Spain	85	1	0.062	-0.127	-0.041	0.119	**0.364**
Sweden	89	1	0.074	0.001	0.021	0.139	**0.181**
Switzerland	90	1	0.059	0.023	-0.043	0.127	**0.210**
Tunisia	93	1	0.067	0.005	0.0916	0.015	**0.259**
Turkey	94	1	0.089	-0.11	-0.053	0.051	**0.404**
USA	98	1	0.031	-0.013	0.005	0.091	**0.161**
Canada	17	2	0.091	-0.026	0.030	0.136	**0.185**
Chile	18	2	0.109	-0.033	0.024	0.187	**0.147**
Colombia	21	2	0.129	0.007	0.000	0.139	**0.257**
Czech Rep	26	2	0.111	0.011	0.064	0.155	**0.142**
Egypt	29	2	0.075	0.022	0.128	0.138	**0.290**
France	33	2	0.106	-0.031	0.010	0.136	**0.184**
Hungary	39	2	0.111	0.083	0.098	0.065	**0.397**
India	40	2	0.116	-0.064	0.104	0.106	**0.172**
South Korea	49	2	0.093	-0.107	0.297	0.911	**0.826**
Norway	67	2	0.124	-0.022	0.050	0.176	**0.125**
Peru	72	2	0.105	0.016	0.009	0.127	**0.235**
Poland	74	2	0.132	-0.068	0.082	0.172	**0.216**
Romania	77	2	0.126	-0.185	0.141	0.278	**0.608**
South Africa	84	2	0.129	0.039	-0.01	0.168	**0.336**
Thailand	92	2	0.091	0.092	0.029	0.005	**0.480**
Ukraine	95	2	0.113	-0.104	0.409	0.199	**0.733**