A New Gilded Age: Wealth Accumulation in the Modern World

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Declaration of Originality

I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Signed: ___  _____

On: 09/09/2016

Foreword

The thesis represents the culmination of a process set in motion some four years ago, in which many individuals supported me both in my home city of Melbourne and in Sydney.

First and foremost, I wish to thank my principal advisor, Associate Professor Kevin Daly, for his guidance and his encouragement to undertake research in an area that went beyond my initial beliefs in what I could achieve. His door was always open and he never wavered in his enthusiasm to get me to undertake this research project. He has become the role model for how I approach the world of scholarship and research. My Honours supervisor, Dr J. Wickramanayake at Monash University also has my thanks for encouraging me to strive for the PhD. I would also like to thank my fellow PhD candidate, Teresa Tosompark, for her encouragement and friendship during these years. Also, Dr Terry Sloan for all his guidance on matters of funding and administration.

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This thesis is dedicated to the memory of my late mother, Panayiota Tsigos.

Abstract

Issues of wealth inequality have been the subject of considerable public interest and inquiry in recent years. The Great Recession of 2008 in the United States (US) made many question the extent to which the global economic system not only caused economic hardship but also managed to create a class of ultra-rich in the US and across the globe. Much focus in popular discourse has centred on the degree to which a group of individuals is able to wield enormous economic influence with a concomitant concentration of wealth holdings. In general, mainstream economics has largely played down this aspect of the capitalist system; instead, the poverty aspect of wealth distribution has garnered the attention of most economists.

This thesis seeks to establish the ultra-rich as an area worthy of study by focusing on various dimensions that have affected wealth accumulation and brought about an era of unprecedented concentration of wealth at a global level. As a project largely bereft of contemporary prior work, the thesis seeks to explore and establish three key elements of modern wealth accumulation, particularly in its extreme form. Firstly, what are the general trends that signify the emergence of an economic elite across the globe, how has this elite evolved, and how are they distributed across countries and sectors of the economy? Here, the analytical approach adopted is one often utilised in historical economic studies of, for example, the US Gilded Age of the late 1800s. Major findings include that the US continues to lead the world in the generation of individuals with extreme wealth holdings, followed by Western Europe. Developing countries, however, provide a substantial portion of the increases observed. Inheritance continues to play a major role in the existence of billionaires in many regions of the globe, but its role has diminished at a global level, mainly driven by the influx of *nouveau riche* from China and Russia, as well as from the US. The majority of new wealth is concentrated in finance and real estate, followed by the consumer discretionary sector. These trends observed both before and after the Global Financial Crisis (GFC) of 2008. Further, the data reveal a high degree of survival among the great fortunes, and especially of fortunes based on finance.

Secondly, the determinants of wealth accumulation are explored. Utilising an accounting identity of household wealth, issues of savings and consumption,

financialisation, the structure of top incomes, particularly the relative importance between capital and earned income are considered. Across all facets, the wealthy increasingly exhibit and exploit behaviours and actions that ensure persistence of their wealth stock while the poorest are being further disadvantaged.

Thirdly, the empirical research in this thesis also considers the role of risk aversion and whether it varies with the level of wealth observed. Applying a mean-variance-based measure of relative risk aversion (RRA) to an Australian household micro panel derived from the Household, Income and Labour Dynamics in Australia[1] (HILDA) survey, the level of risk aversion of Australia's household financial portfolios is estimated. Controlling for various socio-economic characteristics, the present study explores whether risk aversion heterogeneity is a function of wealth heterogeneity. In contrast to most studies, it finds evidence of very high risk aversion among the majority of poor households but vastly lower risk aversion among the high percentiles in the wealth distribution. After applying a first differences model across three survey waves spanning 2002 to 2010, risk tolerance is found to increase significantly with wealth. Risk tolerance is positively associated with mortgage payments, but rental payments have no relationship. In addition, there is no evidence that holding a university education has any discernible impact on risk aversion. The study also elicited some preliminary findings on the impact of financial advice on observed risk aversion. Financial advice is found to accentuate risk aversion, particularly among the wealthiest households. These findings have potential implications for the distribution of wealth in Australia, which has received renewed interest.

Finally, the sources of wealth across seven advanced economies are explored, with particular emphasis on the role of new and inherited wealth. Despite the consistent increases in the ultra-rich across these countries, there is a significant element of heterogeneity in the degree to which inheritance or new wealth dominates in a given country or region. Further, there is an element of variation in terms of the extent of the role of certain sectors in the rise of the ultra-rich. Across North America, financial services have played the dominant role in bolstering the population of billionaires, with

[1] This paper uses unit record data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The HILDA Project was initiated and is funded by the Australian Government Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) and is managed by the Melbourne Institute of Applied Economic and Social Research (Melbourne Institute). The findings and views reported in this paper, however, are those of the author and should not be attributed to either FaHCSIA or the Melbourne Institute.

much of the growth in diversified financials followed by property. This thesis seeks to situate the trends within the context of the sweeping historical macroeconomic, social and institutional changes that have been wrought particularly since the end of the Second World War.

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List of Abbreviations

ABS	Australian Bureau of Statistics
ACP	Australian Consolidated Press
ANOVA	analysis of variance
APC	average propensity to consume
ARDL-ARCH	Autoregressive Distributed Lag-Autoregressive Conditional Heteroscedasticity
ASX	Australian Stock Exchange
CAPM	Capital Asset Pricing Model
CEO	Chief Executive Officer
CPU	central processing unit
CRRA	constant relative risk aversion
DRRA	decreasing relative risk aversion
DTC	double tax treaty
CPPCC	Chinese People's Political Consultative Conference
DAX	Deutscher Aktienindex
DRRA	decreasing relative risk aversion
EDS	Electronic Data Systems
EU	European Union
G20	Group of Twenty
GDP	gross domestic product
GFC	Global Financial Crisis
GICS	Global Industry Classification System
HSD	honest significant difference
HILDA	Household, Income and Labour Dynamics in Australia
IBM	International Business Machines
IMF	International Monetary Fund
IPO	initial public offering
IRRA	increasing relative risk aversion
IT	information technology
LG	Lucky Goldstar
NSDAP	Nationalsozialistische Deutsche Arbeiterpartei
RRA	relative risk aversion

SNA	System of National Accounts
SOE	state-owned enterprise
TIEA	Tax information exchange agreements
TMC	Toyota Motor Corporation
US	United States
UK	United Kingdom
WWID	World Wealth and Income Database

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Risk preferences of Australian households: A panel study. Best paper presented at 23rd International Business Research Conference, October, 2013, Melbourne, Australia.

Risk preferences of Australian households: A panel study. INIFINITI Conference on International Finance, June, 2014, Prato, Italy.

Implicit risk preferences of Australian households: A panel study. Paper presented at 7th International Finance and Banking Society Conference, June, 2014, Lisbon, Portugal.

Chapter 1 Introduction

1.1 Introduction

People who are unable to motivate themselves must be content with mediocrity, no matter how impressive their other talents. — Andrew Carnegie

... implied in all this is that wealth is the reward for virtue, which makes it hard to argue for redistribution. — Paul Krugman

The above quotes, made almost over a century apart, the first during the Gilded Age (1893 to 1899) and the second in contemporary times, starkly illustrate the divergent narratives propounded by those exploring the dynamics associated with the accumulation of large fortunes. The associated debates have raged since the Gilded Age, which was characterised by the rise of vast wealth holdings amongst the few in the United States (US). In stark contrast to the previous economic system of feudalism, in which feudal lords extracted rents from serfs through rights and privileges bestowed by kings, under the capitalist system any individual could pursue wealth accumulation solely through success in commerce. This element of human agency, that anyone can attain great wealth through the successful application of their natural talents, is at the core of Andrew Carnegie's (1901) words above. Contemporary economists such as Kaplan and Rauh (2013), for example, have sought to justify the existence of an ultra-rich class, as exemplified by the *Forbes 400,* along the lines of skill and entrepreneurial talent. This 'skill' is at the core of the extreme wealth levels of a few thousand individuals today according to such narratives.

According to this viewpoint, Krugman (2014) argues, through hard work, along with a sprinkle of genius and luck, a vast accumulation of fortunes can arise. From a policy perspective, arguments that centralise and elevate the individual skill and talent above other factors in the wealth debate present a formidable challenge to any notion of wealth redistribution. Among business publications and the mass media, for example, one often encounters biographical portrayals of the wealthy containing 'rags-to-riches' stories. These stories simultaneously represent records of their success and the possibility that any individual, through sufficient application of productive hard work, can also attain the dizzying heights of extreme wealth (e.g. Giang & Goudreau, 2014; Baer, 2014; Stonington, 2010).

The wealthy and the concomitant wealth distribution skewed in their favour is gaining much focus among the contemporary media, policy makers and non-governmental organisations. In the wake of the recent financial system crisis in the US and the sovereign debt crisis that has engulfed Europe since 2008, there has been much renewed debate over the extent to which prevailing economic structures and institutions brought on the crises and, as a corollary, exacerbated the levels of wealth inequality observed across the world.

Indeed, the importance of the issue of wealth creation and accumulation can be seen from the drastic policies recommended or considered when viewed through the prism of inequality. A report by the organisation Oxfam (2014) details the extent to which inequality has for the past decade increased substantially, as the wealth held by the top one per cent now amounts to a staggering sum of USD110 trillion. In the US, home to the world's most *Forbes* billionaires, the top one per cent captured 95% of the growth in wealth compared to the bottom 90%, who became poorer (Oxfam, 2014). To reverse the growing inequality, Oxfam (2014) recommended a number of policy initiatives. These policy recommendations ranged from reducing the incidence of tax evasion, enforce disclosure and transparency in all wealth holdings, the establishment of a living wage and, perhaps most controversially (depending on which side of the political spectrum one falls), the creation of progressive income and wealth tax regimes.

The International Monetary Fund (IMF) also recently explored the issue of income inequality, including its key drivers and its impact on economic growth (Dabla-Norris, Kochhar, Suphaphiphat, Ricka & Tsounta, 2015). Dabla-Norris et al. (2015) find that

significant income inequality decreases economic growth and that there is no 'trickle down' effect that represented the cornerstone of growth and development theories since the 1950s. They recommend investing more into education and training to develop the human capital for the poorest classes as well as implementing progressive tax regimes. The issue has already the entered political debate at the national government level. In 2012, for example, President Barack Obama raised the capital gains and dividend tax for couples with incomes above USD250,000 (Sanders, 2015). Of course, some countries have maintained a wealth tax for some time. France instituted the Solidarity Tax on Wealth in 1981, while a number of other western European nations have maintained wealth taxes throughout their respective histories, including Norway and Switzerland. Still, other countries have abandoned such an approach. Germany, for example, repealed a property tax law after it was found to be unconstitutional by the Federal Constitutional Court in Germany ("Umfairteilung," 2012).

Recently, the Group of Twenty (G20) bloc has sought to reduce tax evasion via offshore financial centres by creating and enforcing a series of bilateral tax agreements and treaties (Lewis, 2014). More recently still, the Australian Federal Government has been in discussions with the United Kingdom (UK) Government in proposing a global tax on multinational corporation profits at source (Owens, 2015).

The purpose of this thesis is to analyse the processes through which the modern forms of large fortunes are amassed. Despite the recent spate of governmental and non-governmental interest in inequality (be it wealth or income), the most privileged and fortunate have not generated much interest in mainstream economics. However, the publication of Piketty's (2014a) book, *Capital in the 21st Century*, has once again catapulted wealth accumulation into the focus of scholars. As the issue of wealth accumulation is multifaceted, this thesis is not merely an exercise in business history but deals with the issue from multiple perspectives, accordingly employing alternative research methods. Broadly, the trends and dynamics in high-tier wealth accumulation are coupled to the economic, political and social mechanisms that have been in play for at least half a century or more in some parts of the world. This approach leads to potential policy implications since much of the debate on wealth distribution centres on the extent to which wealth has been 'justly' attained. Further, how wealth is distributed in the capitalist system can have an impact upon economic growth.

1.2 Justification for the Research

As the preceding section discusses, both world governments and non-government organisations are directing attention to the related issues of tax policy, wealth concentration, and inequality. Piketty (2014a) forced a reconsideration on how economics and the social sciences at large tackle the issues driving wealth accumulation and concentration. By emphasising the importance of "capital" in capitalism and the transition from an affluent society to a society based, potentially, on inheritance and patrimony, Piketty has revealed tremendous gaps and logic in how the latter is analysed.

Amongst mainstream economics, when the issues of high wealth concentration have been recognised and explored, the boundary of analysis has been restrictive. This body of research has focused on the returns to skills and education as an overriding aspect of the new economic elite. One of the most recent works in this strain, Kaplan and Rauh (2013), seeks to explain the rise and rise of the US *Forbes 400* to the education of these individuals – the rationale being the appearance of the 'tech' based billionaire where an education in computer science, preferably from an Ivy League university, is presumably a core requirement. Such sentiments echo Kalleberg (2011) where highly skilled workers reap enormous benefits in the "modern" economy while the low-skilled miss out. Bonnet and Thery (2014) argue the elite themselves have adopted this view, believing that discourse that associates great fortunes with hard work in itself explains their privileged standing in society.

Such a discourse on the relation between economic elite and meritocracy negates much of the historical changes in both the political, social and economic realm that could potentially explain the existence of the new ultra-rich class. Meritocracy, for example, cannot explain the survival and prosperity of the German family dynasties throughout the past century which included two devastating world wars. Nor can a standard life cycle model account for its preponderance. Explanations in the realm of law and politics are better suited here. The importance and role of financial capital in wealth accumulation is also lacking in much of the literature. For example, do the rich exhibit preferences for wealth that makes them hold greater levels of financial risk in their portfolios?

1.3 Objectives of the Research

To date, the exploration of the ultra-rich has been limited and often beholden to restrictive precepts of neoclassical thought. The rise of the ultra-rich, and ever greater wealth concentration into their hands, are largely grounded in notions of winner-takes-all markets (Rosen, 1981), returns to education or human capital (Kaplan and Rauh, 2013) or the increasing scale of markets. Piketty's (2014a) focus on the rise of the patrimonial society heralds a transformation on how economists should explore these issues. The call for multidimensional studies into the dynamics of wealth accumulation (Piketty, 2014a; Piketty 2014b; Bonnet and Thery, 2014) to further understand the behaviour of the wealthy and their relation to broader economic, political and social forces is taken up in this thesis.

The primary objective of this thesis is to explore and analyse the evolution of wealth accumulation across time, space, and the factors that play a critical role in any observed trends among the wealthiest sections of society, particularly in the advanced economies. This rests on the ability to amass and present statistical data on the world's wealthiest individuals with particular emphasis on examining the trends and relationships across important economic cycles and institutional developments. Further, the behaviour of wealthy households must be considered as consumption and savings, debt levels, the structure of income and taxation all have a role in either reducing the pace of accumulation or accelerating and accentuating it depending on the level of wealth held by households. In addition, an examination is made of the role of wealth in permitting enhanced risk taking. Given the increasing financialisation of household budgets, this seems an important channel through which wealth can further accrue rapidly to wealthier households. This has recently been recognised by Saez and Zucman (2014), who find that rising wealth inequality in the United States is intimately intertwined not only with savings and consumption but also rates of return to household portfolios. This study establishes the level of risk aversion among Australian households and empirically demonstrates how this varies according to wealth. Data limitations restrict this aspect of the study to Australia.

Based on a review of the literature of wealth accumulation, the following research questions were formulated:

1. Which regions of the world have given rise to the greatest private fortunes?

   The first research question is explored in Chapter Three where the general patterns of the rich are established at the regional level.

   This sets the global context by demonstrating how wealth accumulation is rapidly increasing at the highest wealth tier and establishing that this process is not just restricted to the developed world. Further, this research examines not only where today's wealth is generated, but also conducting an analysis that explores the generation of wealth across all sectors, such as information technology (IT) and pharmaceuticals, to more traditional commercial activities such as finance and retailing.

2. To what extent do various structural changes in economy and society impact upon wealth distribution and concentration across advanced economies?

   This question is examined in Chapter Four. The chapter seeks to establish a causal link, analytically, to historical trends in various factors associated with wealth dynamics. Significant emphasis is also placed on the changes in the structure of top income shares and the impact of tax policy on the dynamics of high wealth concentration, and the role of financialisation and consumerism in influencing the savings rates and the potential for household investment. Chapter 4 adopts an analytical approach in exploring how the above factors have played a role in increasing wealth concentration amongst the advanced economies.

3. Given the increasing financialisation of household balance sheets, do risk aversion levels differ across wealth levels?

   This question is explored in chapter 5. A neoclassical approach in the measurement of risk aversion is adopted, then how it varies with wealth is empirically tested. The Chapter focuses on Australian households, employing data from the Household, Income and Labour Dynamics in Australia (HILDA) database.

4. Is inheritance concentrated in a few countries or regions, or does it manifest itself evenly across the globe, particularly in advanced, developed, capitalist societies?

5. What is the relationship between government policy and the creation and endurance of economic elites through succeeding generations of family dynasties?

6. For the great self-made fortunes, are there differences in the role of entrepreneurialism versus appropriation in the initial creation of wealth depending on a country's pattern of development?

7. Do entrepreneurs, depending on their budgetary constraints, specialise in "low" budget risks or "high" budget risks?

   Questions 4, 5, 6, and 7 are explored in Chapters 3 and 6. Chapter 6 is a cross-country study. This historical analysis focuses on the individual histories of extreme wealth holders and the historical context in which their wealth was made. Further, the relative importance of inheritance greatly varies across economies suggesting substantial divergence into the future. The analysis proceeds in the spirit of wealth historians (Rubinstein, 1980; Rockoff, 2012).

1.4 Scope of the Thesis: Sample, Time Frame and Methodology

To answer the research questions raised in section 1.3, the analysis is approached in a number of ways.

Firstly, the general trends in wealth across various countries and regions are analysed, utilising data from wealth lists between 1990 and 2013 and national wealth to income ratios. In total, the analysis consists of an unbalanced panel of 2,609 individuals and families for a total sample size of 9,426 across the 24-year sample period.[2] The wealth lists incorporate data on not only wealth size and demographic indicators but also the

[2] Unbalanced panel refers to data in which observations for a group are missing across time.

country of origin, age and date of birth, and the industrial or commercial sources of wealth.

Secondly, the study examines which regions appear to be producing the wealthiest individuals and whether these observations can be tied to changes in the economic environment, or if other forces more aligned with political, social or even personal circumstances are at work. This follows Watkins (1907) and Rockoff (2012), among others, who viewed the extreme wealth levels of the Gilded Age to be by-products of technological change in certain industries and the rise of financial capital. For these writers, individuals became wealthy due to fortuitous economic and technological circumstances. A century on, are the same forces still at work? In the Gilded Age, railroad growth fuelled the growth of newfound riches in finance and real estate. Has the World Wide Web revolution of the 1990s had a similar impact?

Thirdly, the study examines the world's most advanced economies to determine whether systematic differences in the patterns of wealth generation across economies and industries exist. Which common traits appear across countries that incubate and give rise to the largest fortunes observable? For example, Watkins (1907) argued that the rise of 'abstract property' was a necessary condition for wealth in the Gilded Age in the US. In contemporary times, Torgler and Piatti (2013) and Petras (2007) posit that corruption plays a major role in some countries, while Sanandaji and Leeson (2013) find that secure property rights are the most important element. Alternatively, do these forces differ depending on the associated historical developments of these countries, as Richard Jones (1831) once argued?

Generally, these issues are explored in an analytical and qualitative framework. The use of econometric analysis was rejected because the complexity of the micro data used in the study and its relationship to macro-wide or political factors does not readily lend itself to such an approach. Piketty (2014a), for example, argues that the use of a regression framework to explore the relationship between income and wealth inequality and $r>g$ (where, r= rate of return on capital and g= rate of national income growth) encounters a major impediment. The obstacle is that the accumulation of wealth can be a very long process, often spanning generations, making it difficult to select an appropriate lag length. Indeed, the present study found numerous instances, for example, where an individual acquired wealth from their father's construction business

that was built up before the Second World War. Subsequently, their progeny was catapulted into extreme wealth levels some two decades later. How does one choose an appropriate lag length in such an instance? In more extreme scenarios, some European dynasties span generations greater than three or four centuries, or greater than the existence of some nations. This thesis follows Piketty's (2014a) preferred approach, which relies 'on a mixture of careful case studies and structural theoretical models' (p. 77), and has been used previously in a number of economic history studies such as Rubinstein (1980) and Rockoff (2012). Ultimately, this thesis occupies a middle ground between econometric studies that utilise media rich lists (see e.g. Canterbery & Nosari, 1985) and studies adopting a historical perspective (see e.g. Rubinstein, 1980).

A regression framework is adopted only insofar as to explore the relationship between wealth and risk aversion in Chapter 5. A regression approach is possible because of the availability of quality data on household financial portfolios from the HILDA database across all wealth levels for Australian households.

1.5 Limitations and Weaknesses of the Research

Throughout the process of data collection and collation for this research, a number of weaknesses and limitations were identified that reduced the scope of the thesis.

Firstly, the data on the ultra-rich is sourced from secondary data sources. Media lists on the ultra-rich are the most accessible data source on these individuals – but are plagued by errors or inaccuracies. This is particularly apparent when demarcating between fortunes that are inherited or self-made. In many instances, media publications appear to have moved to a flexible interpretation of what constitutes inheritance over the entirety of the sample period for any number of individuals. Given the longitudinal nature of the data and to ensure consistency across time, such instances were checked and validated from other primary sources including newspaper articles or biographical sources to ensure the coherence and consistency from period to period. Still, data accuracy represents a major caveat to the analysis of the data.

Secondly, the issue of gender is not explored at all in this thesis. Some literature has identified this as an area demanding greater scholarship. For example, it would be

instructive to observe the apportionment of wealth between siblings of different genders. Are these related to cultural norms or do the ultra-rich take a different approach? Such an issue could be explored in the primogeniture theoretical frameworks of Stiglitz (1969). Data on gender and inheritance is available in our database but the aforementioned research avenue is not explored in this thesis. In addition, the relationship between sector and gender is worthwhile exploring.

Thirdly, a major limitation of the study is not being able to expand the scope of certain sections to include more countries in the study. A primary obstacle is a lack of data availability in a longitudinal format. This is particularly in relation to distributional data on wealth, income and taxation. This limitation is particularly acute for this study focusing on the economic elite as many of these individuals come from Asia or Latin America for which relevant data is scarce. Even in the instances of advanced industrialised economies, significant data impediments were encountered despite great strides over the recent past toward this end. For example, wealth distribution data over a long time period, and without missing observations, for Canada, Germany or Japan is not available. Further, data on some variables may simply be missing or not directly comparable across countries due to definitional changes. In addition, much of the data that is available comes from household surveys undertaken on usually intermittent basis. These may only be produced once every ten years. These impediments ultimately limit the scope of the thesis in certain areas.

1.6 Organisation of the Thesis and Main Findings

The thesis is divided into seven chapters. Chapter 2 reviews the literature on wealth and the ultra-rich. This research is relatively limited, given the importance of the ultra-rich in a capitalist system. The literature covers various aspects of wealth from different analytical frameworks. The Chapter begins with historical notions of wealth and capital. Particular attention is paid to Piketty (2014a) and the associated framework for exploring the accumulation of wealth. These range from studies based on social science theories examining the emergence of economic elites in a society to the contemporary economics literature that has researched the issue of wealth from numerous areas, including from industry structure to corruption or stochastic accumulation models. The chapter also reviews how the definition of wealth has evolved over the ages and how it has been differentiated in economics from the definition of capital. Further, in a broader

context, this Chapter situates the thesis amongst the broader corpus of work associated with wealth accumulation models.

Chapter 3 presents an overview of the construction of the ultra-rich database including establishing age, industry and, where warranted, citizenship. Secondly, trends in aggregate wealth amassment are analysed in the form of wealth to income ratios and the amassment of wealth as exemplified by billionaire population and holdings. Statistical analysis is restricted to the one-way analysis of variance (ANOVA) tests to detect any systematic regional differences in relation to important characteristics such as sources of wealth and inheritance. The chapter also discusses the impacts of economic crises, specifically the Asian Financial Crisis and the Global Financial Crisis (GFC) on these trends.

The main findings of Chapter 3 are as follows. Firstly, aggregate wealth, as measured by wealth to income ratios, has been accumulating at a rapid rate across the advanced industrialised economies. At a micro level, the trends in accumulated wealth are reflected in the rise of the billionaire class across the world with average increases in wealth of the class dwarfing income growth. The rise of this class is not restricted merely to the First World, but in all regions of the world. Here, Russia, China and South America are especially prominent. North America, however, remains the main engine of billionaire growth. Inheritance remains a significant force amongst the ultra-rich class in parts of Europe, Asia and South America contrary to the findings of studies that focus only on the US.

Chapter 4 discusses the rise of a dual economy among the world's advanced economies where wealth is concentrated in fewer hands proportionally. It follows the wealth accumulation model developed by Saez and Zucman (2014) and in the spirit of Meade (1965), as well as the work of Piketty and Zucman (2014a) and Piketty (2014a), among others. The purpose of this chapter is twofold. Firstly, it illustrates the stark chasm that appears to be emerging between the wealthiest households and the rest of the population in certain advanced economies across several variables relevant to wealth accumulation and concentration. Secondly, heavy emphasis is placed on situating these variables on the ever-increasing roles of financialisation and consumerism in both enhancing the position of the wealthy and suppressing the upward mobility of large sections of

society. Taxation policy is also introduced in relation to labour and capital income, inheritances, and tax evasion.

The major findings of Chapter 4 are that various forces are increasingly becoming beneficial to the richest segments of society or economy. In each facet, consumerism, financialisation, income shares (wage and capital income) the rich are dominating. Further, the cross country comparisons of taxation show again movement favouring the rich in all aspects of taxation. Taxes on labour incomes, capital incomes, estates and gifts, and wealth taxes all have moved in a direction that favour wealth accumulation. Tax evasion itself is increasingly providing a further avenue of reducing the tax burden of the wealthy.

In Chapter 5, the focus shifts away from an all-encompassing view of wealth accumulation to concentrate on a particular aspect of it. Specifically, the relationship between wealth holdings and risk aversion is analysed in a quantitative manner. The Chapter addresses the point first raised in Chapter 4 – that the increasing financialisation of households' balance sheets suppresses lower wealth class households while enabling enhanced wealth generation by the wealthiest households – by testing to what degree relative risk aversion (RRA) is a function of wealth, controlling for a range of socioeconomic variables. The analysis uses the Australian HILDA survey of an unbalanced panel of more than 7,300 households. Estimates of risk aversion are derived within a mean-variance framework where it is found that risk aversion systematically decreases with wealth holdings.

The main findings of Chapter 5 are that Australian households exhibit decreasing relative risk aversion. This finding remains robust in the presence of various other variables and specifications. Further, the estimated risk aversion of the wealthiest households is found to approach a risk aversion parameter of 2, well below the poorer households. These estimates largely fall in line with calibration models on wealth distribution that assume a risk aversion parameter of 1.5 to 2.

Chapter 6 delves much deeper into the high wealth accumulation trends by exploring the historical sources and processes for the creation of large fortunes across the world's advanced economies. Given the scope of the study, the focus here is to draw out the differing patterns of wealth accumulation, including the role of the entrepreneur and

inheritance, where one group may dominate in a given region or country. The discussion ultimately rests on the prediction by Piketty (2014a) that the high rates of return of yesteryear are diminishing now and links this to prevailing institutional changes. In addition, the theoretical prediction of Shorrocks (1988) is considered. Shorrocks's model predicts that the dynamics associated with wealth accumulation vary substantially depending upon on the resources necessary to access certain entrepreneurial risks. Support for the theoretical predictions of both Shorrocks (1988) and Piketty (2014a) are found across the globe.

Finally, Chapter 7 provides the conclusion to the study. It summarises the main findings of the thesis in greater detail and provides avenues for future research.

1.7 Summary of Policy Recommendations

Based upon the findings of the thesis, policy recommendations based on this research can be summarised along three possible avenues. Implicit in these recommendations is the assumption that government policy can have an impact on wealth concentration and a positive impact upon economic growth.

Firstly, we consider the implementation and efficacy of more expansive and progressive income or wealth tax regimes. A forceful argument that progressive tax regimes do not have a deleterious impact on entrepreneurialism or economic growth is possible. The evidence, particularly in Chapters 4 or 6, does not suggest that entrepreneurial effort is blunted by a progressive taxation regime, particularly in light of the finding that many of the self-made billionaires attained initial success during periods of high taxation. However, the real world applicability of the implementation of higher progressive tax regimes, particularly those involving the ultra-rich and their ability to shift capital from off-shore centre to off-shore centre may limit the effectiveness of this tool in a contemporary context. Although a global wealth taxation system would provide a rapid mechanism through which wealth inequality might be reduced, the political realities are likely to make this an ineffectual approach without enormous political cooperation and coordination between nation-states.

An alternative approach to reducing the inequality of wealth accumulation is to view it within the context of how households deal with their financial holdings. The increasing financialisation of household balance sheets has so far appeared to have an asymmetric impact on households, depending on which side of the wealth distribution one falls. A policy consideration that naturally emerges from this finding in Chapter 4 is to consider the adoption of policies that incentivise savings and investment by all. The potential of utilising finance to increase the probability of upward mobility regardless of classes was well recognised by Watkins (1907) and, more recently, by Saez and Zucman (2014).

Also, the extent of the representation of inheritance in the wealth lists requires attention. Wealth and estate taxes in themselves are not likely to have a dramatic impact given the formidable international issues that would emerge in coordinating tax regimes. An alternative approach may be to restrict the span and sphere of business interests in which these families engage thereby limiting their ability to gain greater shares of the world's income.

1.8 Contributions

This study makes at least three major contributions to the extant literature of wealth accumulation and on the ultra-rich.

Firstly, this study contributes directly to the literature on the sources of great fortunes by showing that the riches observed today significantly differ across the globe depending on the countries' historical development. A recent trend in some literature, particularly that of a neoclassical economics standpoint, is to relate the rise of great fortunes to the human capital one possesses (Kaplan and Rauh, 2013). The results presented in Chapter 6 reveal that the wealth that has been amassed cannot be exclusively tied to such explanations. Instead, the cross-country comparative study demonstrates the roles of government policy and institutions in governing the rise of fortunes. The impact of these varies region by region. The results complement recent studies by Piketty (2014a) and various empirical studies by scholars focusing on specific countries (Siegfried and Roberts, 1991; Siegfried and Round, 1994; Hazeldine and Siegfried, 1997; Stilwell and Ansari, 2003; and Rockoff, 2012).

The second contribution is to show in a cross-country setting the dynamics of wealth accumulation through the prism of various socioeconomic factors. The work builds on the single country studies such as Saez and Zucman (2014), by using a convenient wealth accumulation model to decompose and to compare the process of accumulation across seven advanced economies. Unlike studies which purely focus on elements of inequality in isolation, this study seeks to combine the findings of a disparate set of studies into one uniform corpus of work.

The third major contribution, is to develop a measure of risk aversion based on the portfolio holdings of Australian households. I am not aware of any study that explicitly estimates the degree of risk aversion for the Australian economy in relation to financial securities. A test is conducted on the hypothesised relationship of constant relative risk aversion in wealth, and find, contrary to the null, that risk aversion decreases in wealth. This adds to a growing but small literature on the uniqueness of the wealthy's household portfolios relative to the rest of the population. In addition, the relationship between risk aversion, wealth and the receipt of financial advice was considered. I am not aware of any study that explores this relationship despite its importance in providing a potential advantage to the wealthy. Piketty (2014a) conjectures that one reason why the rich are able to maintain high investment returns is due to their ability to access financial advice. Some of the results present here suggest that this may very well be true.

Fourthly, the thesis utilises media rich lists as a basis for constructing a new wealth database. Although this thesis is not the first to do so by any means (see for example, Siegfried and Roberts, 1991; Siegfried and Round, 1994; Hazeldine and Siegfried, 1997; Stilwell and Ansari, 2003; and Rockoff, 2012), it has sought to bring greater consistency in the information provided by these lists. These include ensuring an accurate and consistent treatment of inheritance over time, and an accurate and consistent treatment of an individual's industrial source of great fortune. This is achieved by applying the Global Industry Classification Standard (GICS) onto a media list back to 1990. By applying the GICS taxonomy I was able to ensure, for example, a consistent record of individuals' movements between industries as it arose. Such tracking of individuals required a methodical search on all 2,609 individuals and families in the billionaire database.

Chapter 2 Literature Review: The Wealthy as a *Sui Generis*

Chapter 2 provides a literature review of several of the works in the field of the ultra-rich and wealth accumulation. To begin, a discussion of wealth and its close relative, capital is provided. Both concepts are explored within the context of the analytical framework of Piketty (2014a) who offers a unique approach here. In addition, the relationship between wealth accumulation and capital accumulation models are discussed. It is argued that Piketty (2014a) represents an attempt to bridge the two different conceptual frameworks. The thesis itself focuses on models of wealth accumulation rather than attempting to unify a theory of wealth distribution with an aggregate productivity theory of growth. Piketty (2014a) emphasises that a class of these models permit the exploration of questions that are not readily explorable in models of capital accumulation. In addition, a discussion of historical approaches to the issue of wealth accumulation is provided as it pertains to the ultra-rich specifically. This review is not solely limited to the discipline of economics but includes, aspects of elite theory from the social sciences. In addition, recent empirical analyses of the rich are reviewed, which have mostly focused on establishing the sources of great fortunes.

2.1 Introduction

Economic research on the ultra-wealthy is scarce, despite the attention they have received in the popular mind as discussed in Chapter 1. Instead, academic discourse has typically examined the whole of the wealth distribution with a particular focus on the extreme left side of the distribution tail, namely poverty (Torgler & Piatti, 2013). However, such a focus may lead to the neglect of a class who play a pivotal role in economy and society in general. Economists who have researched the extremely wealthy such as Tuckman (1973), argue that effectively taxing the rich would provide significant budget relief to the US government's finances. Attempting any such policy

initiative, directed at the rich demands strong economic justification given their role as owners of capital and enterprise (Slemrod, 2000). From a general economic or commerce perspective, Hassler (1999) forcefully argues that this group of individuals makes decisions every day that affects the economic well-being of millions. Indeed, the subjects of this study either found or own many of the world's largest corporations that touch every aspect of our lives from food to computing, retailing to automobiles, and medicine to junk food.

The surprising lack of research on the wealthy, despite the recognition that wealth does 'make the world go around', could be related to how precisely the question of wealth accumulation is explored in orthodox economics.

Neoclassical economics with its focus on marginal productivity theories of capital and labour are limited in providing a sufficient analytical framework within which to investigate certain aspects of both wealth accumulation and distribution. Similarly, the post-Keynesian approach may not be sufficient either in exploring certain sections of the wealth distribution given its overall macroeconomic perspective. The lack of clear disciplinary demarcation lines has also perhaps deterred economists from exploring the topic, particularly in contemporary times, whereas social scientists and geographers are often more prepared to tackle the subject.

However, perhaps the biggest hurdle that confronts researchers, be they economists or social scientists, when seeking to grapple with the rich are the significant data limitations they encounter. Typically, economists approach the problem by employing tax records, deceased estate records or a rich list published by a major periodical. This data is then utilised in a typical econometric framework, employing regression analysis, to test various hypotheses. Tax records provide the most contemporary accurate records, but when dealing with the wealthiest of individuals, the issue of tax evasion becomes a consideration, as does reconciling tax measures across jurisdictions. Deceased estate records also provide a high degree of accuracy but can only be used for deceased individuals. Media lists provide a fruitful foundation for further exploration as long as one is mindful of their limitations, the most obvious being that of inaccurate wealth estimates. Numerous media lists exist across the world. In the US, the *Forbes* annual rankings are by far the most popular, focusing not just on the US but on regional and global wealth rankings. In Australia, there is the *Business Review Weekly's* Top 400

Rich List, while in the UK there is the *Sunday Times* Rich List. Despite these data limitations, some economists have developed a body of work that provides a foundation upon which this thesis can build.

In general terms, Chapter 2 is divided into two sections where there is a change in focus by moving from a general review of wealth accumulation to one focusing on just one aspect of the wealth distribution, the ultra-rich. Section 2.2 principally focuses upon the concepts of wealth and the theoretical models that have considered the accumulation of wealth and the concomitant distributions of wealth. This section also incorporates a lengthy discussion on Piketty's (2014a) concept of wealth and why his definition of wealth is employed throughout this thesis. A discussion on the link between capital accumulation and wealth accumulation models is also considered, particularly considering the theoretical contributions of Piketty (2014a). Chapter 4 utilises a form of these models to examine the multifaceted nature of wealth accumulation. Section 2.3 deals exclusively with the ultra-rich and the literature which explores this small, but important, class. In contrast to section 2.2 which is heavily focused on theoretical aspects, much of section 2.3 is focused on empirical works to this end. Some theoretical works are considered though from the history of ideas to more contemporary works that deal specifically with the ultra-rich. This section is particularly important for Chapter 6. Both sections informed the research questions discussed in section 1.2. Section 2.4 focuses on the small body of literature that has grappled with the ultra-rich.

2.2 Conceptualising Wealth

The definition of wealth in economic or philosophical academic discourse has undergone significant variation since antiquity through to the contemporary era. In economics, the role of wealth has, to an extent, been supplanted by the concept of capital. The purpose of this section is to trace the historical evolution of the concept of wealth and how wealth and capital have become at once separated in the literature. The separation is often viewed as necessary as the two concepts may necessitate different conceptual frameworks in analysing their associated dynamics. The discussion then turns to the definition of wealth and capital that Piketty (2014a) has proposed in which the two are viewed equivalently.

The publication of Piketty's (2014a) book has generated significant scholastic debate. One aspect of Piketty (2014a) upon which much criticism has centred is over his definition of wealth and capital (see e.g. Galbraith, 2014; Blume and Durlauf, 2015). In general, Piketty consistently equates wealth with capital. It will be argued that this approach is a by-product of Piketty (2014a) attempting to reconcile macro observations (growth theory) with micro observations (the distribution of wealth and income). This point is specifically discussed in section 2.2.4.1.

2.2.1 The Concept of Wealth and Capital through the Ages

Wealth and capital have undergone various definitional changes throughout history. In earlier times, the two concepts have been viewed as virtual synonyms, and in contemporary times they have emerged into distinct concepts.

Economic historian Robert Heilbroner (1987) emphasises that wealth represents the fundamental business of economics. Despite the ostensible centrality of wealth in economics, a precise consensus surrounding the definition of wealth has failed to emerge. The lack of consensus may be due to the various meanings of wealth spawned through the ages. The lack of definitional rigour potentially obfuscating the manner of how to debate and analyse wealth. At the core, the issues tend be as to the true purpose of wealth in an economy.

In antiquity, a consensus was absent. For some ancient Hellenic thinkers, the definition revolved around the ability to defy the need for work:

> A Greek was wealthy if he could live without having to work, poor if he did not have enough to live on without working. From this point of view, the majority of people in Greece were 'poor' since they had to work. (Austin & Vidal-Naquet, 1977, p. 16)

Applying such a definition from antiquity would suggest that some of the richest individuals in contemporary times are not wealthy, given that the majority continue to take a day-to-day managerial or entrepreneurial role in the operation of their business enterprises. Similarly, Carroll, Slacalek and Tokuoka (2014) argue that wealth

inequality emerges from those with low wealth-income ratios (high wealth and high income) and not from purely asset-rich households alone.

Distantly echoing concepts of modern capital rather than wealth, some ancient Hellenic thinkers emphasised the utility of wealth toward production. Xenophon (430-354 BC) viewed wealth as a resource that a person can use for some purpose. The use of wealth is not toward creating more wealth – but toward creating a household for the purposes of leisure and autarky. In other words, 'Xenophon … gives no evidence of having considered wealth as anything but an instrument in the service of the good life …' (Booth, 1993, p. 42). In some respects, this notion of wealth echoes those of modern neoclassical production functions in which capital (plant and machinery, land) is a core variable.

Pre-Enlightenment discourse adopted an appreciably unique concept of wealth. The role of money or *specie* in wealth was emphasised – to the detriment of "real" goods. To some degree, these definitions were heavily informed, or aligned, with the machinations of the mercantilist international system and power politics that dominated international relations in the 1500s to 1600s. Negating the importance of production (unless it provided substantial trade surpluses), mercantilists' elevated accumulated wealth as the primary means through which dominance in the international system could be attained. Large stocks of wealth were heavily tied to the amassment of *specie*, gold or silver from whatever source, including plunder or appropriation and not necessarily through an accumulation of national income. The massive reserves, representing a country's wealth, provided a surer foundation upon which to conduct wars or dominate neighbours before the advent of efficient tax regimes or modern central banks.

Equating only *specie* with wealth received considerable criticism, especially amongst the French *laissez-faire* thinkers and British Tories. Pierre de Boisguilbert vehemently rejected the amassment of *specie*, and instead emphasised that the essence of wealth was in goods. Spengler (1984) argues that the views of de Boisguilbert were highly influential on Adam Smith, though the latter never referenced the former. Similarly, the Tory, Dudley North, wrote that:

> … he who is most diligent, and raiseth most Fruits, or maketh most of Manufactory, will abound most in what others make, or raise; and consequently be

> free from Want, and enjoy most Conveniences, which is truly to be Rich, altho' there were no such thing as Gold, Silver, or the like amongst them. (p. 14)

Amongst these thinkers, monetary holdings were not wealth; instead, the goods that one could produce and accumulate constituted wealth.

Enlightenment approaches to the problem of wealth significantly departed from pre-Enlightenment conceptions – by seeking to elaborate other aspects of wealth. Classical economists developed a significant point of departure from previous generations of philosophers with a much more narrowly bounded concept of wealth, namely capital. Specifically, the idea of wealth largely transformed into the concept of capital and in doing so reduced the scope of economists' analysis of wealth. To a great extent, the primacy of the monetary holdings in wealth (or capital) was divested. For Adam Smith, the emergence of capitalism was synonymous with goods that were produced and reordered by labour. Adam Smith emphasised the importance of labour when elucidating what he viewed as the wealth of nations:

> The annual labor of every nation is the fund which originally supplies it with all the necessaries and conveniences of life which it annually consumes, and which consist always either in the immediate produce of that labor, or in what is purchased with that produce from other nations. (p. 1)

The key point here is the reconceptualisation of capital into something distinct from wealth. Capital now came to encompass productive resources and not money or monetary value as it was traditionally ensconced (Hodgson 2014). In this regard, Smith's concept of wealth reflected the early laissez-faire thinkers more so than the mercantile thinkers. Subsequent authors further sought to cement the divorce of wealth and capital. John Stuart Mill (1848, ch. 3) viewed capital as the accumulated produce of labour – again mostly ignoring the monetary foundation traditionally used in commerce. The accumulation of stock through the production of labour now represented the key aspect of capitalism. Irving Fisher further enlarged the definition of capital (whilst negating the definitions adopted in commerce) to that which includes any item that generates flows of income. Wealth as it was traditionally viewed was becoming largely an issue with little or no interest from economists' perspective.

Numerous economists have sought to re-establish the centrality of wealth and money into economic discourse and thereby attempt to synergise the concepts of wealth and capital. The early institutionalist economist Frank Albert Fetter (1930), sought to place commercial definitions of capital at the centre of economics, reversing the approach of Adam Smith (1952). Fetter (1930) redefined capital as a 'conception of individual riches having real meaning only within the price system and the market where it originated, and developing with the spread of the financial calculus of business practice' (p. 190). Similarly, Joseph Schumpeter (1954) rejected the definitions developed by classical, Marxist and neoclassical economics. Emphasising the historical development of the concept of capital from prior to Smith (1952), Schumpeter (1954) argues that capital 'was essentially monetary, meaning either actual money, or claims to money, or some goods evaluated in money' (p. 323).

Extending the concept of capital to include all forms of wealth moves beyond the notion of capital as conceived by Karl Marx. Marx (1981) recognised that money capitalism was the driver of the system, but he sought to firmly place social relations between the workers and capitalists as the essential characteristic of capitalism. For Marx, including wealth runs counter to analysing capitalism and the struggle between workers and capitalists. Capital expands to accumulate more capital, but only through labour is the new value created.

Hodgson (2014) provides a contemporary definition of capital that elevates it to the status of wealth. From a historical and business perspective, the definition of capital as used by economists today has largely neglected its roots found in commerce and business practice that conflated it with wealth. To return capital to its traditional roots, Hodgson (2014) strongly advocates the centrality of market value in any definition of capital. Capital to be defined as such must fulfil the following five criteria:

1. Can its use rights be owned or hired?
2. Has a price formed in the market for capital of this type?
3. Can this kind of capital be used as collateral to borrow money?
4. Can this kind of capital be sold with all rights of ownership transferred to the purchaser?
5. Is the value of this kind of capital measurable?

Hodgson (2014) finds that the definition provided by the older, pre-Smithsonian use of the word capital adheres to all the criteria compared to modern definitions and approaches that of Piketty (2014a).

2.2.2 Piketty on Wealth

A definition of wealth that elevates the market valuation element as central and fulfils most of Hodgson's (2014) criteria is found in Piketty's (2014a) lengthy treatise on wealth. For Piketty (2014a), the concept of wealth and capital represent virtual synonyms. Piketty's definition of capital makes explicit the role of market valuation for all forms of assets and goes beyond the concept of capital as defined in either neoclassical or post-Keynesian models of growth. The extent to which Piketty (2014a), ostensibly, conflates the concepts of capital and wealth is apparent in the following passage of text which defines national "capital" or "wealth": 'the total market value of everything owned by the residents and government of a given country at a given point in time, provided that it can be traded on some market' (p. 48). Assets here go well beyond "productive" assets and encompass land and housing and even consumer durables.

The definition adopted above follows a slew of studies dealing with wealth accumulation or wealth distribution. Similar definitions appear elsewhere, including Piketty and Saez (2014) and Piketty and Zucman (2014a). Piketty and Saez (2014) are clear in their definition of wealth:

> Wealth (or capital) is a stock. It corresponds to the total wealth owned at a given point in time. This stock comes from the wealth appropriated or accumulated in the past…. [W]ealth is defined as nonhuman net worth, i.e., the sum of nonfinancial and financial assets, net of financial liabilities (debt). National wealth is the sum of private wealth (net worth owned by private individuals) and public wealth (net worth owned by the government and public agencies). (p. 842).

An explicit definition guided by the United Nations' System of National Accounts (SNA) is found in Piketty and Zucman (2014a). In defining private wealth, they state:

> … is the net wealth (assets minus liabilities) of households and non-profit institutions serving households. Following SNA guidelines, assets include all the non-financial assets – land, buildings, machines, etc. – and financial assets … over which ownership rights can be enforced and that provide economic benefits to their owners. (Piketty and Zucman, 2014, p. 9).

Both definitions are particularly relevant in the context of a dynamic wealth accumulation model provided in Piketty and Saez (2014).

In essence, all forms of wealth are capital, and all capital is wealth. There is no differentiation per the framework advocated by Piketty (2014a), Piketty and Saez (2014), and Piketty and Zucman (2014a). Piketty and Zucman (2014a) explicitly state that their use of the word wealth or capital has its foundation in the work of 19th century scholars such as Foville and Giffen. Both used the concepts of wealth and capital interchangeably. Giffen's (1889) book, *The Growth of Capital*, contains numerous instances wherein accumulation is used in conjunction with wealth and capital, as synonyms. For example, on page one, Giffen writes about continuing his work on "accumulations of capital" and on the second page about the "growth of wealth". Foville (1893, p. 597) viewed national wealth as encompassing 'everything within its territory which has an appreciable monetary value.' King (1915) defined wealth as encompassing various aspects of property, social capital and consumer goods or durables.

The question naturally arises as to why Piketty (2014a), Piketty and Zucman (2014a) and Piketty and Saez (2014), adopt a definition of capital that is, in reality, a definition of wealth. The issue emanates from the conceptual framework in which the aforementioned scholars seek to explore the issue of wealth distribution. To explore the distribution of wealth, the common starting point is to consider the macroeconomic context, including wealth to income ratios and capital shares. Ultimately, explanations for the trends in wealth to income ratios, and capital's share of national income are sought in models of wealth accumulation and not the typical growth and distribution theories such as Solow (1956) or Pasinetti (1962). This point is developed further in section 2.2.4.1

Throughout this thesis, wealth is defined in the terms proposed by Piketty and Saez (2014). Analytically, the measure of wealth being proposed here is based on three key variables. These include real estate, corporate capital and financial assets. Real estate and corporate capital can be denoted as *R* and *K,* respectively, and let financial assets be denoted by *F.* Wealth, therefore, is $W = K + R + F$. *Wealth accumulates* through "capital" or real estate acquisition, accumulation or appropriation and or growth in financial assets. Further, the measure of wealth is confined to marketable wealth. Non-marketable wealth such as pensions are excluded from the analysis. This definition of wealth falls within the definitions utilised in wealth accumulation models which are discussed in section 2.2.3.

Numerous criticisms have been mounted about Piketty's (2014a) definition of wealth and capital, particularly from neoclassical economists. Firstly, there is the issue of what can and cannot be included in the concept of "capital". Blume and Durlauf (2015) argue that Piketty's concept of capital is far too sensitive to changes in wealth holder preferences. 'Changes in tastes concerning impressionist paintings will change the wealth share of national output even though such changes leave the productivity of the capital component of wealth unchanged' (p. 752). Such a charge seems to neglect that the wealthy have preferences that can easily generate greater wealth beyond "productive capacity". Similarly, Kabur and Stiglitz (2015) point out that a rise in property values will have a purely distributional effect but will not raise the productive capacity of a country. Rognlie (2014) argued that Piketty's (2014a) data and results in relation to the capital share of income is predicated upon an inflated valuation of housing stock. These criticisms miss the potential for all forms of wealth to be gainfully employed in some manner, including the housing stock. Examples of finding new uses of capital abound. For example, "home equity" provides a means for retirees to provide an income stream in their retirement years by liquidating part ownership of their housing equity. Parkinson, Searle, Smith and Stoakes (2009) document the rise of this new product from 2000 to 2007 in Australia and Britain.

Another issue surrounding Piketty's (2014a) definition of capital or wealth emerges when one considers whether "human capital" should be included. Two critical reviews of Piketty (2014a) emerge from Weil (2014) and Kuehn (2015). Both argue that in not including "human capital", Piketty is neglecting a significant component of national wealth. A few scholars have attempted to link human capital to the rise of contemporary

great fortunes. Wai (2014) finds that amongst the '0.0000001% of the wealthy, higher education and ability were associated with higher net worth, even within self-made and non-self-made billionaires, this was not however the case within China and Russia' (p. 54). Wai takes ability to mean 'cognitive ability' and equates it with the attendance of an elite school. Similarly, Kaplan and Rauh (2013) argue that access to higher education is a key determinant for amassing great fortunes:

> The rise in the college wage premium may have flattened somewhat in the past decade, but our evidence from the identity of the super-rich suggests that the premium for technological skill has continued to rise in the right tail of wealth outcomes. (p. 162)

The role of human capital in the amassment of wealth has been criticised by scholars who prefer explanations grounded in an institutional framework. The economist Watkins (1907) and the social theoriser Mills (1956) argued that institutions, broadly defined, endowed individuals with wealth. Piketty (2014a) and Hodgson (2014) forcefully reject the notion of human capital on the more well-defined grounds that humans cannot trade their labour outside of slave society. Further, Piketty (2014a) argues that only in a slave society is ownership of humans available as well as the transference of this ownership to another party, either via a market mechanism or inheritance.

2.2.3 The Contribution of Piketty's *Capital*

By enlarging the definition of capital to encompass all forms of wealth, Piketty (2014a) effectively permits exploration of wealth accumulation and concentration beyond the traditional lines of neoclassical economic enquiry, to political economy and other schools that incorporate elements such as institutionalism or power. This has been recognised amongst critics of Piketty (2014a). Galbraith (2014) states that 'Private financial valuation measures power, including political power even if the holder plays no active economic role. Absentee landlords and the Koch Brothers have power of this type.' In the very first chapter, Piketty (2014a) strives to emphasise this when stating:

> The history of the distribution of wealth has always been deeply political, and it cannot be reduced to purely economic mechanisms. (…). It is shaped by the way economic, social, and political actors view what is just and what is not, as well as by the relative power of those actors and the collective choices that result. (p. 35)

The multidimensional nature of wealth and the historical transformation it has undergone presents the opportunity to explore the issue of wealth accumulation and concentration from a plurality of dimensions. Aspects of modern day wealth scholarship do already fall largely within this framework. Contemporary studies, which incorporate analysis of industrial sectors, are a case in point and discussed section 2.3.2.

The utility of conceptualising wealth along such plural or multidimensional lines becomes more evident when one attempts to analyse the impact of wealth accumulation on society at large. For example, given the potential re-emergence of inheritance as a source of great wealth, what will its impact be on societal relations? Alternatively, how does such a society and economy differ from an affluent society? The Affluent Society (Galbraith, 1958) largely coincides with a period when income growth was greater than the returns to wealth. Affluent societies tend to award meritocracy and are plural in nature. Societies dominated by inherited wealth move to a paradigm characterised by the power and dominance of an elite (Bonnet and Thery, 2014). In contrast, according to Piketty (2014a) the Affluent Society represents a historical anomaly. Instead, the domination of inherited wealth is the norm, particularly when returns to capital are greater than national income growth. Bonnet and Thery (2014) argue that Piketty's approach to capital or wealth permits the detection of such societal transformations.

2.2.4 Wealth Accumulation Models

In this subsection, micro-founded wealth accumulation models are reviewed and represent the body of scholarship to which this thesis is most closely aligned. These wealth accumulation models can be used to model wealth distributions, to fix ideas surrounding the decomposition of the constituent processes underlying wealth accumulation, and to provide a framework for examining the sources of great fortunes.

Before discussing wealth accumulations models, a discussion of historical capital accumulation models is considered within the context of Piketty (2014a) and their relation to wealth accumulation models.

2.2.4.1 From Captial Accumulation to Wealth Accumulation Models and Piketty

It is important at the outset to differentiate wealth accumulation as envisaged by a class of models (life cycle, intergenerational, and dynamic multiplicative shock models) from theories of growth and development where the role of wealth or income distribution either affects growth or is impacted by it. The differentiation becomes particularly important in the light of the debates surrounding Piketty (2014a). According to certain scholars, Piketty places the determination of the distribution of income (and ultimately, wealth) at the feet of marginal productivity of capital theories.[3] In doing so, Milanovic (2014) points out that Piketty (2014a) is not only providing a theory of wealth distribution but also providing a general unification between growth theory and wealth distribution theory. Here it will be posited that Piketty (2014a) represents a bridge between the broad conceptual frameworks, though both share many characteristics and have reciprocal implications.

Wealth accumulation models share much in common with capital accumulation models found in macroeconomics. For example, Atkinson and Harrison (1978) point out that Meade's (1964) micro founded wealth accumulation formulation permits for intrinsic differences between individuals. In a similar vein, Kaldor (1960) and Pasinetti (1962) offer a macro model where workers and capitalists exhibit different savings propensities. In what precise manner does capital and wealth accumulation differ, given instances of shared ideas? Baranzini (1991) contrasts the differentiation in the following way:

[3] Post-Keynesians contend that the approach adopted by Piketty (2014a) attempts to combine micro-based foundations with macroeconomic logic in an overall neoclassical framework. The main problem with such an approach resides in the utilisation of an aggregate production function. As the Cambridge Capital Controversies demonstrated the theory of growth and distribution cannot be founded upon aggregate production function as such a function cannot be observed in reality (López-Bernardo, López-Martínez, and Stockhammer, 2016).

> … the term ‘wealth accumulation’ is used to indicate the decisions of individuals or families to save for a specific objective, while the term ‘capital accumulation’ will, more generally, refer to the wide process through which society increases its potential to produce a flow of goods and services. (p.12)

As Baranzini (1991) further argues, there is a link between the two concepts particularly when one considers that the process of accumulation can be viewed from either: a) the investment perspective (direct inputs into the production process) on which there exist both micro and macro perspectives and; b) the savings perspective where life-cycle and intergenerational dynamics become important. On the former point, the differentiation between macro- and microeconomic based theories becomes particularly important in considering how to explore the rise of the entrepreneurial ultra-rich, where theories relating to entrepreneurial risks become relevant. On the second point, micro-founded models provide a better framework of exploring such intergenerational transmissions of wealth.

The attempt to unify theories of growth and distribution have a long history. The approach of Piketty (2014a) in this regard is not new and has its antecedents in the growth and distribution literature of the 1950s and back to the classical economists. The classical political economists were first concerned by the functional distribution of income, the accumulation of capital and economic growth, all of which were underscored by the existence of different social classes. The importance of the first item, income distribution, is apparent upon reading the title to Adam Smith’s (1952) title of Book I: ‘Of the Causes of Improvement in the productive Powers of Labour, and of the Order according to which its Produce is naturally distributed among the different ranks of the People.’

Modern growth and distribution theory as it arose after the Second World War broadly diverged into two schools, although both found their motivation in the works of Kuznets (1955; 1963) and Kaldor (1957). Both scholars established a number of stylised ‘facts’ upon which numerous theories and hypotheses would be built in relation to inequality and economic growth. Firstly, on Kaldor’s stylised facts, the most relevant were the stability of a nation’s capital to output ratio and that capital’s and labour’s share of national income was approximately constant. Based on these facts, Kaldor (1955-56; 1960) proposed a theory of income distribution based on a Keynesian model of

economic growth where inequality arises from different savings rates of labour and capitalists. In essence, Kaldor (1955-56;1960) hypothesised that the marginal propensity of the rich to save is higher than the poor. This had two implications, one on economic growth and two, on inequality. If economic growth is related to the proportion saved, unequal economies will grow faster than economies characterised by equal distributions of income. Empirically, Kaldor (1967) demonstrated that productivity growth throughout the 1950s and 1960s was a function of investment behaviour, '[h]ence the traditional and pervasive argument that inequality catalyzed capital accumulation' (Fisher and Erickson, 2007, p. 54). Pasinetti (1962; 1966) built upon the ideas of Kaldor, and assumed, for example, that the working class received wage and interest payments, while the capitalist class received interest payments only.[4] Atkinson and Harrison (1978) argue that a significant limitation of the Kaldor-Pasinetti approach is that it does not provide any theory on the origin of a capitalist from entrepreneurialism, and assumes the capitalists are solely rentiers.

The Kuznets (1956, 1963) hypothesis represented the other significant development of the era in inequality studies. Through an accumulation of data on income shares and GNP per head, Kuznets found a concave relation between income inequality and growth. Here, inequality increases during the transition from, for example, a rural economy to an industrialised economy; inequality would initially increase before decreasing once again as the now industrialised economy matures. As Kanbur and Stiglitz (2015) note, both the Kuznets and Kaldor stylised facts (and their hypotheses) generated a slew of growth and development theories to explain these facts. The 'old' neoclassical growth models of Solow (1956) and Swan (1956) for example, sought to explain many the Kaldor facts and the Kuznets hypothesis.[5]

However, many of the stylised facts of both Kaldor and Kuznets do not hold any empirical validity particularly in the long run of history (Piketty, 2014a). Principal amongst these is that the capital share of national income is increasing amongst advanced economies, contrary to what was established by Kaldor. To illustrate, Figure 2.1 presents Piketty's estimates of the capital share in rich countries. As Piketty notes,

[4] Pasinetti (1965, 1973, 1981) was readily prepared to examining issues of growth and distribution in a multisector economic system characterised by different technological progress and changes in consumers' preferences.

[5] In future years, endogenous growth theory was developed to explain the variance of growth rates across countries.

in 1970 the capital share of income ranged between 15% and 25%, and between 25% and 30% in the 2000 to 2010 period. Secondly, Piketty observes that in the standard model, the only way to explain how capital income ratios move with capital shares is to assume that the capital-labour elasticity is greater than one (Piketty, 2014a; Kanbur and Stiglitz, 2015).[6]

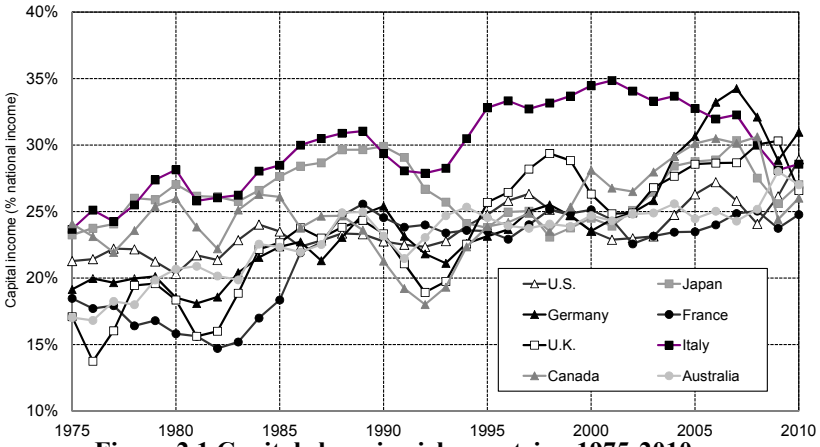


Figure 2.1 Capital share in rich countries, 1975-2010

Source: Piketty (2014a), retrieved from http://www.piketty.pse.ens.fr/capital21c

Kabur and Stiglitz (2015) argue that the new observations of Piketty (2014a) and their associated implications for the Kuznets and Kaldor *stylised* facts require new ways of thinking about inequality. Here, Kabur and Stiglitz (2015) highlight Piketty's positive theory that when returns to capital exceed income growth, wealth inequalities become exacerbated. Since the publication of Piketty (2014a), economists have sought to cast Piketty's inequality ($r > g$) as being entirely consistent with a neoclassical production function. (see for example, Mankiw (2015).

Such attempts do not capture Piketty (2015) core idea on the role of the $r - g$ relationship. In seeking to clarify the role of $r > g$, Piketty (2015) argues that, at most, the inequality equation represents merely a mechanism that can amplify wealth inequalities in any given period. Instead the issue is what model is better suited to explore the wealth dynamics if not standard capital accumulation models? Piketty (2015)[7] and Piketty and Saez (2014) emphasise that a class of dynamic multiplicative

[6] A principal criticism along these lines relates to Piketty's assumption that the return to capital can remain constant as the capital-output ratio increases. Summers (2014) strongly criticised Piketty (2014a) for failing to recognise that marginal models of capital would predict lower returns as the capital share of income rises.

[7] Along with Piketty (2015), Piketty and Saez (2014), Piketty and Zucman (2014b), and Piketty and Saez (2015) all demonstrate Piketty's views in this regard.

stochastic models, emanating from the broader wealth accumulation family of models are the better approach to understanding the dynamics of wealth distribution and accumulation.

2.2.4.2 Wealth Accumulation Models

In a wide-ranging survey on the distribution of wealth, Davies and Shorrocks (1999) detail two broad empirical regularities that have been discovered in relation to the accumulation of wealth. Firstly, the distribution of wealth is positively skewed. Secondly, the extreme end of the top tail is well approximated by a Pareto distribution. Further, when wealth is transformed by the logarithmic function, it approaches a log-normal distribution function.[8] Therefore, a stochastic process itself is sufficient to model wealth distributions as empirically observed. Feller (1971) describes the process of a coin tossing game in which the short-term winner gains momentum and indefinitely maintains the lead, contrary to the layperson's prediction that the lead would change roughly evenly. It is not difficult to see how a stochastic process can lead to situations where a winner-takes-all market emerges. Thurow's (1975) theory of wealth inequality in the US is based upon notions of luck where prudence only takes one so far. Echoing modern theories of financial economics, Thurow (1975) argues that coupled with luck, modern financial markets provide the means for rapid capitalisation and, consequently, the path to large fortunes. In other words, adopting a financial economics perspective, the Efficient Market Hypothesis (Fama, 1970) provides a sufficient explanation for a given wealth distribution observed in a market. Although the Efficient Market Hypothesis can provide a clear framework for thinking about extreme wealth, testing whether observed extreme wealth accumulation is down to luck may prove exceedingly difficult (Canterbery & Nosari, 1985). The concept of 'long leads' initially filtered into the industrial organisation literature with Scherer's (1980) simulation model in which without market frictions such as economies of scale or entry barriers, some firms managed to grow well above average and capture up to 30% market share. Furthermore, once in front, these firms maintained this lead.

However, a simple random-walk model of wealth accumulation possesses a significant drawback when taken to a real-world context. Davies and Shorrocks (1999) point out

[8] A lognormal process suggests a random walk model, $lnW_t = lnW_{t-1} + u_t$

there are no upper-bound to these models – therefore, they provide no explanatory power when confronted by decreasing wealth inequality. Empirically, the deficiency of these models is apparent when one considers that in the immediate post-World War II era, where a decrease in wealth inequality was observed.

An alternative to the stochastic processes framework, is to introduce a myriad of mechanisms which can either accelerate or decelerate wealth accumulation. These models are micro-founded in their approach. Meade (1975) provides an accounting identity for analysing the distribution of household wealth distribution:

$$W_t = W_{t-1} + E_t + r_t W_{t-1} - C_t + I_t \qquad (2.1)$$

where W_t is wealth at time *t*, r_t is the rate of return on investments, E_t is earned income, $C_t$is consumption and I_t are gifts and bequests received. Meade's formulation can be rewritten to encapsulate an individual's or family's total lifetime experience (Davies and Shorrocks, 1999). Assuming zero wealth at age 0, the dynamics of wealth accumulation in equation 2.1 can be rewritten as follows:

$$W_t = \sum_{k=1}^{t}(E_k - C_k + I_k)\prod_{j=k+1}^{t}(1 + r_j) \quad (2.2)$$

Therefore, per Meade (1975), a family's wealth is determined by:

i. age, and history of:
ii. earnings;
iii. savings rates;
iv. rates of returns; and
v. inheritances.

In Chapter 4, a model developed by Saez and Zucman (2014) is used to decompose wealth accumulation across similar variables. An advantage of both models, is the capacity to cover different classes of individuals, and not just bifurcate classes to worker and the rentier capitalist. On a smaller incidental point, an advantage of the Saez and Zucman (2014) model is the incorporation of taxation as a mechanism for equalising or lowering the rate of wealth accumulation – but this can be easily accommodated in the Meade process.

Equations 2.1 and 2.2 identify general contributors to the process of wealth accumulation and are by no means representative of a gener*al theory of wealth distribution*. Attempts at constructing a general theory of wealth distribution have typically either adopted a life-cycle approach or a dynastic modelling approach. The Lifecycle Model (LCM) of Modigliani and Brumberg (1954) postulates that individuals save and accumulate wealth for financing consumption in retirement. From a wealth distribution perspective, this has two implications. Firstly, the relationship between age and wealth is humped shaped, with the peak of wealth accumulation near retirement. Secondly, and most importantly, wealth inequality is wholly an age-based phenomenon. The richest members of society are the ones near retirement, and the poorest those just entering the workforce. In the LCM approach, no allowance is made for the possibility of bequest motives but for which casual empiricism suggests becomes more important at the upper tail of the wealth distribution. Further, the wealth distribution produced by the LCM predicts too little wealth inequality, and simply reflects income distribution. This despite empirical evidence indicating that wealth is distributed more unequally than income. In addition, the LCM class of models are wholly incapable of explaining the rise of extreme wealth holders as exemplified by modern day billionaires.

In opposition to the LCM, are models that emphasise wholly the intergenerational transmission of stocks of wealth. Such models assume that individuals seek to maximise dynastic utility functions with infinite time horizons. In contrast to the LCM, age, retirement and death are irrelevant; therefore, individuals' wealth accumulation undertakes substantially different paths depending on initial inheritance (Piketty and Zucman, 2015). Empirically, the importance of inheritance in the distribution of wealth has received considerable attention. These debates have centred upon the level of inheritance. In the US, for example, the level of inheritance as a proportion of wealth has been estimated as low as 20% to a high of 80% (see e.g. Davies and Shorrocks, 1999). The lower bound estimates used as empirical support of the LCM whilst the higher bound estimates are used as evidence supporting intergenerational dynastic models.

A theoretical compromise between the two approaches can be found in random shock type models. These differ from simple random walk models through the incorporation of shocks which have multiplicative effects and propagate through time. Piketty and Saez (2014) adopt a dynamic wealth accumulation model to explain the dynamics of

wealth accumulation, and in doing so provide a micro context for the relation between the returns to capital and income growth. Depending upon the structure of shocks, these models amplify the effect of the Piketty (2014a) inequality, *r* – g. Further, a dynamic wealth accumulation model can be proven to give rise to wealth distributions with fat Pareto tails, thereby approximating empirical observations in the higher spectrum of wealth distribution (Piketty and Zucman, 2015). Piketty and Saez (2014) propose a simple dynamic model of wealth accumulation with multiplicative shocks to the distribution of wealth with the form:

$$z_{it+1} = \omega_{it} z_{it} + \varepsilon_{it} \tag{2.3}$$

where z_{it} is the position of individual *i* in the wealth distribution, ω_{it} is a multiplicative random shock and ε_{it} is an additive random shock.

According to Piketty and Saez (2014), the random shocks of equation 2.3, can manifest in a wide variety of ways. What precisely these phenomena represent is not made explicit in the formulation. However, various forms can be speculated. These include, but are not limited to, Stiglitz's (1969) primogeniture model to investment shocks and impact on the rates of return (Benhabib, Bisin, and Zhu, 2013). Alternatively, the structure of shocks can relate to changes in the share of labour or capital income or growth, or to shocks in the preferences of savings rates. These shocks ultimately emanating from broader socioeconomic forces, such as war or a major economic recession. The point here is that the models are wide enough to capture a variety of phenomena. In this thesis, the manner of how these shocks manifest themselves and propagate through time, it is argued in Chapter 4, are through wealth accumulation models of the sort shown in equations 2.1 or 2.2. These models provide a useful means of conceptualising the process of wealth accumulation to capture relevant shocks through different channels over time when analysing relevant empirical phenomena.

2.2.4.3 What of Self-made fortunes?

A primary objective of this thesis is to study the emergence of individuals and family dynasties that have amassed great fortunes, embedding them at the very apex of the wealth distribution. However, the aforementioned theories fail to account well for the

phenomena of the self-made ultra-rich (Davies and Shorrocks, 1999). These drawbacks manifest themselves in two ways. Firstly, bequest motives go beyond utility for terminal wealth or even for the survival of a dynasty for which current dynastic models and LCMs are inadequately equipped to analyse. Secondly, current theories cannot point to why large fortunes arise in the first place. Davies and Shorrocks (1999) argue that such an explanation must contain elements that incorporate entrepreneurial risk, dynastic considerations and institutional influences.

Section 2.3 below devotes considerable space and attention to both early theoretical studies directed at understanding great fortunes and contemporary empirics in this domain. In the spirit of Piketty's (2014a) call for a broader sociological attempt at understanding wealth, as emphasised in section 2.2.2, studies from the wider domain of the social sciences and political economy are also considered. For example, the ideas proposed by elite theory are reviewed as they can potentially shed some like on issues of wealth, power, and economic policy in general.

2.3 Review of Scholarship on the Rich

2.3.1 Theoretical Studies of the Rich

2.3.1.1 Early Theoretical Approaches

The absence of easily accessible data was not a deterrent to the classical political economists, whose spirit the present study follows. Perhaps the first to focus purely on the rich or wealthy as a *sui generis* was Richard Jones' (1831) *An Essay on the Distribution of Wealth.* Jones' study systematically sought to establish and categorise the system of rent or profit and how it differed across the globe during the early 1800s. Its significance for this thesis resides in the application of an inductive approach to understanding the interdependence of economy and society in producing the prevailing wealth distribution. In this approach, as described by Rashid (1979), the 'primary concern was to try and extract some generally valid proposition from a study of facts, and then try and extrapolate, however cautiously, into the future' (p. 166). Jones (1831) developed several key insights, including the centrality of both technological progress and the dissemination of knowledge in guiding wealth accumulation in some circumstances. Further, Jones (1831) made clear distinctions between social groups that

would point to significant differentiation between the organisation of societies and the way wealth is ultimately distributed according to law or custom.

At the core of Jones' (1831) approach was the accumulation of facts and observations from which universal or general propositions could be developed. This was very much in the tradition of Bacon's inductionism that was found useful in biology and astronomy. Induction is defined as a process whereby one can 'construct general propositions themselves from the contemplation of particulars, and attribute to them a universality which experience is incapable of warranting' (Herschel, 1841, p. 193). Although Jones (1831) was not wholly against deduction in economics, often applying concepts such as diminishing returns and selfish man to analyse rent and wealth associated with British capitalism, he attributed more influence to institutional forces, particularly among despotic-type regimes that dominated the international system at the time (Rashid, 1979).

In today's parlance, Jones (1831) could be classified as an intuitionalist or of the historical school. The intuitionalist school of economics has typically been most open to examining the rich and wealthy. An early American intuitionalist, Commons (1893), sought to construct a theory of wealth distribution based upon the integration of legal and economic theory. Much like Jones (1831), Commons' (1893) work suffered a legacy of scholarly neglect, largely due to the socialist radical tendencies perceived in his thesis by his peers (Häring & Douglas, 2012).

Another work that has been neglected by both past and contemporary scholars is that of Watkins (1907), who drew upon legal, technological and even geographical concepts as the defining characteristics that gave rise to the great fortunes of the Gilded Age during the late 1800s and early 1900s. Watkins's (1907) thesis remains highly relevant in its analysis and effectively foreshadows many of the key forces that are in play today. Watkins (1907) was concerned with the rise in the wealth of the Gilded Age entrepreneurs, or the Robber Barons, as they were later labelled by Josephson (2013), who presided over vast fortunes in an era not dissimilar to today in terms of both the rate of accumulation and the prevalence of technological development and economic shocks. Rockoff (2012) argues that many of the large infrastructure and energy changes (rail and oil) reflect the technological revolutions of today in transportation, communications, and energy.

Further, much like our era, Watkins (1907) viewed four primary forces as fostering the growth of great fortunes during the Gilded Age. Firstly, technological advancements in manufacturing ensured that corporations achieved unprecedented economies of scale. Secondly, the logistics behind commerce were revolutionised with the expansion of a vast railway network straddling the US, which created a market scale hitherto unattainable. For example, large meatworks in Chicago could quickly transport their cargo to the eastern US, leading to the emergence of the meat tycoons (Rockoff, 2012). The wealth of the oil tycoons John D. Rockefeller and his brother William Rockefeller, at Standard Oil, was only achieved by the vast railroad infrastructure built by the likes of Jay Gould, Jim Fisk and Russell Sage (Rockoff, 2012). Similarly, the fortune established by Henry Ford required the efficiency of the combustion engine that relied on oil for the automobiles, the transportation of vast materials to the Highland Park Ford Plant and the implementation of other nascent engineering technologies to enable the functioning of the first mass assembly plant (Bradley, 1999). Thirdly, the rise of what Watkins (1907, p. 15) terms 'abstract property', such as equities and bonds, facilitated the rapid capitalisation of entrepreneurs. For some modern scholars, this is the primary mechanism for rapid wealth accumulation (Thurow, 1975). Fourthly, Watkins (1907) viewed the process of urbanisation in the US as a further catalyst to rapid and large wealth accumulation, creating larger markets and the growth of property barons. The second and fourth points echo the theoretical and deductive argument by Rosen (1981) that the sheer scale of large cities results in a greater probability that extraordinary wealth will be created, given the ability to reach a large audience in a geographically concentrated area.

Ultimately, however, Watkins (1907) appears to explain the rise of an ultra-rich economic class based on an underlying belief in institutions and the limited role of individual agency. That is, there is little room for either personal talent or natural endowment in explaining the existence of large wealth stocks into few hands. Behavioural or personality explanations are rejected for their lack of precision, as Watkins (1907) argues:

> A postulate of any scientific theory of the causes of large fortunes is that those causes are impersonal. That is, they must be such as permit of being made the basis of generalisations. 'Pull' and privilege are not such. Neither can the

> causes of the change in the degree of development of riches lie in human nature or in inequality of natural endowment. (p. 5)

This rejection of the 'inequality of natural endowment' is heavily opposed, too, in contemporary literature that has sought to explain wealth accumulation and inequality through a 'plethora of capitals' (Hodgson, 2014, p. 12).

Although Watkins (1907) identified many relevant elements of wealth accumulation amongst the wealthy, his approach neglected or dismissed many key aspects of wealth accumulation. Of note is the rejection of privilege in sustaining large fortunes in the afore quoted passage from Watkins (1907, p. 5). The dismissal of inheritance or privilege may not be tenable in many parts of the world today and particularly not during Watkins' (1907) own era, with inheritance playing a major role in wealth accumulation in the 1800s France, for example (Daumard, 1980). Further, Watkins (1907) missed the potential of entrepreneurs to create markets in goods and services for which there was no pre-existing requirement. For example, Rubinstein (1980) points out that Rockefeller rose to great fortune by creating market demand for his oil in China by providing oil lanterns to the Chinese. Nevertheless, Watkins's (1907) overall thesis remains highly relevant today.

2.3.1.2 Contemporary Theoretical Approaches to the Ultra-Rich

Contemporary theoretical scholarship on the ultra-rich is scarce as discussed in section 2.2.4.3. Although there has been a tremendous amount of theoretical modelling regarding life cycle considerations or dynastic considerations, there is little that deals with large wealth holdings and entrepreneurial activity. Two important but contrasting works that do consider these issues are those of Rosen (1981) and Shorrocks (1988). Rosen (1981) sought to determine how a small number of individuals can come to dominate the distribution of wealth given small differences in 'talent' or 'ability' in their chosen fields of enterprise. A central prediction of Rosen is that the relative minor variation in the distribution of talent at the top of a given sector will translate into substantial differences in revenues. Empirically, Kaplan and Rauh (2013) base their explanation for the rise of the US *Forbes* 400 on the basis of Rosen's (1981) theoretical framework.

An alternative approach is one that incorporates notions of risk, initial wealth and entrepreneurial activity. Shorrocks (1988) develops a model in which two kinds of entrepreneurs are considered, who both face different entrepreneurial opportunities depending on their respective initial stocks of wealth. Firstly, there are those entrepreneurs who need not possess significant initial wealth; only time is required to search out for opportunities that can provide significant rewards. The second class of entrepreneur is already a highly successful entrepreneur and also searches out opportunities for large rewards. However, these opportunities require substantial access to both time and substantial wealth holdings to access due to markedly different risk profiles of the opportunities presented. Shorrocks model predicts two results. Firstly, entrepreneurs with little initial wealth will target or specialise in 'single' risk opportunities. Secondly, entrepreneurs possessing high budgets will instead seek to engage in projects where risks can be diversified as much as possible and in conjunction with other wealthy individuals. Targeting such projects ensures the perpetuation of wealth and one's status. According to Shorrocks (1988), 'the model developed in this paper bears little resemblance to any previous study of wealth holdings' (p. 242). As far as I am aware, no recent study on the billionaire class has considered this aspect of wealth generation and accumulation. In Chapter 6, Shorrocks' predictions are considered in the context of self-made entrepreneurs.

A potentially interesting extension of Shorrocks (1988) theory is the implication of inheritance for the type of commercial and financial activities estate beneficiaries will engage in. A logical extension of Shorrocks' (1988) is to argue that inheritance beneficiaries (in relation to billionaires) will also diversify their risks as much as possible just like self-made entrepreneurs with high wealth stocks. This might have macroeconomic implications. Standard financial economic theory would posit that with greater diversification, the risk premium would reduce. Piketty (2014a) and Piketty and Saez (2014) have shown that returns have fallen since the 1960s. In Chapter 3 and Chapter 6 the linkage between entrepreneurialism, risk and returns and inheritance are all considered.

2.3.1.3 Sociological Explorations of the Ultra-Rich

Throughout the 1960s, several scholars tackled the issue of extreme wealth holdings from a sociological perspective. Lundberg (1969), in an eclectic exploration, argues that the rise of the ultra-rich in an economy is best viewed through the prism of a sociological theory such as elite theory. Following Lorenzian thought, Lundberg (1969) argues that society always produces and maintains an elite class who maintains substantial control over society's resources and culture. Interestingly, he argues that the rich of the 1960s in the capitalist world were largely an evolution of the barons of the feudal system of the Middle Ages, who lorded over both land and peasants. This was a major departure from classical economists such as Jones (1831), Marx (1981) and Watkins (1907), who viewed capitalist wealth as distinct in both nature and source and possessing substantially different dynamics from the landed feudalist system that dominated Europe's economic system prior to the Industrial Revolution. Moreover, Lundberg (1969) also argues that the existence of an economic elite is a natural outcome in any economic system not just in a capitalist system. Indeed, in the Soviet Union the emergence of the *nomenklatura* from the Stalinist era could be viewed as being the equivalent of Western elite establishments (Hosking, 1985).

The issue of whether the emergence of economic elites is a natural outcome of any economic system has received attention in contemporary writings. Figueroa (2008) develops a simple model of how the economic elite maintains their position at the apex of society. The theory proposed by Figueroa predicts that, as the social equivalent of the economic monopolist that erects barriers to entry into an industry, the economic elite restrict entry to the highest echelons of the social *milieu* where economic power is held and wielded with considerable influence. How such barriers are erected is not made clear, but Figueroa (2008) uncovers empirical evidence that the Peruvian economic elite maintains a degree of control over who is admitted into their ranks. To an extent, Figueroa's (2008) thesis echoes Shorrocks (1988) who argues that there are investments or projects that an economic elite are only able to access given the risks associated with those projects.

Bodley (1999) argues, from an anthropological perspective, that economic growth is an elite-directed process. The elite undertakes economic growth only so long as it provides continuously increasing returns to them. The fundamental assumption of elite theorists

is that with increasing scale in any setting (e.g. market size, population or government), economic power tends to become more and more concentrated in the hands of the elite. The emergence of the elite is a natural outcome in any type of economic system, no matter how objectionable such a conclusion is. For example, Bodley (1999) refers to how property owners in the US assume greater roles in municipal governments, which encourages further growth and inevitably results in greater wealth for the elite, and the cycle continues.

The argument that there always is an elite, particularly in settings where there is a large subordinate population is reminiscent of the randomness or luck hypothesis outlined briefly in section 2.2.4.2.[9]

2.3.2 Contemporary Empirical Studies of Wealth

The lack of a well-developed theoretical framework has not precluded fruitful empirical studies on the issue of where and how great wealth is generated. Such studies being highly relevant in the context of Piketty's (2014a, 2014b) notion of the multidimensional nature of capital and wealth. Piketty (2014a) devotes significant time and effort to detail how aggregate national wealth has at times tended to be concentrated in a few areas. For example, the modern-day oil based kingdoms of the Middle East, or the rise of financial capital in the UK and the US, all illustrate this multidimensional nature of wealth. It is, therefore, highly relevant to review the literature on modern riches which particularly focus on the industrial sources of wealth.

Canterbery and Nosari (1985) explore the determinants of "super wealth" among America's *Forbes* 400, employing a cross-sectional regression framework to construct a model with various personal and economic variables. At the personal level, they find that age and inheritance are positively correlated with larger wealth levels in agreement

[9] It is worthwhile to emphasise, at this juncture, as to what is meant by an elite and elite theory in general. Contemporary elite theory defines "elites" as individuals who control real or symbolic resources, occupying key positions and relate to each other through power networks (Yamokoski and Dubrow, 2008). Thus, power represents the central element of elite theory. López (2013) argues that this is not very distant from Marxists conceptions of the capitalist class. Indeed, numerous Marxists have utilised elite theory themselves, including Mills (1956) and Domhoff (1967). However, it should be noted that elite theory is very much opposed to social class theory. The divergence in the two schools of thought was exemplified in the debates between structural Marxism and instrumental Marxism surrounding the nature of the state (Poulantzas and Miliband, 1972).

with both dynastic models and the LCM discussed in section 2.2.4.2. In terms of the industrial sources of great fortunes, they find that wealth is typically made in oil and shipping (Canterbery & Nosari, 1985). Contrary to previous eras (see Rockoff, 2012; Watkins, 1907) in the US, they do not find any significant wealth being generated in real estate. However, Canterbery and Nosari's (1985) study just focuses on one year, 1982, which means their model cannot capture by construction the dynamics of the economy over time and where a different time period may yield different findings as Piketty (2014a) emphasises. For example, Blitz and Siegfried (1992) examine the *Forbes* 400 for 1986 and find that most wealth is generated in oil, wholesale trade *and* property. Given the small time difference between these two studies, it is surprising to see how much of a greater role real estate has in generating wealth as observed in Blitz and Siegfried's (1992) study, which highlights the importance of adopting a panel framework when exploring issues related to extreme wealth. Studies on the Gilded Age, however, have also found a significant surge of wealth generation in real estate during relatively short time frames (Watkins, 1907).

Similar studies have been conducted for the rest of the Anglo-Saxon world. Siegfried and Round (1994) explore the sources of great wealth in Australia using the *Business Review Weekly's* rich list, and find that new wealth was largely made and concentrated in finance, property development, and retail and wholesale trade in the 1980s. Australia's rich typically have reflected the areas in which the country has been able to gain the greatest scale. For example, most of the 'old wealth' was generated in agriculture and manufacturing. Unsurprisingly, Siegfried and Round (1994) find that the majority of new wealth appears to be generated in competitive industries. On this basis, they argue that risk and uncertainty, returns to business acumen and strategic resources, and market dis-equilibria are the main drivers of great wealth generation, a finding that reflects Thurow's (1975) thesis of the centrality of efficient markets.

Stilwell and Ansari (2003) also examine Australia's wealthy utilising the *Business Review Weekly's* rich list for the years 1993 to 2003. They focus on three questions: to what extent has wealth at the pinnacle of the wealth pyramid increased; to what extent has the entry into the ranks of the wealthy been elevated; and what are the economic activities that have permitted the concomitant concentration of wealth? Much like Siegfried and Round (1994), Stilwell and Ansari (2003) find that retail, investments and property are the greatest wealth generators. Significantly, mining and resources are not

listed in their study. This provides a striking juxtaposition with the results in Chapter 6 of this thesis, where mining magnates dominate the total wealth share and further illustrates the dynamic and stochastic nature of the creation and destruction of wealth. In addition, Stilwell and Ansari (2003) highlight the increased patrimonial nature of wealth accumulation at the time, observing that '6 out of the 10 wealthiest people in 2003 attained a substantial basis for their affluence through inheritance: the comparable figure in 1993 was 4 out of 10' (p. 151). Foreshadowing recent scholarship, Stilwell and Ansari (2003) also emphasise the role of financial assets in wealth accumulation, as 'share ownership is much more concentrated, with a staggering 86% being held by the wealthiest 10 per cent of families' (pp. 154-155). Ownership of other assets (cash, business assets and rental properties) are also high, averaging in the 50 percentile range (Ansari & Stilwell, p. 155).

The centrality of real estate and/or banking and finance is further reflected in the UK, where Siegfried and Roberts (1991) find that these sectors provided the greatest source of extreme wealth. Furthermore, they observe that where great wealth is found, most of it is concentrated in competitive industries and not in industries that can be classified as either oligopolistic or monopolistic by economists. Siegfried and Roberts (1991) find this surprising, as they assert that in the absence of barriers, new entrants should rapidly remove any dis-equilibria and restrict the number of wealthy.

Hazledine and Siegfried (1997), who examine how New Zealand's wealthy became so rich, also establish an empirical regularity: most wealth is made in property and finance. They also find the appearance of great wealth in industries that are characterised by intense competition which they concluded represents a paradox, as the greatest wealth was expected to exist in monopoly industries. However, the extent to which this is an empirical paradox has been challenged by, for example, Waldman (1991), who contends that, if anything, such extreme wealth is a natural consequence of capitalism and its associated stochastic nature.

Other works have adopted a purely historical perspective but also consider the sources of wealth in a similar vein to the contemporary studies reviewed above. These historically focused studies analyse the 1800s in Europe or the Gilded Age of the US and utilising contemporary estate data, journalistic wealth lists or news media sources to analyse the sources of great fortunes. Rubinstein (1980) explores the social and

demographic characteristics of the rich in Britain at the turn of the eighteenth century, utilising estate data. For Rubinstein (1980), the defining characteristic of British wealth was the concentration of the rich in finance and property, and the absence of inheritance beneficiaries. Furthermore, there was a lack of wealthy industrialists in Britain, despite the technological, economic and social changes wrought by the Industrial Revolution. Rockoff (2012) explores the sources of wealth in the US during the late 1800s and discovers that finance and property again were the main engines of wealth growth. In contrast to the Anglo countries of the US and the UK, Daumard (1980) explores the wealth distribution of France in the 1800s and finds that wealth typically was patrimonial in nature.

2.4 Summary

To summarise, the nature of wealth and how it has been approached in economic discourse has changed substantially. The definition of wealth as proposed by Piketty (2014a) recognises the monetary and marketable value of all assets. This significantly differs from economists who have sought to focus on a limited notion of productive capital.

Although contemporary mainstream economists ignored the study of wealth, there is a small strand from the early political economists to today that have tackled the issue from various frameworks and perspectives. Modern scholarship has developed wealth accumulation models which can be used to model a) the process of wealth accumulation across all individuals; and b) to produce a predicted distribution of wealth which have shown to closely mimic Pareto distributions observed in reality. Broadly, these wealth accumulation models fall into three broad categories, the Life Cycle Models, the dynastic models of wealth accumulation and the dynamic multiplicative random shock models. The latter provide the most applicability but are bereft in content as to what shocks are necessary to model wealth accumulation. The models stand in contrast to capital accumulation models that are macroeconomic in their focus and have typically been concerned with the distribution of income on economic growth. Despite the divergence in theoretical approaches, it was posited that Piketty (2014a) largely represents an attempt to bridge the different conceptual frameworks.

Studies that focus on the ultra-rich rather than the whole distribution have considered different questions and adopted different approaches to the deductive methods. An inductive approach was often utilised, seeking to situate the rise of great fortunes in sociological, political or technological change and transformation. For early political economists, such as Jones (1831), Commons (1893) and Watkins (1907), the main elements giving rise to great wealth included:

- Social ordering and customs (Commons, 1893; Jones, 1831);
- Rise of finance and the separation of management and control (Watkins, 1907);
- Technological shocks (Jones, 1831; Watkins, 1907); and
- The rise of the capitalist system over the feudal system (Watkins, 1907).

Elite theory, which emerged in the 1950s and 1960s significantly departed from the classical political economy in two ways. Firstly, the emergence of an economic elite is a given in any economic system, with little differentiation between the feudal era and modern capitalism. The rise of an elite can be subsumed under a stochastic process hypothesis. Secondly, the economic elite direct economic growth only as far as it benefits them.

Modern empiricism has focused on the sources of contemporary fortunes. Various explanations have been proposed for the rise of great fortunes. At the core of these studies though is the view that the industrial sources of great fortunes have an important explanatory role in understanding why the ultra-rich exist. These approaches echo Piketty's (2014a) view that the history of capital or wealth is not homogenous in nature. Rather, it is a history of alternative forms of wealth, manifested in different industries or sectors of the economy, be it financial wealth, property, or oil capital. Further, modern empiricism views market efficiency, and abnormal returns to risk as important elements in the attainment of vast fortunes. Society, law and custom have little role in the growth of large fortunes in most modern empirical literature *sans* Piketty (2014a).

Chapter 3 Trends in Wealth and the Rise of the Billionaire

The purpose of this chapter is to provide a description of the primary data and trends used in this thesis in relation to a study of the ultra-rich in the contemporary world. We begin by providing a preliminary overview of the data sources employed in the construction of a global billionaire database. To complement the latter, we also use various other data sources on income distribution and wealth and highlight some limitations regarding the data sources employed. Secondly, a general overview of the contemporary trends and patterns in the globe's billionaire population is presented. These trends are nestled against the backdrop of aggregate wealth-income ratios for several advanced economies for which data is available. These trends and patterns are viewed through the prism of various characteristics at a global and regional level and at the sectoral and demographic intersection.

3.1 Introduction

This chapter examines the trends in the accumulation of vast fortunes over the period 1990 to 2013, focusing on individuals or families with an estimated net worth of USD1 billion. As the title of the thesis suggests, many have claimed that the rise of great fortunes in our epoch reflects the process that was observed in the late 1800s and early 1900s in the US. Much like our era, the Gilded Age was characterised by rapid income growth, rising inequality and the sudden onset of vast fortunes, and economic crises (Rockoff, 2012). This chapter details the rise of vast contemporary fortunes across the globe, hypothesise why some nations have been the more prolific in wealth creation, discusses the impact of the Global Financial Crisis on wealth creation and finally examines the extent to which inheritance represents a source of great fortune amongst the world's economic elite.

The analysis is based on lists of the world's billionaires published between 1990 and 2013. This is by no means the first study to use these lists, with recent examples including Saez and Zucman (2014), Cagetti and De Nardi (2006), Kopczuk and Saez (2004), and Klevmarken, Lupton and Stafford (2003). The present chapter builds on these works by extending the sample range and adding detailed information on the sectoral sources, by the application of the GICS classifications, of wealth and the extent of inheritance pervading the data.

This chapter is divided into six sections. Section 3.2 discuss the methodology and database construction. Unlike previous studies, a regression framework is not adopted; rather, the data is directly analysed. Section 3.3 analyses the aggregate trends in wealth accumulation, including wealth to income ratios and the concomitant rise of the billionaires. Section 3.4 presents a regional breakdown of wealth accumulation in both developed and developing regions of the world. Section 3.5 presents data on the evolution of inheritance versus self-made wealth across time and space. Section 3.6 summarises the main points of the chapter.

3.2 Methodology and Data

3.2.1 Analysing Trends and Assigning Causality

Both Chapters 4 and 6 explore where current wealth came from and how it is being sustained among the advanced economies of the world. The *Forbes* data provides a starting point for establishing names, ages, industries and countries to construct a historical typology of the economic and political forces at play.

In this chapter, enumeration plays an important role for detecting or signalling areas of systematic difference within a region or across regions, while the personal business histories provide the framework for developing generalisations across time and space. This approach is aligned with the works of Rockoff (2012) and Kaplan and Rauh (2013). Similarly, Jones (1831) argues that careful accumulation of historical facts is essential before the production of generalisations with regard to wealth can be made. In general, econometric analysis is kept to a minimum and utilised only to establish inter- and intra-regional differences based on various underlying drivers throughout chapter 3, 4 and 6. One-way ANOVA tests are employed along with relevant post-hoc tests to

establish the key areas of differentiation between different regions or industries if necessary.

A major problem with using such historical data is the risk of generalising from intuition (Jaher, 1980). To address this problem, the collective biography attempted here is guided by theoretical or conceptual rationales from past literature. Conceptually, the framework to analyse wealth borrows heavily from Piketty (2014a), Jones (1831), Watson (1907), Rubinstein (1980), and Shorrocks (1988). For example, technological shocks, government fiscal policy, rules on corporate governance and the benefits of diversification are sound economic ideas and theories utilised in this study to establish the key markers of differentiation in wealth generation across the globe, including: How is wealth made? Where was it made? When were the large fortunes first amassed? Is wealth creation being sustained?

3.2.2 Constructing the Billionaires Database

An immediate handicap encountered by any study of the state of extreme wealth is the scarcity of accessible and relevant sources. Broadly, the researcher has four sources from which to examine the upper tail of the wealth distribution: 1) journalistic lists of the rich, 2) wealth tax data, 3) estate data, and 4) investment income data. Of these, Davies and Shorrocks (2000) conclude 'estate and wealth tax data probably yield more reliable information on the upper tail of the distribution' (p. 605). This presents two problems for this study. Firstly, this study is concerned with the distribution of extreme wealth across both geography and industries. Wealth data is limited to those nations that have a wealth tax, and those with wealth taxes do not necessarily have the same definition of what constitutes wealth for taxable purposes (Atkinson, 2006). In addition, tax evasion or avoidance substantially plagues this type of data set (Atkinson, 2006; Spånt, 1987). Secondly, estate data does not reflect the contemporaneous evolution of industry dynamics in the present epoch analysed here. For example, to capture the source and evolution of Mark Zuckerberg's or Sergey Brin's net worth, one would have to wait until after their deaths. An impractical solution given the ages of these two Internet entrepreneurs. Furthermore, estate data typically neglects wealth tied up in large trust funds, which are often the favoured investment vehicle of the super-rich for concealing their net worth from the tax system (Lundberg, 1969).

In this chapter, we employ the *Forbes* World Rich List to generate a time and geographical distribution of wealth. Here we are mainly interested in the qualitative aspects of wealthy individuals rather than the recorded wealth figures *per se*.[10] The study incorporates data on individuals from 1990 through to 2013, although the *Forbes* data only started including point estimates on individual wealth from 1996, which is when most quantitative studies begin (see Neumayer, 2004; Sanandaji & Leeson, 2013; Torgler & Piatti, 2013). Journalistic 'rich lists' have been utilised by a few prior studies. For Australia, Siegfried and Round (1994) utilise the *Business Review Weekly* Rich List, and for the UK, Siegfried and Roberts (1991) use the *Sunday Times* Rich List. Neumayer's (2004) sample is restricted to a three-year period (2001, 2002, and 2003), while Torgler and Piatti's (2013) sample covers 1996 through to 2003. In both instances, the lists were used in an econometric exercise where the number of billionaires recorded in each country was the dependent variable.

The first *Forbes* world billionaire list was published on the 5th October, 1987, listing 140 billionaires with an aggregate net worth of USD295 billion. The wealthiest person recorded on this list was Yoshiaki Tsutsumi, with an estimated net worth of USD20 billion. His wealth was generated by inheriting the control of his father's industrial conglomerate, Seibu Corporation, which had various business interests in tourism, railroads and finance (Downer, 1994). As of 2013, there were over 1,400 individuals on the list from across the globe. *Forbes* sources its data from both public and private sources some of which remain anonymous. This data is then used to construct a picture of individual wealth holdings. Although *Forbes* may go directly to the source, anonymous lawyers, financial advisors and accountants close to the listed individuals are often contacted (Kroll, 2014).

Despite having access to the rich and their close associates, *Forbes* is compelled to follow certain valuation rules in instances where sources are not forthcoming (Canterbery & Nosari, 1985). Valuation of privately listed companies, which is often the case with the individuals in these lists, proves problematic. In the case of privately held business concerns, the firms are valued by estimating revenues and combining

[10] Estimates of wealth are intermittently utilised throughout Chapter 3 and Chapter 6. However, a significant caveat in the use of media sourced data is the accuracy of journalists' wealth estimates. It is for this reason that reliance on these wealth figures are kept to a minimum.

them with price-to-earnings ratios of similar public companies (Kroll, 2014). For oil and gas companies, *Forbes* will often settle for placing a 'fair estimate' on oil reserves, for example. The worth of television networks or stations, which are not listed on a stock exchange, 'is evaluated by reputable media brokers' (Canterbery & Nosari, 1985, p. 1056).

Although this data set has been used successfully in the past, there are limitations associated with its use. Atkinson (2006) argues that liabilities often are not discovered, which artificially raises the net worth of some individuals. For example, the UK publishing mogul Robert Maxwell revealed extraordinary debts in the early 1990s that, in real terms, transformed him from a billionaire into a penniless pauper (Cohen, 1991; Wearing, 2005).

A further problem with the *Forbes* list is in dealings with wealthy dynastic families such as the Rothschild and Rockefeller families. Although aggregate family wealth is often large, the *Forbes* lists focus mainly on individuals and, at most, the nuclear family. When business interests diverge significantly, as in the case of two siblings, they are counted as separate wealth holdings. For example, the brothers Karl and Theo Albrecht own and operate ALDI Sud and ALDI Nord, respectively. Due to the independence of the two business operations, *Forbes* maintains a separate listing, despite both inheriting their wealth from their father. In contrast, the French fashion billionaires, Alain and Gerard Wertheimer, who maintain a controlling interest in Chanel, are listed jointly by *Forbes* and would be counted as one individual and not two. Further, in the case of large, wealthy dynasties, the wealth is often far too diffused among the extended family, and this diffusion leads to substantial opaqueness making it difficult to arrive at an overall valuation or, more importantly for this study's purpose, individual enumeration (Goff, 2010; Kroll, 2014). Rather than recode and aggregate family dynasties to individuals, this study strictly follows the *Forbes* approach and does not make any changes.

A further complication is the treatment of location. *Forbes* magazine records, at times, both the citizenship and the residence of the individual. Given that billionaires encounter few if any liquidity constraints to consumption, they typically leave their country of origin and find an abode in one of the cosmopolitan centres of the world. Roman Abramovich, for example, made his fortune in Russia via its vast gas resources

but is listed as a resident of the UK. While it may seem logical to code citizenship as the home state of an individual, this would be disingenuous in the instance of billionaires as location confers substantial advantages to the billionaire. Watkins (1907) argued that the wealthy of his age who moved to New York City possessed significant commercial advantages over the older agrarian wealthy, for example. In contemporary times, Beaverstock, Hubbard and Short (2004) document the rise of a trans-global rich elite who cluster in a few globalised cities and their subsequent enormous impact on the local populations, both in terms of generating economic activity as well as exacerbating inequalities. To simplify the analysis, the place of primary business interests is assumed to be the primary geographical identifier. In the case of large diversified holdings with income sources across the world, citizenship is assumed here as the identifier.

Further problems present themselves in relation to the coding of inheritances. Firstly, *Forbes* has on occasion changed the source of wealth of an individual from inherited to self-made, without explanation. Secondly, there is the issue of whether one should encode the degree of inheritance received per some respecified relative level. Kaplan and Rauh (2013) attempt this by applying a weighted inheritance score across a range of scales. For example, if individuals inherited a small business and built it into a larger enterprise then they would provide a weighting of 1.5 compared to 1, which indicates the wealthy individual founded the business. A score of 2 would then equate to inheriting a large enterprise and so on. The problem with this approach is judging what constitutes a small or large inherited business. Given that many of these business span generations, and the international nature of the database would require subjectively determining what constituted a relatively small business in, for example, immediate post-war ravaged Germany compared to the US. Under this approach, the Koch brothers are not considered to have come from a privileged background, according to Kaplan and Rauh (2013). Regarding the first point, the *Forbes* data is used in this study only as a starting point in determining whether to classify an individual's source of wealth as inherited or self-made. All individuals' biographical information is examined to ensure accuracy. Regarding the second point, this study maintains a simple dichotomy between the two groups, following past scholarship (Rockoff, 2012; Canterbery & Nosari, 1985).

Lastly, a major undertaking in constructing the billionaire database was to assign each individual over time a relevant GICS identifier code. The GICS system of industry codes provides a convenient and consistent means of assigning individual billionaires to

various industries or sectors over time. This is extremely important for two reasons. Firstly, Chapter 6 requires detailed records of the industrial sources of great wealth. The *Forbes* data does provide similar such information but in a far from rigorous and consistent fashion. There were numerous instances in the data where *Forbes* would, for example, in one year list an individual's industry as "diversified investments" and in subsequent years switch this to "diversified conglomerate". To ensure an accurate allocation of individuals to GICS sectors, each individual's personal business history was examined over time and allocated a GICS sector accordingly. In total, the sample consisted of more than 1,400 individuals over 30 years.

In addition to the journalistic rich lists that play a critical role in quantifying and enumerating the billionaires of the world, the nature and approach of the study requires substantial use of both primary and secondary sources of information on individuals. Historical news articles, interviews and, where available, government reports, provide much of the evidence and context for developing the key themes throughout Chapters 5 and 6. For example, although the *Forbes* list demonstrates a high proportion of inheritances in each region, it does not and cannot provide context as to why inheritance should constitute the main source of wealth in a given region.

3.2.3 Macroeconomic Data on Wealth and Income Distribution

The rise of the global rich is ultimately a product of purely economic phenomena. In Chapter 4, the amassment of great fortunes is analysed in the broader context of the dynamics wealth accumulation. Adopting such an approach requires the use of various data sources from various advanced economies. These data sources are varied, but include data on income shares, after-tax incomes shares, the structure of income (capital versus labour) and savings and consumption data.

The main data source relied upon to this end is the World Wealth and Income Database (WWID) (Alvaredo, Atkinson, Piketty, Saez, and Zucman, 2015). The WWID is a database constructed from an accumulation and synthesis of several succeeding studies. The utility of the database is particularly apparent regarding the use of estimates in relation to income shares. In general, the income statistics are based upon income tax data rather than household surveys which are used by, for example, the Luxembourg Income Study (n.d.). The advantage of income tax approach of WWID is in furnishing

the researcher with longer estimates of income shares. In contrast, household surveys may only be undertaken every few years.

The database is significant in scope and scale covering thirty-one countries. Despite the scale of the database, the analysis using this data is restricted to seven countries: Australia, Canada, France, Germany, Japan, the UK, and the US. Latin America is also considered, but with the caveat that data availability is very limited. In addition, some countries may simply be missing from the WWID. Brazil is one such example despite some recent studies appearing. The analysis is largely restricted due to the length of time series available and the availability of data for various percentiles and the structure of income. Despite having the most coverage, there are numerous gaps in what data is available for these countries. Table 3.1 summarises what type of data is available and what years are used in the study by country.

Table 3.1 Income shares availability, World Wealth and Income Database

	Top 1%	**Top 0.1%**	**Top 0.01%**	**Income Structure**
Australia	1960-2010	1960-2010	1960-76, 1985-98	Yes - partly
Canada	1960-2000	1960-2000	1960-2000	Yes
France	1960-2010	1960-2006	1960-2006	Yes
Germany	1961,'65,'68,'71,'74,'77, '80,'83,'86, '89,'92,'95, '98,2001-'08	1961,'65,'68,'71,'74,'77, '80,'83,'86, '89,'92,'95, '98,2001-'08	1961,'65,'68,'71,'74,'77, '80,'83,'86, '89,'92,'95, '98,2001-'08	Not available
Japan	1960-2010	1960-2010	1960-2010	Yes - partly
UK	1960, 1962-'79, 1981-2007, 2009-'10	1960, 1962-'79, 1981-'86, 1993-2007, 2009-'10	1960, 1962-'79	Not available
US	1960-2010	1960-2010	1960-2010	Yes - partly
Argentina	1997-2004			Not available
Colombia	1993-2010			Not available
Uruguay	2009-2012			Not available

Source: For all the countries in Table 3.1, the income share data was obtained from the World Wealth and Income Database (Alvaredo, Atkinson, Piketty, Saez, and Zucman, 2015). The data is accessible from http://www.wid.com/

In addition to the income statistics above, a wealth of data on taxation, consumption, savings, and debt were gathered from various statistical bodies across the globe. An

inherent problem in this data gathering process is that the data is not strictly comparable across countries due to substantial variation in what is recorded. For example, wealth may be defined differently. Alternatively, a common base such as wealth or income data on a given percentile might be missing, making direct comparisons on a certain factor, such as debt, across countries problematic.

3.3 Exploring the Global Rich

This subsection develops the empirical context for the subsequent chapters. It seeks to emphasise the growth of the number of billionaires within the context of a "wealthier" world. The reasons for the rise of accumulated wealth and the wealthy is then considered in subsequent chapters.

3.3.1 Comparison of Wealth-Income Ratios Across Advanced Economies

To set the context and differentiate the 1990s and 2000s versus the 1960s and 1970s, a broad overview of wealth accumulation is presented across advanced economies.

Table 3.2 presents the aggregate ratio of wealth to national income across the major industrialised economies between 1960 and 2010, as estimated by Piketty and Zucman (2014a). The wealth to income ratio is a measure of the extent that wealth has accumulated relative to income and in effect represents a measure of wealth deepening. In addition, it provides the means to directly measure the extent to which the accumulation of wealth has increased over time and across countries (Saez and Piketty, 2014).

In aggregate, there is an overall upward trend in wealth to income ratios since the 1960s. Overall, the mean wealth-income ratio is 3.729x (σ=0.995), although there has been substantial variation across decades. Throughout the 1960s and 1970s, the mean wealth to income ratio was averaging 3.011x to 3.068x, but a marked increase is observed during the 1990s when it rose by over 32.4% from the 1970s to 4.064x in the 1990s. In the subsequent decade, 2000 to 2010, the wealth to income ratio further increased to 4.676x.

Table 3.2 Mean wealth to income ratios of advanced economies by decade

Decade	Wealth-income ratio
1960 - 69	3.011x
1970 - 79	3.068x
1980 - 89	3.528x
1990 - 99	4.064x
2000 - 10	4.670x

Source: Piketty and Zucman (2014b).

Which countries have driven the substantial increases in the wealth-income ratio? Figure 3.1 illustrates the trends across the seven industrialised countries of interest. The highest observed wealth-income ratio is observed in Japan in 1990, which coincides with that country's property boom high. It is also the year when Japan dominated the global rich lists, with the two richest men of 1990 being Yoshiaki Tsutsumi (net worth of USD16 billion) and Taikichiro Mori (net worth of USD14.6 billion). This follows a precipitous increase throughout the 1980s in Japan's wealth to income ratio. In 1979, Japan's wealth to income ratio was 4.057x, the highest in the world at the time. However, by 1985 it reached 4.864x and peaked at 6.985x in 1990, an increase of approximately 72.2%. It then decreased to 6.073x in the 1990s and to 5.876x from 2000 to 2010. The rapid wealth accumulation in the 1980s in Japan is not observed in every country. In Germany, a much more stable and slow growth pattern is observed. Its lowest wealth to income ratio was 1.723x in 1960, averaging 2.093x over the 1960s compared to the global average of 3.011x. It then grew at an average of 1.79% to 3.135x in the 1990s, converging with global averages, and reaching 3.798x over 2000 to 2010.

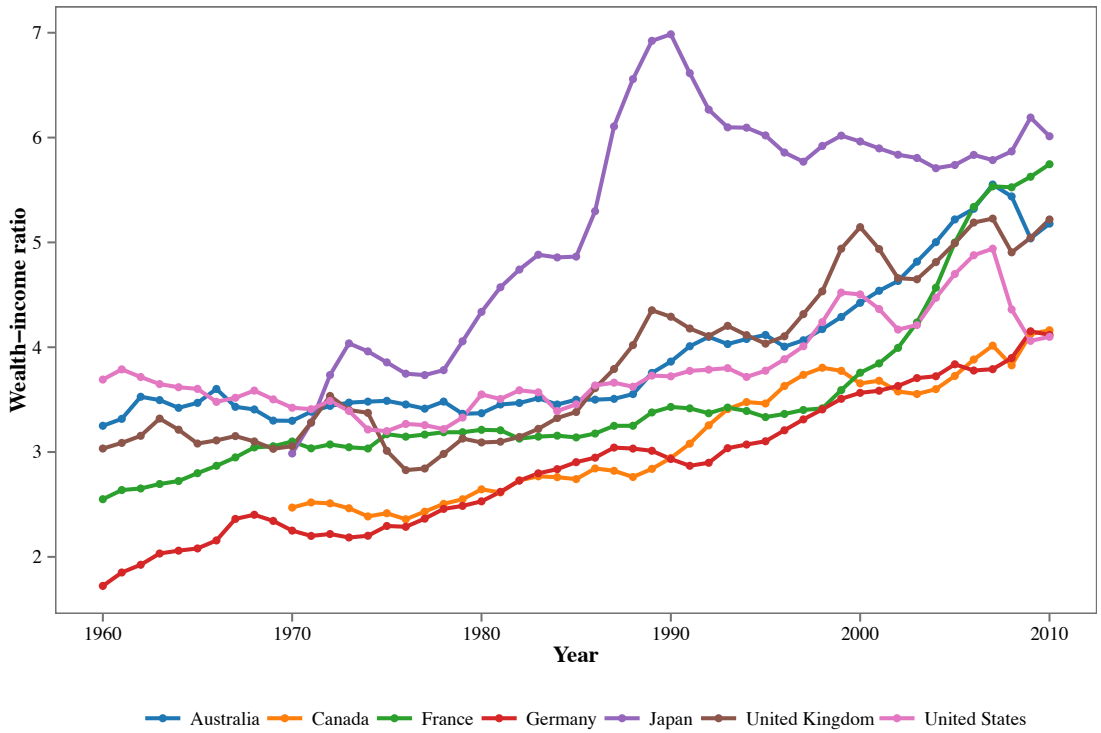


Figure 3.1 Wealth to income ratios of advanced economies, 1960-2010

Source: Piketty and Zucman (2014b)

The striking differences between the two former Axis powers after the Second World War reflect the dynamics of wealth accumulation in this era. It can be argued that the high values of wealth observed in Japan are tied to its real estate boom in the 1980s, and the subsequent collapse in property values reflects the trend observed in Figure 3.1. However, notwithstanding the decline in its wealth to income ratios in the 1990s and 2000s, Japan still averages far above the ratios estimated for Germany. Germany did not experience a property boom during this period, but the divergence between the two nations may attest to substantial industrial or institutional differentiation affecting the manner and rate through which wealth might be accumulated. For example, Germany's high rates of housing rent and rental price controls may have significantly reduced the degree of wealth accumulation. Moreover, the variance in the wealth to income ratios may partly be attributable to systematic differences in the policies of the Allied occupying forces towards commercial and industrial interests in the immediate post-war period. This is further explored and discussed in Chapter 6.

The heterogeneity in wealth to income ratios is not restricted to vast physical or cultural distances, as demonstrated by the experience across the Rhine River, where France differs substantially from Germany. Starting from a relatively low mean of 2.7973x for

the 1960s, France's wealth to income ratio barely averaged beyond 3 (mean of 3.039x over 1960 to 1989). Only in the late 1990s is a precipitous increase observed. By 2000, the ratio was 3.757x and by 2010 it had increased exponentially to 5.746x (compared to 3.798x in Germany), equating to an annual growth rate of 4.38% compared to -0.0948% between 1960 and 1999.

In contrast to the significant heterogeneity observed between the continental European powerhouses of Germany and France, and that of Japan, the economies of the Anglo-Saxon world tend to exhibit similar trends in their wealth to income ratios. By far the largest economy, the US, exhibits the most variation in the 50-year sample. Overall, the US mean wealth to income ratio is 3.785x (σ=0.4364). Figure 3.1 shows that it exhibits a J-shaped path over the sample. The trough arises in the 1970s, where the mean wealth-income ratio decreased to 3.320x from 3.615x in the 1960s. By the 1990s, the ratio had increased to 3.571x. The increase in wealth accumulation coincides with an explosion in great fortunes in the US during the 2000s. The influx of new wealth is captured in the macro data, with the wealth to income ratio averaging 4.190x over the 2000 to 2010 period, with the peak observed in 2007 at 4.940x. Although the ratio decreased after 2007, if the general trends in billionaire individuals are to be viewed as a barometer of wealth accumulation, the US wealth to income ratio would be expected to increase again soon. Finance, IT and retail are the key drivers of this wealth creation and accumulation at the micro level in the US, which will be discussed in depth in Chapter 6.

Amongst the other Anglo-Saxon economies, the highest observed ratios are in Australia and the UK. In Australia, the highest wealth to income ratio was 5.552x in 2007, compared to the overall country mean (1960 to 2010) of 3.911x (σ = 0.6596). The history of this increase in wealth accumulation could be traced to any number of sources. One could point to the economic rationalisation programmes of successive Labor and Coalition Governments. Alternatively, the mining and property booms of the last 20 years have had a clear impact on Australian household wealth. Prior to the 1990s, Australia's wealth to income ratio averaged approximately 3.500x, which may have reflected the strong agricultural sector that dominated economic output in this period but was never a major producer of wealth. Similarly, the mean wealth to income ratio of the UK was 3.1 over the 1960s to 1970s. By the mid-1980s, an upward trend was established, increasing to over four in the 1990s and to the low fives by the 2000-

2010 period. Similar to Australia's experience, the increase in the wealth to income ratio of the UK tend to coincide with the implementation of increasingly pro-market government policies. The rise of London as a global centre for finance also acted as a strong catalyst in the rapid rise of wealth in the UK, particularly for self-made entrepreneurs. Indeed, as Chapter 6 demonstrates, peerage plays a minor role in modern Britain's extreme wealth ranks, with only two notable names appearing in the property sector. Instead, in the UK, self-made financiers dominate the wealth rankings.

3.3.2 The Return on Wealth and National Income Growth

The trend towards very high wealth to income ratios or high wealth intensity does not necessarily say anything about the dynamics behind wealth concentration in and of itself. A useful consideration here is to examine Piketty's (2014a) view that the high wealth to income ratios have been associated with the inequality between the return on capital or wealth and national income growth. As Pressman (2016) states, if there is one definitive manner of summarising Piketty's (2014) *Capital in the Twenty-First Century*, it is the inequality $r > g$. Here, r is the return on wealth[11] and g is the growth in national income.

Empirically, the evidence does suggest that returns to wealth have tended to exceed income growth. The real rate of return to capital has, since the 1960s, tended to remain above the national incomes of the seven industrialised countries discussed here. Figure 3.2 plots their national income growth and real rates of return based on Piketty and Zucman (2014b), although the authors do not provide real return data for the 1960s for the US, the UK, Japan or Canada. The figure reveals that the rate of return on capital, across all countries, is on average above contemporaneous national income growth rates. From the 1970s, the highest rates of returns are observed in Canada (9.03%) and Germany (8.44%). In contrast, the lowest returns are observed in Japan (5.62%) and Australia (6.14%), followed by France (6.53%), the UK (6.55%) and the US (6.89%).

[11] Piketty (2014a) defines and wealth and capital equivalently. The definition of wealth is discussed in Chapter 2.

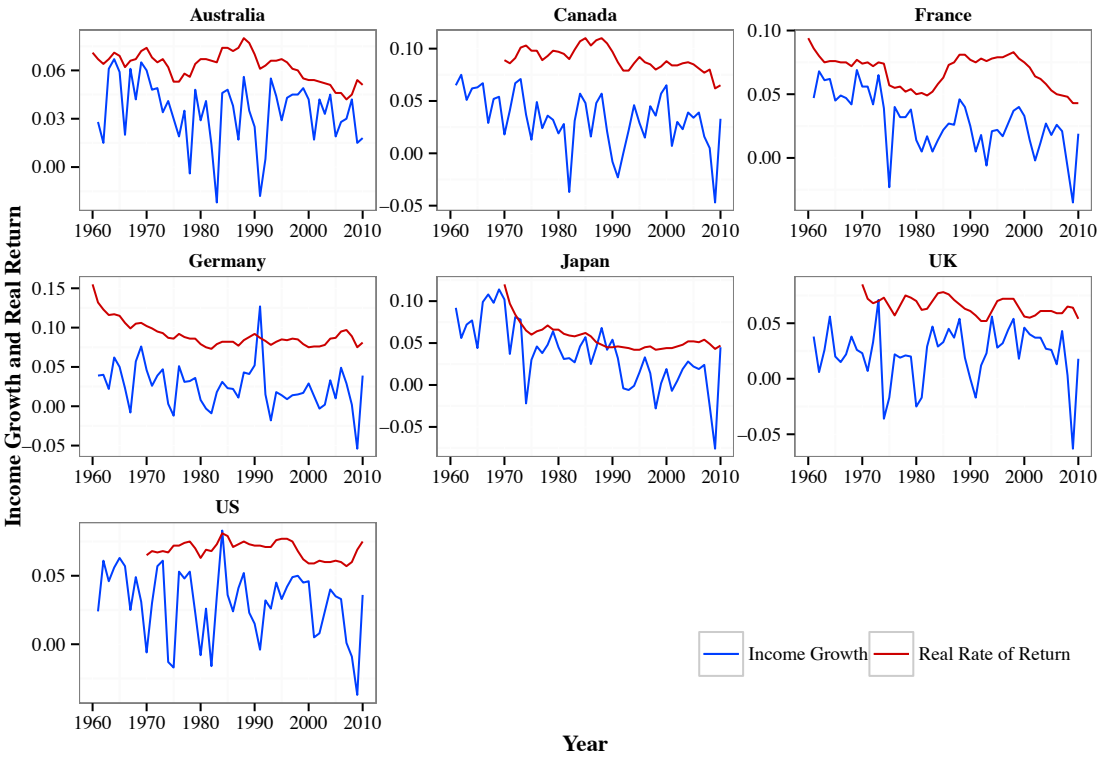


Figure 3.2 Income growth and real rate of return, 1960-2010

Source: Piketty and Zucman (2014b)

In contrast to the relatively high rates of return to capital, income growth rates (not returns to income) are less than real returns, and exhibit more volatility. Australia's mean income growth has averaged 3.21%, which is the highest observed with the least variability (σ = 1.86%). France (2.26%), Germany (2.19%) and the UK (2.19%) all registered the lowest growth rate overall. Germany's average growth shows a significant increase in income growth in 1991 at 12.7%, which was in no doubt spurred by the enlarged population of the newly unified German state.

From Figure 3.2, it is observable that most countries have experienced decreasing or flat real returns. Japan and Germany both exhibit the greatest negative gradient. For Germany, the real rate of return averaged 10.4% during the 1960s and 1970s, before falling to 8.25% for subsequent decades. The decline in Japan's real rate of return traces out a more precipitous decline. During the 1970s, Japan averaged 7.67%, one of the highest in the world. In subsequent decades, it had decreased to 4.96%, falling further to 4.85% from 2001 to 2010. Conversely, France demonstrated considerable variability in *r*, with no clear trend early in the sample. During the 1960s and 1970s, the French mean *r* was 7.15%. Between 1975 and 1985, a large decrease is observed corresponding to a mean of 5.43%, followed by a reversion to levels above 7% from 1986 to 2001. In

2001, there is a dramatic decrease once again, and from 2001 to 2010, the mean real return to French capital was 5.21%.

The Anglo-Saxon economies tend to exhibit decreasing real returns over the sample period. In the case of the US and the UK, this is not highly perceptible but it is there, as they have mean real rates of return of 6.89% and 6.55%, respectively. Between 1970 and 1989, the average rate of return in the US was 7.12%, and from 1990 to 2010 it was 6.67%. The UK's experience was very similar. Between 1970 and 1989, the mean *r* was 7.00% and by the 1990 to 2010 period it fell to 6.12%. Both Australia and Canada exhibit similar behaviour, although Canada had one of the highest rates in the Anglo-Saxon world. Between 1970 and 1989, Australia's and Canada's mean *r* was 6.68% and 9.85%, respectively. By the subsequent sample period, 1990 to 2010, a fall is once again observed to 5.63% for Australia and 8.35% for Canada.

An interesting exercise is to consider the relation between returns to capital and the wealth to income ratios depicted in Figure 3.1. This exercise is relevant from one significant perspective. High returns to capital may be related to high risk factors such as high entrepreneurial risk. Conversely, lower returns may be indicative of a move from entrepreneurial activity in generating wealth to one based on diversification and or inheritance. The inheritor may prefer to diversify their portfolios thereby reducing overall returns and risk. Piketty (2014a) predicts that increases in β (wealth to income ratio) would ultimately be driven by falls in the realised real rates of return. Figure 3.3 presents the relationship between β and *r* over time, with the coloured shapes depicting the sample decades in Piketty and Zucman's (2014b) data.

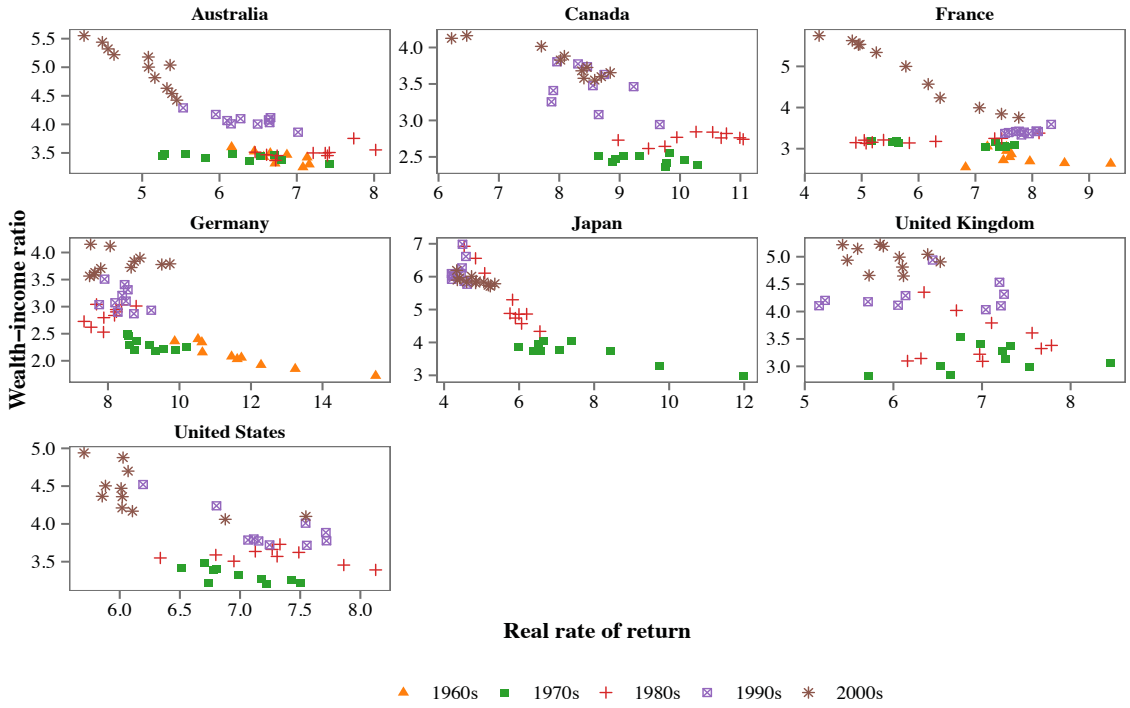


Figure 3.3 Real rates of return and wealth to income ratios, 1960-2010
Source: Piketty and Zucman (2014b)

The negative relationship between β and r largely holds across the sample and is strongest among countries that demonstrate both the greatest changes in β and large changes in the annual real rate of return. The pattern tends to be repeated across the majority countries. In the latest decade, returns tend to be clustered at the lower end of the spectrum, whereas in the 1960s and, where applicable, the 1970s, they are typically clustered at lower levels of β. The only major exception to this general pattern is France, where the negative relationship between r and β does not hold over the 1980s and the US during the 1970s and 1980s. However, the 2000s largely confirms the observations across the general sample. Overall, the statistical strength of the relation is quite high for most countries, as presented in Table 3.3.

Table 3.3 Correlation between β and r

Australia	-0.7849
Canada	-0.7514
France	-0.6139
Germany	-0.6344
Japan	-0.8582
United Kingdom	-0.5508
United States	-0.6629

Notes: Author's own calculations

Examination of the correlation coefficients for each country reveals that the strength of the association is moderate to high. Japan demonstrates the strongest negative correlation (-0.8582), followed by Australia (–0.7849) and Canada (-0.7514). The UK demonstrates the lowest correlation (-0.5508), while the US is slightly higher (-0.6629). The question that naturally arises is what relevance does such a negative relationship have for inequality.

The negative relationship between returns and wealth-income ratios might be indicative of a transformation of capitalism in some economies from one based on entrepreneurial activity to one in which inheritor or rentier plays a greater role. Piketty (2014a) argues that any number of reasons can be provided for this relationship, but the preferred one resides in linking the amount of entrepreneurial effort expended during periods of high income growth and returns, as substantial entrepreneurial labour effort and energy are exerted to allocate capital. In contrast, during periods of low growth, the entrepreneur moves back and the rentier approach gains dominance as the latter requires less effort in allocating capital (Piketty, 2014a). Watkins (1907) also recognises the effect of a low-interest income on entrepreneurial effort. Examining the impact of falling returns for the rich, Watkins (1907) argues:

> For them further accumulation is still easy and the low rate of interest puts others at a disadvantage, so long as the large incomes from property are much larger than the large incomes from personal effect. Family pride will sustain the effort of those already rich to keep their relative position in the fact of falling interest rate. (p. 125)

This basic argument, along with the data on rates of return presented in Figure 3.3, provides an initial motivation for seeking to establish the origins of extreme wealth across the advanced economies. For example, many of the observations for the US in the 1990s are clustered in the high percentage return range (over 7%), with the recorded years coinciding with the influx of new wealth from internet start-ups and new finance industries (e.g. hedge funds) with relatively more youthful entrepreneurs dominate. The UK, too, experienced an influx of the new rich in the 1990s, which was associated with the emergence of a new elite financial. In contrast, Japan's entrepreneurial renaissance in the immediate post-war era tapered off in the last two decades of the 1990s and 2010

with many of the wealthiest and their estate beneficiaries diversifying away from their dynasty's traditional locus of entrepreneurial activity. Many of the wealthiest entrepreneurs in these countries found initial success during the 1960s to 1980s. This is further explored in a historical framework in Chapter 6.

3.3.3 Trends in Billionaire Wealth Holdings

Moving from the general macro wealth context, we now turn to another aspect of wealth for which this thesis is principally concerned; the rise of individuals with extreme wealth holdings. The enumerated list of billionaires covers a 24-year period from 1990 through to 2013. As mentioned in Section 3.2.2, the *Forbes* global billionaire list only provides point estimates of net worth from 1996 and beyond. Although this study is ultimately interested in the historical processes and sources associated with large fortunes, it is still useful to examine the general trends in the actual wealth levels as reported by *Forbes*. Table 3.4 presents the descriptive statistics on the aggregate sample for both the number of billionaires and the average wealth of those listed on the *Forbes* global billionaire list. As Table 3.4. and Figure 3.4 indicate, there has been a 511% increase in the number of billionaires from 232 in 1990 to 1,417 in 2013. On a per annum basis, the growth rate in billionaires equates to a mean 10% growth rate in the billionaire ranks, although this varies considerably from year to year. Certain periods show little growth or a reversal in the fortunes of the rich. Between 1997 and 2000, there was little growth in the numbers, with 1998 showing the lowest number of billionaires of the past 24 years at 203.

Table 3.4 Global aggregate billionaire wealth (USD), 1996-2013

Year	No. of Countries	No. of Individuals	Total Wealth ($'000)	Median ($'000)	Mean ($'000)	Max ($'000)	Standard Deviation ('$000)
1996	39	414	1,028,000,000	1,950,000	2,483,092	18,500,000	2,037,720
1997	39	221	965,590,000	2,900,000	4,369,186	36400000	4,377,129
1998	38	203	1,007,900,000	3,300,000	4,965,025	51,999,999	5,935,095
1999	39	294	1,252,800,000	2,900,000	4,261,224	90,000,000	6,367,236
2000	39	319	1,379,199,999	2,900,000	4,323,197	60,000,000	5,527,475
2001	42	531	1,710,200,000	1,800,000	3,220,716	58,700,000	4,459,070
2002	41	468	1,503,300,000	1,700,000	3,212,179	52,800,000	4,464,847
2003	41	472	1,392,300,000	1,900,000	2,949,788	40,700,000	3,726,738
2004	42	582	1,902,600,000	2,000,000	3,269,072	46,600,000	4,171,913
2005	45	686	2,222,000,000	2,000,000	3,239,067	46,500,000	4,108,015
2006	48	790	2,634,600,000	2,100,000	3,334,937	50,000,000	4,111,956
2007	51	942	3,438,000,000	2,200,000	3,649,682	56,000,000	4,783,892
2008	53	1122	4,370,400,000	1,800,000	3,895,187	62,000,000	5,437,303
2009	51	790	2,407,900,000	2,000,000	3,047,975	40,000,000	3,761,497
2010	51	1000	3,520,300,000	2,000,000	3,520,300	53,500,000	4,691,937
2011	52	1205	4,483,100,000	2,000,000	3,720,415	64,000,000	5,206,276
2012	55	1220	4,559,000,000	2,100,000	3,736,885	69,000,000	5,120,191
2013	59	1417	5,411,260,000	2,100,000	3,818,814	73,000,000	5,392,871

Source: Forbes (1990-2013)

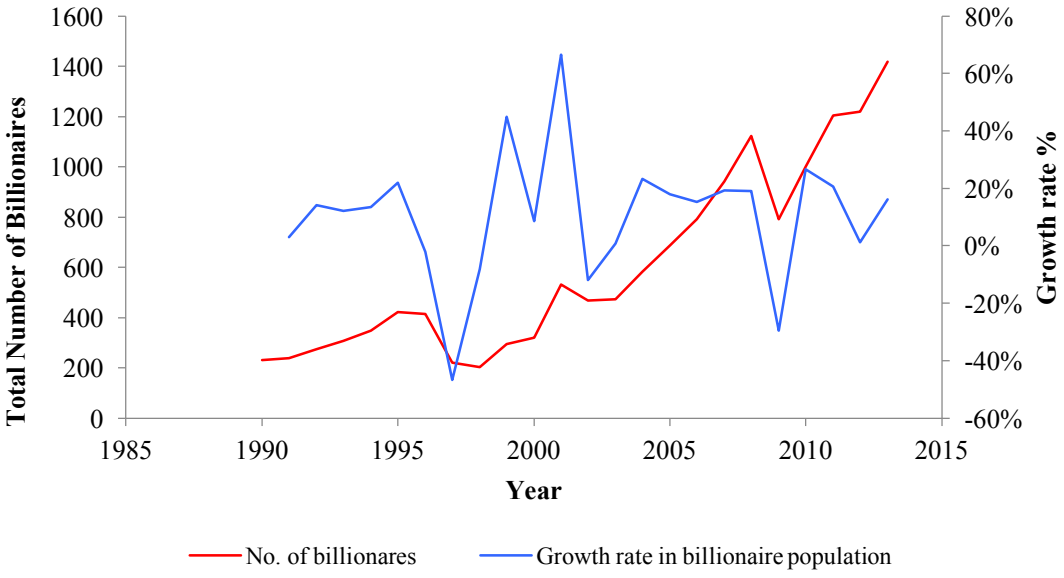


Figure 3.4 Global billionaire population and growth, 1990-2013

Source: Forbes (1990-2013)

The middle of the last decade saw a substantial increase in the ranks of the world's billionaires. From 2003 to 2008 an average 19% growth rate in the number of billionaires is observed. In 2008, the billionaires list exceeded 1,000 individuals for the

first time, an extraordinary increase considering that only 10 years prior the number of billionaires languished at 202. The rapid rise is partly explained by the influx of *nouveau riche* from Russia, China and South America, with the new entrants' impact being captured by the increase in the number of countries being represented in the Forbes list. In 1996, 39 countries were represented, increasing to 59 by 2013.

It would be highly premature to draw inferences from these trends, and there is a potential problem in using journalistic lists without delving more deeply into the personal histories of these individuals. For example, it can be argued that the fall in billionaires observed between 1997 and 2000 is due to the economic downturn associated with the Asian Financial Crisis, as they perfectly coincide. However, there are problems in establishing such a causal relation regarding Western Europe, for example. Although the number of Western European billionaires fell from 84 in 1996 to 48 in 1997 and to 40 in 1998, Western European policy makers and the markets were both much more sanguine about Europe's economic position during 1998 despite the Asian Financial Crisis. In fact:

> European Commission President Jacques Santer could argue that the direct effect on the European economies of the Asian Pacific economic turmoil would be 'slight' and that he saw no need to revise downward growth projections for the European Union (EU) for 1998. (Bridge, 1999, p. 458)

Market indicators were also quite healthy and did not signal any cause for concern for the rich of Europe. If the Deutscher Aktienindex (DAX), for example, is assumed to be a barometer for the financial health of Western Europe's economic elite,[12] the DAX closed at 4,693.50 in February 1998, 3,259.60 in February 1997 and 2,473.60 in February 1996. Taking another European index, the Euro STOXX 50 closed at 2,077.22 in February 1997 and at 2,878.04 in February 1998. Given the relative health of Europe's financial markets, one is either left to conclude that the European economic elite made terrible investments *en masse* compared to the rest of the market, or there were other factors at play. This might be explained by the data gathering process of *Forbes*, or substantial changes in wealth holdings through intergenerational transfers or divorce.

[12] As will be shown below, Germany produces the bulk of Western Europe's billionaire economic elite, followed by the UK and France.

Although the number of billionaires may have plummeted in the late 1990s, the mean wealth of billionaires fortunate enough to maintain their position on the list reached the highest-ever observed levels at USD4.965 billion in 1999, compared to USD3.564 billion over the entire sample. It is possible that the mean is influenced by extreme valuations. In 1999 the highest-ever recorded valuation by *Forbes* was made for Bill Gates at USD90 billion. To put this into perspective, Gates's wealth exceeded the combined wealth of the next top three (all from the US and two from Microsoft): Warren Buffet (USD36 billion), Paul Allen (USD30 billion) and Steven Ballmer (USD19.5 billion). The greatest dispersion of wealth was also observed, with a standard deviation of USD6.367 billion during 1999. Given the sample incorporates extreme values, the median may provide a better measure of the central tendency of extreme wealth. Between 1998 and 2000, the median value ranged between USD2.9 billion and USD3.3 billion, compared to USD2.1 billion in subsequent years. Overall, the total wealth owned has since a fivefold increase from 1996 to 2013. In 1996, the total estimated net worth of the billionaires was USD1.028 trillion. In 2000, it had increased to 1.379 trillion. Finally, by 2013, it had almost quadrupled to USD5.411 trillion. On an annual basis, this equates to a wealth growth rate of 9.76% *per annum* and in excess of the average returns and national income growth rates outlined in section 3.3.2.

The global industrial segmentation reveals that most industries have produced billionaires. Figure 3.5 presents a sectoral breakdown of billionaires over time. Reflecting on all sectors, there is a rapid increase in the number of billionaires throughout the life of the sample. Globally, both consumer discretionary and financials produced the bulk of billionaires and have also demonstrated the most growth. The growth is most pronounced after the year 2000. Next are industrials and consumer staples. Despite the media popularity of individuals in the sector, the number of billionaires in IT is far below these industries and had produced 90 billionaires by 2013. Perhaps even more interesting is the lack of representation of the telecommunications industry, with the number of billionaires barely reaching 20 in 2013, and typically averaging 15 throughout the period 2000-2010. At least on a global basis, the findings of Kaplan and Rauh (2013) that the ultra-rich will be typically found in industries requiring a high education premium does not, on casual observance, fit the global data.

Although the energy industry is often viewed as a constant stream of wealth generation in popular discourse, it is surprisingly under-represented in the sample. Just under 61 energy billionaires appear in 2013 albeit showing an upward trend compared to previous years. Health care also exhibited a similar consistent and relatively smooth upward trend. Utility billionaires only made an appearance in 2012 and 2013, a far cry from the Gilded Age when 27 super rich were associated with this industry (Rockoff, 2012). Except for telecommunication services, most industries exhibit very low volatility in billionaire numbers.

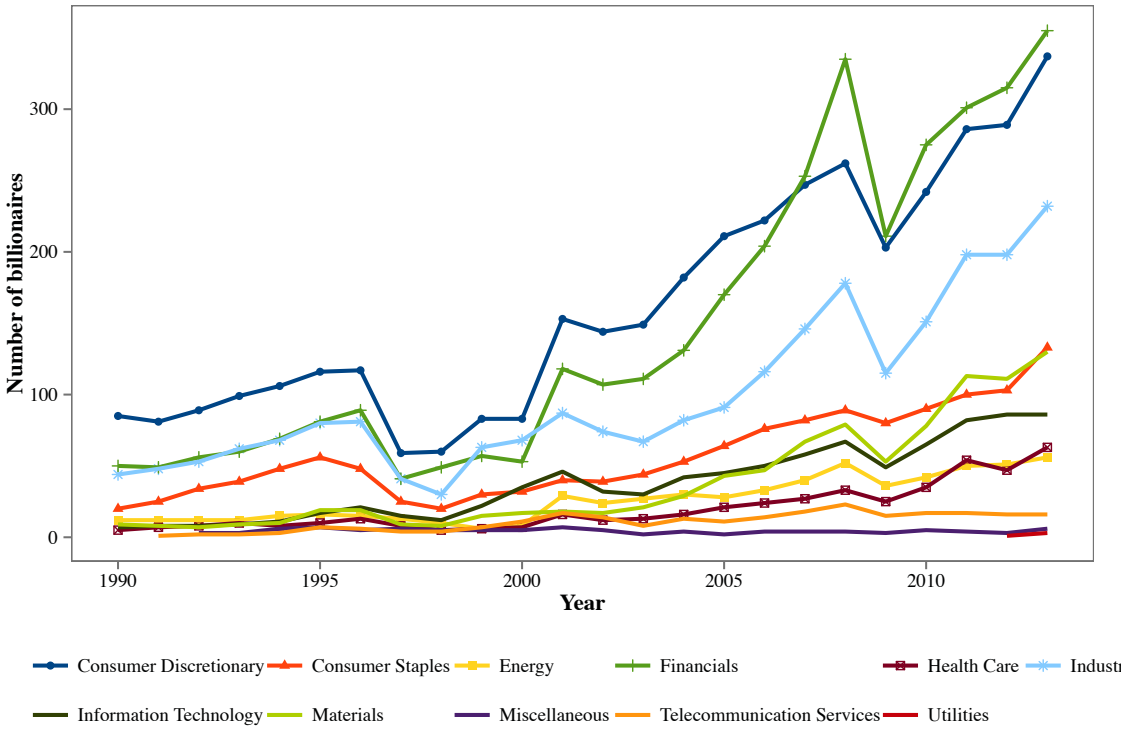


Figure 3.5 Global distribution of billionaires by industry, 1990-2013

Source: Forbes (1990-2013), Author's compilation from various secondary sources

The creation of much of the wealth in these industries, however, has a history stretching farther back than the figures would lead one to believe. Although Thurow (1975) and Hirsch (1911) argue that rapid capitalisation is an essential element of wealth creation (examples of which abound today), typically the road to extreme wealth spans decades. Indeed, for many in the billionaire rankings, the source of their wealth may appear in family histories spanning well over a century. These accounts are examined on a region-by-region basis focused on individuals in Chapter 6.

3.3.4 The Impact of the GFC on Billionaire Numbers

How did billionaires fare during the GFC? On a superficial level, not exceptionally well. In early 2009, world markets hit their lowest point. In 2009, there were 790 billionaires across the globe, a decrease of 30% from 1,122 in 2008. *Forbes* records asset prices as at 14 February annually. Examining global equity returns in Figure 3.6, February 2009 had the worst recorded year-to-year returns since 2003, with yields falling by approximately 60% from 2008.

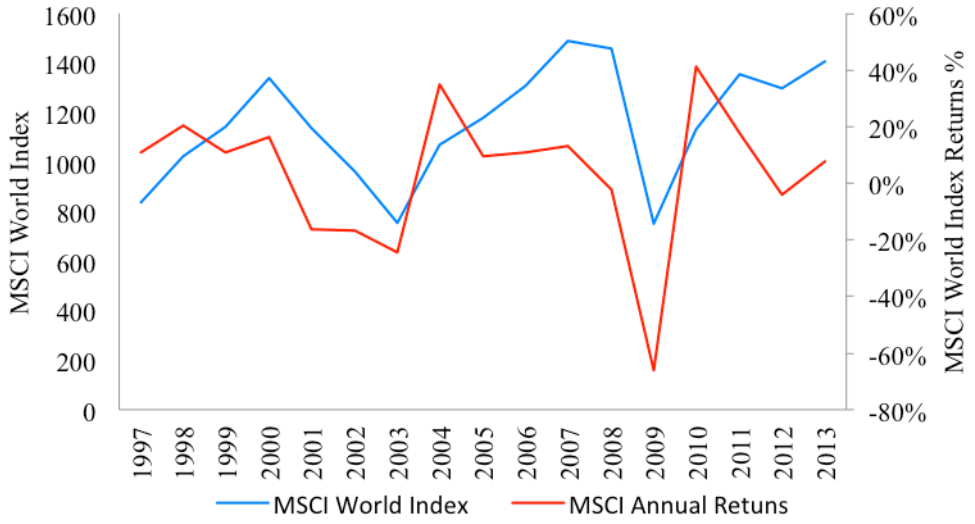


Figure 3.6 Global equity performance: price history and returns, 1997-2013

Source: Datastream (2015)

Once again, however, a degree of scepticism should be maintained when seeking a correlation between aggregate macro statistics and rise or fall of billionaires. There is some evidence that the decline is not entirely attributable to the economic crisis. Table 3.5 presents data on the estimated dropouts from 2008 to 2009, and those who managed to reappear in the wealth list in subsequent years.

At the *global* level, the fall was more dramatic than that revealed by the 332 decrease. Table 3.5 shows that of the 332 net recorded decreases, 374 were from dropouts and 42 were additions. The greatest number of dropouts came from North America (142), followed by Eastern Europe (61) and Western Europe (33). Of the 374 global dropouts, 208 managed to re-emerge in subsequent years (2010 to 2013), while 166 have not reappeared at all. The absence could be due to any number of factors, including business and investment misfortune, death, prison or divorce.

Table 3.5 Impact of the GFC on billionaire population

	2008	Drop outs	Additions	Net Additions	2009	Survived	Fully disappeared
Global	*1,122*	*-374*	*42*	*-332*	*790*	*208*	*166*
North America	500	142	23	-119	381	76	66
Western Europe	159	33	6	-27	132	18	15
Eastern Europe	96	61	0	-61	35	19	42
Middle East	78	30	4	-26	52	16	14
East Asia	70	24	3	-21	49	8	16
South Asia	53	29	0	-29	24	11	18
China	46	23	4	-19	27	5	18
Southern Europe	37	14	1	-13	24	9	5
South America	26	7	0	-7	19	2	5
South East Asia	26	5	0	-5	21	0	5
Oceania	17	5	0	-5	12	3	2
Central Asia	7	4	1	-3	4	0	4
Sub-Saharan Africa	6	1	2	1	5	1	0

Source: Forbes (1990-2013), Author's compilation from various secondary sources

An examination of the regional dynamics suggests at first glance that other factors are at work not purely associated with the economic crisis. The number or proportion of dropouts adheres to the general contribution of a region to the overall global number of billionaires. For example, in 2009, the Middle East contributed 6.6% of the world's billionaires and 8% to the proportion of dropouts. Similarly, Australia contributed 1.5% of total billionaires and 1.3% to the share of dropouts. The correlation between dropouts and contribution to the wealth lists is very high at 0.92. However, three regions deviate from this trend in terms of both dropouts and additions. While both the US and Western Europe played significant roles in the GFC, the proportion of dropouts from this billionaire list is relatively less than in other regions. However, they contributed more additions during 2009 while still reeling from the economic crisis. The US contributed 44.6% to the global billionaire ranks and 38% to the number of dropouts, while Europe only contributed 8.8% to dropouts and 14.2% to the overall population in 2009. Further, both regions contributed the bulk (US 54.8% and Western Europe 14.3%) of new billionaire additions in 2009, despite their respective populations suffering through a protracted economic contraction.

Figure 3.7 illustrates the ratio of additions to dropouts for every region for 2008 to 2009. Apart from China (0.17), both North America and Western Europe appeared to have performed above the global average of 0.11.[13] The only region that seemed to experience from substantial losses in the ranks of the ultra-rich was Eastern Europe, with 61 dropouts throughout the course of 2008-2009, decreasing the absolute number of billionaires from 96 in 2008 to 35 in 2009. In relative terms, Eastern Europe contributed 4.43% to the population of ultra-rich in 2009 but constituted a disproportionate 16.3% of its dropouts.

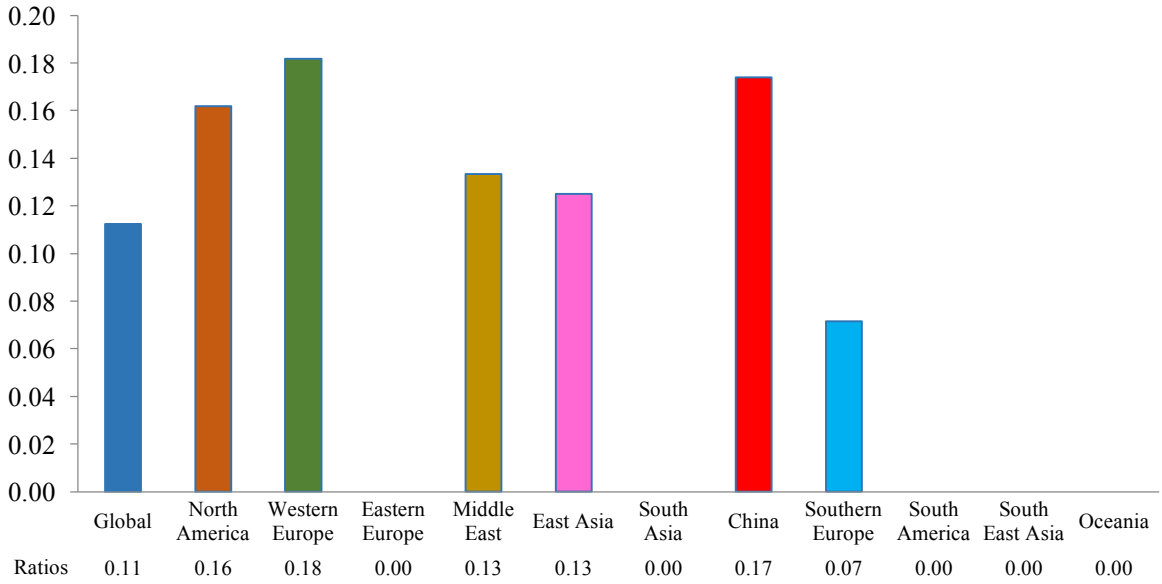


Figure 3.7 Ratio of billionaire additions to dropouts, 2009

Note: Author's own calculations

What is most significant is that for many individuals, 2009 was a momentary blip with many reappearing in 2010 and beyond to the status of wealth elite. The regional decomposition shows that for the US (76 survived and 66 disappeared) and Western Europe (18 survived and 15 disappeared), many billionaires managed to rapidly re-establish their wealth beyond the one billion dollars. The personal circumstances of these individuals, health or the wellbeing of their marriages even, can have an impact on the number of representative individuals. Of the 166 who have remained absent from the lists, 21 died in 2008, and 11 died sometime between 2009 and 2013, with the

[13] Both Sub-Saharan Africa and Central Asia actually performed the best, although their absolute numbers are insignificant.

majority being in North America or Western Europe. A few fell from wealth's grace due to divorce (Robert Johnson) or criminal activities (Timothy Blixseth and Robert Allen Stanford). The rest still appear to be in relatively good financial health despite not appearing in the ultra-rich lists mainly due to the truncated nature of the *Forbes* list.

Another major element shaping the number of billionaires has been the influx of individuals from developing economies. The emergence of a new super-rich group from Russia and the People's Republic of China as well as parts of Eastern Europe and South America, appear to be the primary drivers, although the Russian contribution has been reduced since 2009. Also, the rise of new industries in well-established economies has also continued to be an active contributor, with the US, for example, maintaining the mantle of the world's factory for producing the most billionaires, far outstripping the numbers from both Russia and China due to new sectors of the economy emerging. Although new wealth from the developing world has played a significant role in many parts of the world, privilege and old wealth continue to increase both the number of billionaires and their absolute wealth. For both continental Europe and South Korea, inherited wealth forms the primary source of new billionaires. These points are developed further below.

To summarise, a basic review of the data suggests that except for the late 1990s and 2009, the world's billionaires have managed to both increase their total wealth while also enlarging the club of the economic elite. In addition, the data suggests that distribution of wealth at these extreme levels is extraordinarily wide as evidenced by the large standard deviations listed in Table 3.4. During periods of expansion or recovery, more individuals attained high wealth status with large influxes swelling the number of global billionaires. The extent to which different regions contribute to this growth is explored below.

3.4 Regional Trends

This section discusses the regional trends in ultra-wealth. The relevance of such a geographical exercise has long been recognised in the literature relating to the rich. John Stuart Mill (1929), for example, once argued that the distribution of wealth is largely contingent upon the prevailing laws and social customs in a state. Further, the pace of

economic development and the strength of prevailing market institutions can have an impact on any regional variations in the number of billionaires. Given the sheer heterogeneity in the regions and industries represented in the billionaire database, only an overview of the various regions is provided here. Chapter 6 provides a more detailed exploration and sectoral analysis of these regions of the globe.

Determining how to allocate individuals to countries and regions was discussed in section 3.2. Briefly, the process followed is to allocate an individual billionaire according to their residency. For individuals that hold significant commercial interests spanning the globe, this may be an issue due to the high mobility. In these situations, the residency of the individual billionaire is assumed to be, for this study, the headquarters of their business empires.

The extent to which geography matters to the distribution of large fortunes can be inferred by tabulating the regional trends over the 24-year sample. Figure 3.8 presents the evolution across time and space in the number of billionaires on the *Forbes* list from 1990 to 2013. What is immediately apparent is the extent to which all regions (except Central Asia and, to a lesser extent, South East Asia) exhibit the same upward trend in the number of billionaires observed at the global level in Section 3.3.2 and for the wealth to income ratios in section 3.3.1. This pattern is tied not only to the developed world but also to the emerging regions of the world, with both contributing heavily to the increase of the billionaire group.

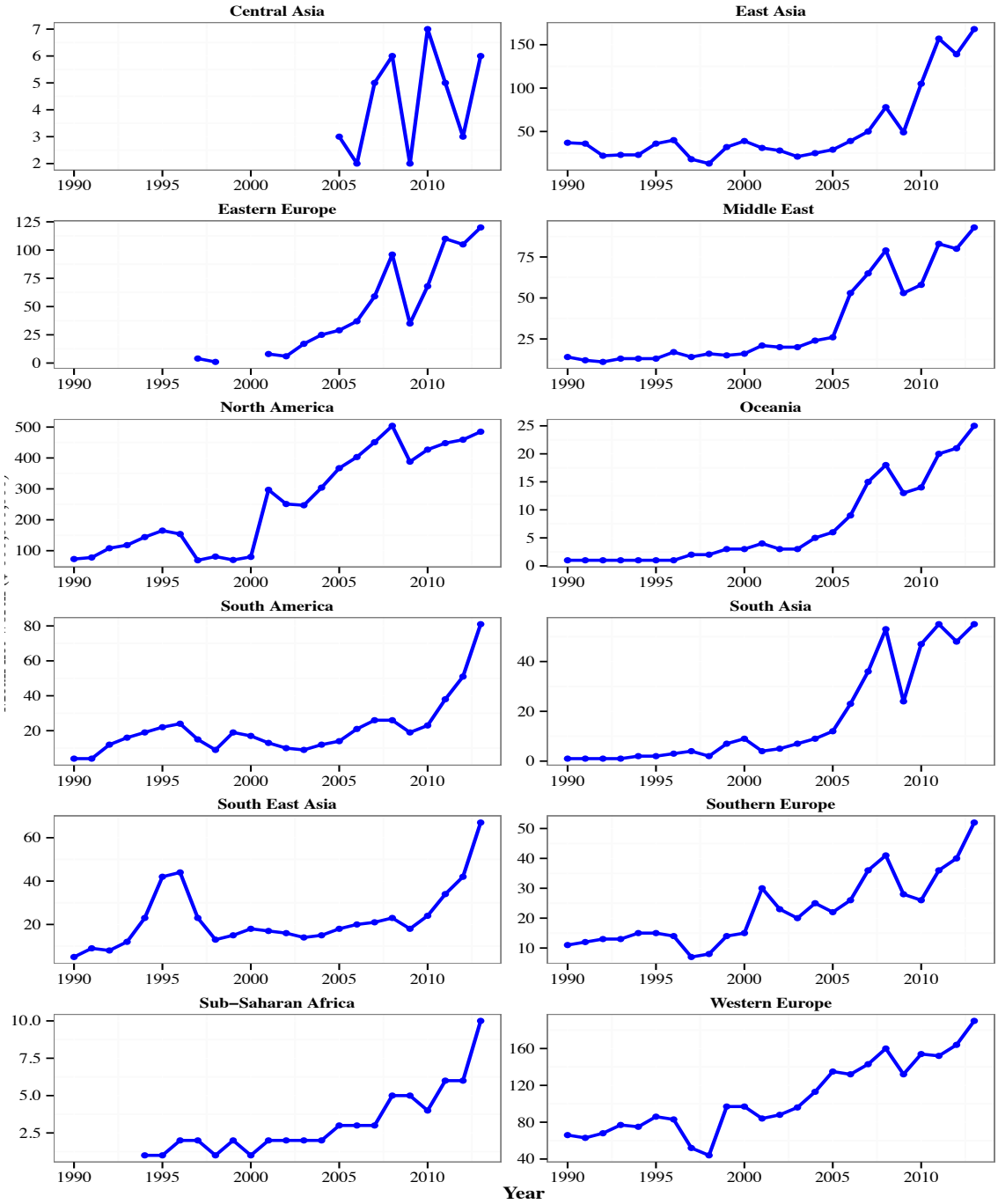


Figure 3.8 Billionaire population, geographical distribution, 1990-2013

Source: Forbes (1990-2013), Author's compilation from various secondary sources

In the developed world, the largest cohort of billionaires lives in North America where a significant increase in numbers is observed. From 1990 to 2013, the number of billionaires increased from 73 to 485, an increase of 664%, or an annual growth rate of 27% compared to 10% for the global statistics. Although North America has seen the biggest increase in absolute numbers, the relative magnitudes and growth rates are just as impressive in other regions of the developed world. In Western Europe, the absolute

numbers of billionaires have lagged those of North America, with little substantial growth from the late 1990s to 2003. However, a large rise in the number of ultra-rich individuals is observed in Western Europe, from 93 in 2003 to 190 by 2013, with an associated annual growth rate of approximately 7.8%. The GFC appears to have had only a small transitory impact on wealth creation, with a fall to just 132 in 2009, but had largely stabilised to pre-GFC levels by 2010.

The other great region of advanced capitalism, the Japanese-dominated East Asia, had an anaemic rise in the number of billionaires in the previous few years. From a low of 21 in 2009, the number of billionaires has more than doubled in 2013 to reach 47. This growth, however, represents a marginal increase from the 1990s. Throughout the 1990s and much of the 2000s, the region showed barely any growth in the number of billionaires, typically averaging 31. The mean growth rate throughout the sample is 7.4% closely aligned to that of Western Europe, though well below what is observed in North America. The bulk of the growth post-2008 is mainly tied to South Korea, where the fortunes of a few family dynasties have dramatically increased through *inter vivos* gifts. In contrast, Japan has not seen any dramatic increase during the sample period.

Among the least-populated areas of the advanced industrialised world, there has been an impressive growth in numbers. In Oceania, the mining and property booms have seen the number of billionaires increase from only 1 in 1996, the Australian media mogul, the late Kerry Packer, to 25 by 2013. In southern Europe, which has endured protracted economic issues and recession since 2009, a similar upward trend can be observed in the number of billionaires, recording its highest number in 2013. Much of this growth came from Spain (20 billionaires in 2013) with an annual growth rate of 10% and Italy (23 billionaires in 2013) with a 5.8% growth rate.

Next, Figure 3.9 depicts the mean wealth level across the 15 regions. Average net worth is within similar ranges across the globe. In North America, mean net worth peaked at $7 billion in 2000 and 1998 before settling between $3 and $4.5 billion between 2001 and 2013. When read in conjunction with Figure 3.8, the drop is more likely due to an influx of new billionaires rather than a systematic decline in wealth levels. The Middle East has shown similar trends in mean net dropping from the $8 billion to $3 billion by 2013. In East Asia and South East Asia, mean net worth peaked at approximately $4.5 billion in 1997 before encountering a precipitous decline.

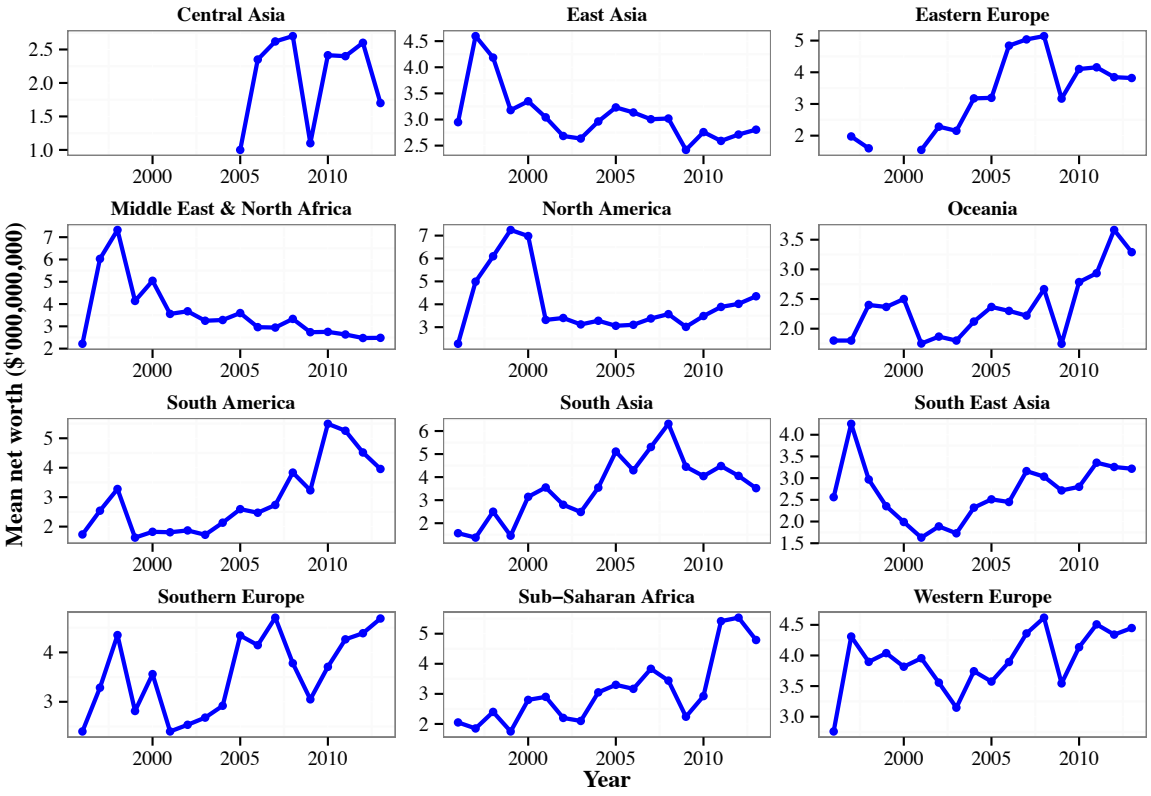


Figure 3.9 Mean net worth (USD) by region, 1996-2013

Source: Forbes (1990-2013), Author's compilation from various secondary sources

Clear economic or market facts immediately present themselves as candidates for the large falls. The falls recorded in North America closely parallel the falls in equity market valuations in 2001. In the *Forbes* data, a drop in mean net worth is recorded in 2002, a full year after the bursting of the US equity markets. As the *Forbes* measurements take place in February for a given year, it is to be expected that a fall would become evident a year after the event. For Asia, the obvious candidate is the Asian Financial Crisis, which affected the region over 1997 and 1998.

Returning to the number of billionaires, in emerging markets a similar upward trend is detected, with the exception that growth was delayed between the years 2005 to 2010 in many regions. However, for the People's Republic of China, the number of billionaires has grown from just one in 2001 to 125 by 2013. The loosening of central government controls on ownership clearly had a dramatic but not surprising impact in China's wealth landscape. A dramatic increase in the number of billionaires in Eastern Europe is also observed, peaking in 2013 at 120. The peak reflects the precipitous increase observed in China, with the first four Eastern European billionaires only appearing in

1997. The only depression in the trend was the GFC in 2009, which caused some billionaires to fall from the rich lists and not to reappear. Southern Asia, dominated by India, also shows substantial growth, albeit less than China or Eastern Europe. In the 1990s, the mean number of billionaires was 2.4, and between 2000 to 2013 it had increased to 27.6, with the highest recorded number being 55 in 2011 and 2013.

Significant increases are observed in South America, where the mean number of billionaires throughout the 1990s was 11, before more than doubling to an average of 25 throughout the 2000s. The biggest increase is observed in 2013 when the population of billionaires reached 76, an increase of 204% on the average. Similarly, in South East Asia, the mean in the 1990s was 15, increasing to 25 for 2000 to 2013. Following global trends, the most growth occurred between 2008 and 2013. In 2008, the number of South East Asian billionaires was 18, and by 2013 it had increased to 64, an increase of 255%.

What has caused the general upward trend across the developing regions of the world, particularly among former heavily centrally planned economies (India) and communist states (China and Russia)? Any explanation may be found in legal and political changes, technological developments, or access to large markets. As Chapter 2 discussed, older studies of wealth have typically fixated on these three avenues through which wealth can rapidly accumulate and develop into substantial concentrations. Although their degree of influence will vary, all can be seen to be at play. Indeed, any discussion needs to highlight the dramatic changes in the economic and geopolitical sphere that have arisen not only since the early 1990s but also from far earlier across these regions. When considering China, Russia and India, the interplay between politics and law have had just as much an impact as pure economics in elevating certain individuals to the status of economic elite. In legal terms, the primary concern is to what extent private ownership of modes of production would be distributed among the population. Each of these regions has experienced monumental changes to private ownership and policy-maker discretion over directing commerce since the unravelling of the socialist state economy in the early 1990s. These issues are analysed in Chapter 6.

3.5 Inheritance and Self-made Wealth

In studies of the wealthy, inheritance and, by extension, liberal inheritance laws, have long been recognised as having an important role in the prevailing distribution of wealth and on the economy in general. Some authors have argued from the view that it promotes an environment that stifles initiative, particularly among the beneficiaries. Andrew Carnegie (1901) argued that inheritance has a distortionary impact upon the incentives of a market economy, as 'the parent who leaves his son enormous wealth generally deadens the talents and energies of the son and tempts him to lead a less useful and less worthy life than he otherwise would' (p. 56). Similarly, Rubinstein (1980) finds that for the UK in the late 1800s, the lack of inherited wealth in the rich lists perhaps had to do with the lack of motivation on the part of beneficiaries who squandered their fortunes. Other authors have focused on the impact of inheritance laws and corporate laws that enable massive, intergenerational wealth transfers from generation to generation. Tuckman (1973) argues that death taxes would be an effective 'tool in the implementation of policies designed to limit the concentration of wealth' (p. 56). Lundberg (1969) argues that inheritance issues go beyond taxes and include the ability of family dynasties to maintain and expand their sphere of ownership and influence through holding companies and foundations, citing the Ford Foundation as an example.

Typically, estate beneficiaries occupy positions of ownership at the very top of the wealth tables. For example, the Walton family is by far the wealthiest family dynasty at a global level, with an estimated combined wealth of USD125 billion in 2013. In South Korea, the Lee family possesses enormous economic power through its ownership of Samsung. In Europe, there are older family dynasties, such as the Grosvenors in the UK, the von Siemens and Quandt families in Germany, and the Dassault family in France, all of which often dominate the top of the wealth tables. In Australia, when measured by personal wealth, mining is dominated by Gina Rinehart, and media and gaming by the Packer family.

When taking a regional view of the world's ultra-rich, detection of systematic differences between the proportions of inherited versus self-made wealth across regions may point to underlying differences in either legal or cultural attitudes towards the

intergenerational transfer of wealth. Table 3.6 presents data on inherited and self-made fortunes as the sources of wealth. Overall, the proportion of individuals inheriting their wealth between 1990 and 2013 has averaged 45.1% (54.9% self-made). Dividing the sample into two periods, 1990-2001 and 2002-2013, reveals the trends clearly. Throughout the first half of the sample, there were more inherited billionaires, averaging 53.4%. Between 2000 and 2013, the mean proportion of inherited wealth had decreased to 36.8%.

A regional decomposition, however, reveals substantial variation in the relative share of inheritance during different periods. Firstly, the regional breakdown of estate beneficiaries points to the influx of new wealth from the former centrally commanded economies. The share of inheritances has languished at a mean of 2.0% in China and 1.6% in Eastern Europe. Similarly, in South Asia (India and Sri Lanka), the mean proportion of inheritances decreased from 92.3% throughout the 1990s to 59.2% between 2002 and 2013, following India's dismantling of the License Raj system. Secondly, the fall in the frequency of the inherited billionaire is also in evidence in developed regions. In North America, despite the prominence of family dynasties such as the Waltons, du Ponts, Fords and Kochs, the mean proportion of inheritances has decreased in the 24-year sample, falling from 48.7% in the 1990s to 34.0% in the second half. Only Western Europe and Oceania record a mean proportion of greater inheritance than self-made wealth. In Western Europe, the mean proportion of inheritance across the entire sample's time length is 62.5%. A large fall from 71.8% between 1990-2001 to 52.3% between 2002 and 2013 is registered, but this result may be driven by substantial variation at the sub-regional level, where inheritance appears to dominate in continental Europe. For Oceania, a similar dramatic fall is recorded with the number of inheritances falling from 78.5% to 41.9%, though the overall mean proportion of inheritances is 61.0%.

It would be premature based on the preceding summary of inheritance trends to conclude that the data shows some convergence globally to less inheritance. A one-way ANOVA test between subjects found a significant regional effect on the proportion of observed inheritance at the $p<.05$ level across all 12 regions [$F(12, 259)=302.16$, $p=0.000$]. Post-hoc comparisons indicated that the mean score for advanced economies systematically differed, particularly when comparing North America ($\mu=41.3\%$, $\sigma=10.4\%$), Western Europe ($\mu=62.5\%$, $\sigma=12.02\%$), East Asia ($\mu=36.1\%$, $\sigma=5.13\%$) and

Oceania (μ=61.00%, σ=27.8%) in terms of their impact on the proportion of inheritances. Rather, the results strongly point to the fact that the observed levels of inheritance are ultimately determined at a country or regional level wherein substantial heterogeneity is observed. Whether these are due to legal, cultural or economic factors is determined through an intra-regional analysis presented in Chapter 6.

The relationship between age and inheritance is worth examining, too. Individuals may inherit their wealth at relatively young age; for example, Prince Albert von Thurn and Taxis appeared in the rich list at age 7 in 1991. Alternatively, inheritance between marital partners can occur and is often the most sizeable among the older individuals in the sample. Alternatively, *inter vivos* gifts may constitute an important channel through which inheritance flows. The age at which one inherits wealth can have a dramatic impact on one's future success. As mentioned above, Rubinstein (1980) does not find much evidence for inheritance in British society despite the country's peerage system and suggests that many who inherit an estate squander their fortunes. Table 3.7 provides some data on this issue. At a superficial level, there appears to be a slight inheritance effect. Although both subsamples follow very similar trends in the cohort perspective, the inheritance group tends to be slightly younger than the self-made group. Between 1990 and 2003, the average age of the inheritance group ranged between 60 and 63, whereas the self-made billionaire, the average age ranged between 62 and 67.

Table 3.6 Mean net worth (USD) by region, 1996-2013

	Global		Central Asia		China		East Asia		Eastern Europe		Middle East & North Africa		North America	
	No	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*
1990	48.1%	51.9%					67.2%	32.8%			35.7%	64.3%	50.7%	49.3%
1991	45.6%	54.4%					69.5%	30.5%			33.3%	66.7%	47.4%	52.6%
1992	37.1%	62.9%					52.9%	47.1%			36.4%	63.6%	37.7%	62.3%
1993	36.4%	63.6%					49.1%	50.9%			23.1%	76.9%	39.1%	60.9%
1994	39.7%	60.3%					57.4%	42.6%			30.8%	69.2%	40.4%	59.6%
1995	43.7%	56.3%					68.2%	31.8%			30.8%	69.2%	39.8%	59.0%
1996	49.0%	51.0%					65.3%	34.7%			47.1%	52.9%	51.9%	48.1%
1997	49.8%	50.2%					65.5%	34.5%	100.0%	0.0%	28.6%	71.4%	62.3%	37.7%
1998	52.7%	47.3%					61.5%	38.5%	100.0%	0.0%	31.3%	68.8%	59.3%	40.7%
1999	49.0%	51.0%					63.5%	36.5%			46.7%	53.3%	64.3%	35.7%
2000	50.8%	49.2%					66.7%	33.3%			50.0%	50.0%	60.0%	40.0%
2001	57.6%	42.4%			100.0%	0.0%	66.0%	34.0%	100.0%	0.0%	52.4%	47.6%	62.0%	38.0%
2002	56.4%	43.6%			100.0%	0.0%	62.8%	37.2%	100.0%	0.0%	50.0%	50.0%	62.2%	37.8%
2003	56.4%	43.6%					67.6%	32.4%	100.0%	0.0%	45.0%	55.0%	62.8%	37.2%
2004	58.4%	41.6%			100.0%	0.0%	70.2%	29.8%	100.0%	0.0%	54.2%	45.8%	62.8%	37.2%
2005	59.5%	40.5%	100.0%	0.0%	100.0%	0.0%	69.4%	30.6%	100.0%	0.0%	53.8%	46.2%	61.0%	39.0%
2006	60.6%	39.4%	100.0%	0.0%	100.0%	0.0%	66.0%	34.0%	97.3%	2.7%	45.3%	54.7%	62.8%	37.2%
2007	64.3%	35.7%	80.0%	20.0%	100.0%	0.0%	60.0%	40.0%	96.6%	3.4%	47.7%	52.3%	66.5%	33.5%
2008	67.3%	32.7%	83.3%	16.7%	97.6%	2.4%	62.3%	37.7%	97.9%	2.1%	44.3%	55.7%	68.8%	31.2%
2009	64.4%	35.6%	100.0%	0.0%	96.4%	3.6%	68.9%	31.1%	97.1%	2.9%	52.8%	47.2%	66.2%	33.8%
2010	66.8%	33.2%	85.7%	14.3%	90.3%	9.7%	64.5%	35.5%	97.1%	2.9%	41.4%	58.6%	68.6%	31.4%
2011	68.8%	31.2%	80.0%	20.0%	98.3%	1.7%	65.0%	35.0%	98.2%	1.8%	47.0%	53.0%	69.0%	31.0%
2012	68.3%	31.7%	100.0%	0.0%	97.9%	2.1%	62.3%	37.7%	98.1%	1.9%	46.3%	53.8%	70.6%	29.4%
2013	67.0%	33.0%	66.7%	33.3%	97.5%	2.5%	61.6%	38.4%	98.3%	1.7%	44.1%	55.9%	70.1%	29.9%
μ	54.9%	45.1%	88.4%	11.6%	98.2%	1.8%	63.9%	36.1%	98.7%	1.3%	42.4%	57.6%	58.6%	41.3%
σ	10.1%	10.1%	12.2%	12.2%	2.8%	2.8%	5.1%	5.1%	1.3%	1.3%	9.0%	9.0%	10.6%	10.5%
μ *('90 - '01)*	46.6%	53.4%			100.0%	0.0%	62.7%	37.3%	100.0%	0.0%	37.2%	62.8%	51.2%	48.7%
μ *('02-'13)*	63.2%	36.8%	88.4%	11.6%	98.0%	2.0%	65.0%	35.0%	98.4%	1.6%	47.7%	52.3%	66.0%	34.0%

Table 3.6 (continued) Proportion of billionaires receiving inheritances - regional decomposition 1990-2013

	Oceania		South America		South Asia		South East Asia		Southern Europe		Sub-Saharan Africa		Western Europe	
	No	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*
1990	0.0%	100.0%	75.0%	25.0%	0.0%	100.0%	60.0%	40.0%	54.5%	45.5%			28.8%	71.2%
1991	0.0%	100.0%	50.0%	50.0%	0.0%	100.0%	44.4%	55.6%	50.0%	50.0%			23.8%	76.2%
1992	0.0%	100.0%	53.8%	46.2%	0.0%	100.0%	37.5%	62.5%	46.2%	53.8%			20.6%	79.4%
1993	0.0%	100.0%	52.9%	47.1%	0.0%	100.0%	50.0%	50.0%	42.9%	57.1%			19.5%	80.5%
1994	0.0%	100.0%	55.0%	45.0%	0.0%	100.0%	43.5%	56.5%	53.3%	46.7%	100.0%	0.0%	20.0%	80.0%
1995	0.0%	100.0%	52.2%	47.8%	0.0%	100.0%	54.8%	45.2%	53.3%	46.7%	100.0%	0.0%	24.7%	75.3%
1996	0.0%	100.0%	41.7%	58.3%	0.0%	100.0%	59.1%	40.9%	50.0%	50.0%	100.0%	0.0%	27.7%	72.3%
1997	50.0%	50.0%	53.3%	46.7%	0.0%	100.0%	47.8%	52.2%	71.4%	28.6%	50.0%	50.0%	26.9%	73.1%
1998	50.0%	50.0%	66.7%	33.3%	0.0%	100.0%	53.8%	46.2%	75.0%	25.0%	100.0%	0.0%	36.4%	63.6%
1999	33.3%	66.7%	52.6%	47.4%	16.7%	85.7%	40.0%	60.0%	64.3%	35.7%	50.0%	50.0%	32.0%	68.0%
2000	33.3%	66.7%	41.2%	58.8%	50.0%	66.7%	50.0%	50.0%	73.3%	26.7%	100.0%	0.0%	33.0%	67.0%
2001	25.0%	75.0%	38.5%	61.5%	33.3%	75.0%	52.9%	47.1%	70.0%	30.0%	50.0%	50.0%	36.9%	63.1%
2002	66.7%	33.3%	40.0%	60.0%	25.0%	80.0%	50.0%	50.0%	65.2%	34.8%	50.0%	50.0%	37.5%	62.5%
2003	33.3%	66.7%	55.6%	44.4%	16.7%	85.7%	50.0%	50.0%	70.0%	30.0%	0.0%	100.0%	33.3%	66.7%
2004	40.0%	60.0%	58.3%	41.7%	50.0%	66.7%	53.3%	46.7%	68.0%	32.0%	0.0%	100.0%	35.4%	64.6%
2005	50.0%	50.0%	64.3%	35.7%	100.0%	50.0%	55.6%	44.4%	72.7%	27.3%	33.3%	66.7%	42.2%	57.8%
2006	55.6%	44.4%	61.9%	38.1%	76.9%	56.5%	55.0%	45.0%	76.9%	23.1%	33.3%	66.7%	46.2%	53.8%
2007	60.0%	40.0%	69.2%	30.8%	89.5%	52.8%	61.9%	38.1%	77.8%	22.2%	33.3%	66.7%	50.3%	49.7%
2008	66.7%	33.3%	65.4%	34.6%	103.8%	49.1%	69.6%	30.4%	75.6%	24.4%	60.0%	40.0%	52.5%	47.5%
2009	53.8%	46.2%	68.4%	31.6%	71.4%	58.3%	66.7%	33.3%	75.0%	25.0%	60.0%	40.0%	48.5%	51.5%
2010	57.1%	42.9%	65.2%	34.8%	80.8%	55.3%	70.8%	29.2%	73.1%	26.9%	50.0%	50.0%	53.9%	46.1%
2011	75.0%	25.0%	52.6%	47.4%	77.4%	56.4%	61.8%	38.2%	63.9%	36.1%	66.7%	33.3%	53.9%	46.1%
2012	71.4%	28.6%	52.9%	47.1%	65.5%	60.4%	61.9%	38.1%	62.5%	37.5%	66.7%	33.3%	55.5%	44.5%
2013	76.0%	24.0%	50.6%	49.4%	66.7%	60.0%	61.2%	38.8%	59.6%	40.4%	60.0%	40.0%	52.6%	47.4%
μ	39.0%	61.0%	54.9%	45.1%	40.2%	76.5%	54.4%	45.6%	64.8%	35.2%	58.2%	41.8%	37.5%	62.5%
σ	27.8%	27.8%	9.8%	9.8%	37.8%	20.3%	8.7%	8.7%	10.7%	10.7%	30.7%	30.7%	12.0%	12.0%
μ ('90 - '01)	21.5%	78.5%	49.8%	50.2%	10.4%	92.3%	48.7%	51.3%	59.6%	40.4%	77.8%	22.2%	28.2%	71.8%
μ ('02-'13)	58.1%	41.9%	60.4%	39.6%	72.6%	59.2%	60.7%	39.3%	70.5%	29.5%	42.1%	57.9%	47.7%	52.3%

Source: Forbes (1990-2013), Author's compilation from various secondary sources

Table 3.7 Age and cohort trends, 1990-2013

	Overall		Self-made Individuals			Inherited		
	Age	*Birth Year*	*Age*	*Birth Year*	*Number*	*Age*	*Birth Year*	*Number*
1990	64	1925	67	1923	112	61	1930	121
1991	64	1915	67	1923	109	60	1905	130
1992	64	1928	67	1925	101	62	1930	172
1993	64	1918	67	1926	111	62	1910	195
1994	64	1921	67	1927	136	60	1913	211
1995	63	1924	66	1928	180	60	1919	233
1996	62	1933	64	1931	203	60	1936	211
1997	62	1935	63	1934	110	61	1936	111
1998	63	1935	64	1934	107	62	1936	96
1999	63	1936	64	1935	144	61	1937	150
2000	61	1939	62	1938	162	61	1939	157
2001	62	1939	62	1939	306	61	1939	225
2002	64	1938	64	1938	264	63	1939	204
2003	64	1939	64	1939	266	63	1940	206
2004	67	1940	70	1940	340	64	1940	242
2005	64	1941	64	1941	408	63	1941	278
2006	63	1943	63	1943	479	63	1942	311
2007	62	1945	62	1945	606	63	1944	336
2008	61	1947	61	1947	755	63	1945	367
2009	64	1945	63	1946	509	64	1945	281
2010	63	1947	62	1948	668	64	1946	332
2011	62	1949	61	1950	829	64	1947	376
2012	63	1949	62	1950	833	64	1948	387
2013	63	1950	62	1951	950	64	1949	467

Source: Forbes (1990-2013), Author's compilation from various secondary sources

3.6 Summary

This chapter presented several findings on global and regional trends among billionaires and wealth in general. The following salient facts were established with possible explanations advanced in chapters 4, 5 and 6. Firstly, the secular trend in billionaire population has demonstrated a precipitous increase since approximately 2000. By 2013, the number of billionaires was at 1,417 with an estimated combined net worth of $5 trillion. The growth in the super rich has to some degree arisen from a concomitant influx of billionaires from more countries, particularly from emerging markets. However, the advanced regions of the world, particularly North America, continue to represent the bulk of both the growth and proportion of billionaires.

Significant economic events such as the GFC had, at most, a momentary impact on billionaire numbers. Even in the US, many who had lost their position in the rich lists in

2008 were back by 2009 or 2010. In Asia too, the late 1990s crisis appeared to have had only a temporary impact on the growth of the mega rich. Indeed, death or personal circumstances had just as big an impact as transient fluctuation in asset prices. Piketty (2014a) also argues this to be the case.

Significantly, financial services and consumer discretionary are the two sectors producing the most growth in billionaires. Innovative industries such as IT are still relatively minor in terms of their relative numbers on the global scale despite their recognition in the general population's mind. These results foreshadow the potential for alternative explanations to the human capital or skill based ones that have been typically advanced (for example, Kaplan and Rauh, 2013).

Interestingly, the proportion of inheritance has diminished globally, particularly compared to the late 1990s, where inherited wealth represented the greater proportion of the super-rich. On initial review, this appears to contradict Piketty (2014a) who argues that capitalism is in the midst of a transformation toward a system based on patrimony. Closer inspection suggests that the trend toward self-made wealth may be transient in nature. Indeed, the influx of *nouveau riche* from China and Russia, and the rise of financiers amongst Western economies largely explains the declining share of inherited wealth in the present. A fuller exploration of the issues behind the structure of wealth, in terms of inherited and self-made, is provided in chapter 6.

Chapter 4 The Rise of the Dual Economy – Wealth Accumulation and Inequality

The purpose of Chapter 4 is to study the determinants of wealth accumulation and inequality in the modern world. The conceptual framework adopted borrows heavily from Meade (1965) and Saez and Zucman (2014), but contextualises their framework in a grander socioeconomic context. The ultimate objective of Chapter 4 is to explain in depth the trends emphasised in Chapter 3, including wealth to income ratios, returns to capital and changes in the wealth distribution against the backdrop of significant changes in the economic systems of the advanced economies. Adopting an analytical approach, the chapter looks at the respective roles of consumerism, the financialisation of household balance sheets (both liabilities and assets), the role of capital income, and taxation policy in fuelling the rise of vast fortunes whilst concurrently ensuring the detachment of the fortunate few from the rest of society. To this end, various data sources are employed. The principal databases used include the WWID, and various estimates related to tax evasion. The Chapter focuses particularly on the advanced economies – due to data availability – however, some attention is paid to Latin America when data availability permits, particularly in relation to top income shares.

4.1 Introduction

This Chapter explores the general changes and underlying forces associated with the accumulation of wealth and wealth inequality. It has become a well-established empirical regularity that both income and wealth exhibit increasing levels of inequality in contemporary times (one of the most recent studies from the International Monetary

Fund; see Dabla-Norris et al., 2015; also Alvaredo, Atkinson, Piketty, & Saez, 2013). Although income inequality has received considerable attention, wealth inequality has only recently received the same level of research interest. The emergence of wealth inequality, or as a corollary, the amassment of great fortunes into few hands does represent a significant departure from the experience of the post-World War II era. This era, roughly coinciding with the conclusion of the Second World War and the early to mid-1970s in the First World, had ushered in a golden age of unprecedented wealth and income equality, driven by robust income growth across the working and middle classes (Alvaredo et al., 2013; Piketty, 2014a).

The 1940s had the most impact on income and established the egalitarian distribution of wealth for the next three decades. Goldin and Margo (1992) labelled this period "The Great Compression". A term used to contrast with the Great Depression of the 1930s. The "Great Compression" had produced a wage structure endowed with significant equality beyond any period before or experienced since. Scholars writing in the immediacy of this era recognised this positive and socially progressive anomaly. Thurow (1975), for example, observed:

> After the wage differentials of the Great Depression and World War II had become embedded in the labour market for a number of years, they became the new standard of relative deprivation and were regarded as 'just' even after the egalitarian pressures of World War II had disappeared. Basically, the same differentials exist to this day, thirty years later. (p. 111)

Contemporary studies, at both national and international levels, confirmed that the post-war era was unique from an (income and wealth) equality perspective. In contrast, Alvaredo et al. (2013) document, for example, that since the 'great compression' the share of the top 1% has increased, but their growth has not been uniform across the advanced industrialised economies of the world. Although they do not find evidence that the wealth concentration, at least in the US, has significantly increased over the same period, they do find a significant relationship between the rise of the share of the top 1% and the growth in capital incomes, an area that has been under-explored.

However, recent studies emphasise that wealth inequality has also re-emerged. Saez and Zucman (2014) document that in the US, just like the share of top incomes, the level of

wealth concentration has followed a U-shaped path since the early 1900s to 2012. Saez and Zucman (2014) challenge the view that wealth concentration has not increased in the US, finding that the top wealth holders now accumulate wealth at a more rapid rate than the rest of the populace, particularly over the last three decades. Significantly, the richest families increased their share of wealth from 7% in 1978 to 22% in 2012 (Saez & Zucman, 2014, p. 1). Interestingly, they find that their estimates of wealth accumulation by this group of the US population are consistent with other sources, including the *Forbes* billionaire wealth estimates. The question here is what forces have driven this process and not just in the US but across other First World economies?

The purpose of this Chapter is to go beyond *singular* explanations and to find the potential causes for modern day wealth concentration in forces found in the socioeconomic changes that have transpired since the Second World War. Clearly, the immediate post war period was different. Although capital destruction in Europe effectively reset the wealth counter to zero, it can only represent part of the explanation (Piketty, 2014a). Therefore, this Chapter pursues several alternative explanations within the context of a wealth accumulation model. The changes associated with wealth accumulation are discussed within the context of larger societal changes and how society engages in economic activity, including consumerism and financialisation. Analytically, it examines these broad changes within a wealth accumulation framework in the spirit of Meade (1964, 1975) and Saez and Zucman (2014). In both, the growth of wealth is decomposed into the main constituent elements of savings, returns, investments, earnings, consumption and taxation.

The chapter comprises three sections. Section 4.2 discusses the general conceptual framework that is followed throughout this Chapter. Section 4.3 examines the role of consumerism, financialisation, the structure of income, and taxation policy as possible channels through which inequality has eventuated. Section 4.4 provides a summary.

4.2 Conceptual Framework

Of primary interest are the dynamics associated with wealth, income, savings and taxation policy across the entire wealth distribution encompassing seven advanced economies. These seven economies include Australia, Canada, France, Germany, Japan, the UK, and the US. The four forces provide the channels through which the process of wealth accumulation can initially be considered in a simple accounting identity. Further, they can act as a proxy for a number of explanatory variables to this end including consumerism, financialisation, investment behaviour, income structure, and taxation policy.

In Chapter 2, the existence of models possessing dynamic random multiplicative shocks were considered. Piketty and Saez (2014) point out that for a given structure of shocks, such models best approximate the distribution of wealth in a given economy. As was argued in Chapter 2 too, what constitute these shocks is not determined by theory but through historical enquiry. Piketty and Saez (2014), for example, point to labour income shocks in the immediacy of the Second World War that enabled the propagation of low wealth inequality through to the early 1970s in Europe and the US.

Determining what shocks to consider as relevant to the dynamics of wealth accumulation therefore require some structure as to what are the relevant factors to this process. Accounting identities of wealth accumulation were used by Meade (1965; 1975) and more recently Saez and Zucman (2014). These models provide a convenient means of decomposing the constituent elements of wealth into basic components. Saez and Zucman's (2014) model of wealth accumulation consists of five essential elements – current labour income, saving rates, rate of return, tax on labour and capital, and consumption – formally written as:

$$W_{t+1}^{i} = W_{t}^{i} \cdot \left[1 + r_{t}^{i} \cdot \left(1 - \tau_{K}^{i}\right) + q_{t}^{i}\right] + Y_{Lt}^{i} \cdot \left(1 - t_{L}^{i}\right) - C_{t}^{i} \qquad (4.1)$$

Where, W_t^i is initial household wealth, r_t^i is the real rate of return, τ_K^i is the corporate tax rate, q_t^i is the asset price effect, Y_{Lt}^i is labour income, $t_L^i$is the tax rate on labour income, and C_t^i is household consumption. The potential for wealth concentration arises

first from the existence of labour income inequality. The greater wealth accruing to higher incomes leads to greater capital income, assuming households elect to save more. In addition, 'for a given distribution of income, wealth inequality will tend to grow if consumption C_t^i of poor households becomes larger and larger compared to their income while rich households keep saving' (Saez & Zucman, 2014, p. 27). This emphasis on consumption and saving behaviour is one key element to understanding the dynamics of wealth accumulation. Equation 4.1 does not explicitly model for savings. To do so, savings, S_t^i, are assumed to represent increases in net wealth *prior* to changes in asset prices:

$$W_{t+1}^i = (1 + q_t^i) \cdot (W_t^i + S_t^i) \tag{4.2}$$

Savings, S_t^i, are assumed to be capitalised, and are equal to net capital income and labour income:

$$(1 + q_t^i)S_t^i = r_t^i \cdot \left(1 - \tau_K^i\right) \cdot W_t^i + Y_{Lt}^i \cdot \left(1 - \tau_L^i\right) - C_t^i \tag{4.3}$$

An advantage of the Saez and Zucman (2014) models is that it permits the distribution to be decomposed into percentiles or quintiles as it makes no *a priori* assumption as to how a given class receives its income (capital or labour) or how it spends and saves. It does not, for example, rigidly assuming a two class society of workers and rentiers or capitalists as in capital accumulation models such as those of Kaldor (1960) or Pasinetti (1962).

The general framework above captures the primary elements associated with wealth accumulation. In Section 4.3, a historical examination of the factors is made to determine the major changes that have impacted upon the dynamics of wealth accumulation.

4.3 The Socioeconomic Context

4.3.1 The Role of Consumerism and Savings

To begin, the role of consumerism in wealth accumulation is considered. In equation 4.1, the last element *C*, represents a proxy for consumerism. In reality, the full impact of consumerism can also manifest itself through returns to capital (aggregate consumption would flow through to returns to capital), but to begin, consumption is first viewed as an expense on a household's bottom line. Further, consumption is intimately tied to the savings of households, this aspect is also explored here. The role of savings being particularly important in Piketty's inequality, $r > g$ (Solow, 2014). In Piketty's model, if savings were independent of income, then in the long run the wealth inequality distribution would converge to the wage inequality distribution, and the $r - g$ differential would have little relevance. However, given that wealth inequality is greater than income inequality, greater savings can exacerbate inequalities particularly in terms of Piketty's (2014a) inequality.

Consumerism has long been noted as a major transformative force in capitalist society by Marxists and social scientists alike. Typically, it has assumed various definitions depending on the ideological strain of the writer. Marxists, for example, view consumerist society as the means to the valorisation of capital, with the proliferation of consumer goods a necessary means to this end. Further, consumerism is as an important social force through which entrepreneurs and, more generally, corporations can expand the scale of their markets. In general, consumerism is a set of values and techniques whose role is to develop the scale of consumer markets beyond what would ordinarily be necessary. For this thesis, the definitions of Ewen (1976) and Galbraith (1958) are adopted. Ewen (1976) defined consumerism as 'mass participation in the values of the mass-industrialised market' (p. 54). Perhaps more importantly, the rise of advertising and sales and the recognition of the desire for consumers to emulate their 'neighbours' enabled the transformation of society into mass consumer participation, which had a substantial impact in terms of market scale. Galbraith (1958) recognised the importance of both in his book, *The Affluent Society*. On the first, he wrote:

> As a society becomes increasingly affluent, wants are increasingly created by the process by which they are satisfied. This may operate passively. Increases in consumption, the counterpart of increases in production, act by suggestion or may proceed actively to create wants through advertising and salesmanship. Wants thus come to depend on output.... [I]t can no longer be assumed that welfare is greater at an all-round higher level of production than at a lower one. It may be the same. (Galbraith, 1958, p.158)

It is important to emphasise that consumerism was not necessarily created via the tool of advertising, but can emerge naturally without direction in a capitalist system.

For Marxists, the development of consumerism is viewed strictly within the context of labour and capitalist relations. Marxists conceptualise consumerism as a process directed by corporations seeking to move labour discontent and resentment in the work environment and channel it into the desire for goods to escape the dissatisfaction and drudgery associated with mass production. Lane (1962) for example, argues:

> The more emphasis society places upon consumption – through advertising, development of new products, and easy instalment buying – the more will social dissatisfaction be channelled into intra-class consumption rivalry instead of interclass resentment and conflict. (p. 80)

The element of social dissatisfaction is developed by Bauman (2007), stating that the 'subjective sense of insufficiency' compared to the wealthier is then aggravated by an 'increasing relative (comparative) deprivation, both reinforced rather than mitigated by economic growth in its present, deregulated, *laissez-faire* form' (p. 41).

Whether consumerism is due to the growth of advertising or whether output creates a concomitant increase in wants diverts attention away from the most relevant aspect of consumerism, the notion of relative consumption. Relative consumption can be defined as the extent to which individuals or households observe their neighbour (however broadly neighbour is defined) and strive to emulate or surpass them in their display of material well-being.[14]

[14] At this point, it needs to be emphasised that this section is mainly concerned with the role of consumption in *depressing* wealth accumulation amongst working and middle-class households. The

To establish the role of consumerism in depressing wealth accumulation amongst the lower and middle classes, a range of statistics are considered. Since a measure of consumerism does not exist, alternative measures of consumption and associated ratios are considered. This is done through three avenues. Firstly, has the average propensity to consume (APC) increased since the 1960s or 1970s across the industrialised world? Secondly, have the incomes of the lower and middle classes grown enough to sustain rising consumption levels? Thirdly, what has occurred with the saving rates of the lower or middle class households relative to the rich?

On the first question, the APC, defined as national consumption divided by national income, demonstrates substantial variance since the 1960s across all seven countries. The range of observations resides between 0.51 and 0.75, depending on the year and country, as observed in Figure 4.1. Of the seven countries included in the sample, four have shown increasing propensities to consume out of current income. The largest economy, the US, also shows a steep increase in the APC measure from the lowest observation in 1979 at 0.64 to approximately 0.75 over the last two years of the sample. Both Japan and the UK have also shown similar increases, but neither attains the absolute level exhibited by the US. Japan demonstrates a marked increase of 24% from 0.48 in 1981 to 0.60 in 2009. The APC in the UK increased 22.1% from 0.57 in 1978 to a peak of 0.69 in 2003. France also shows a marked increase in APC during the 1980s and 1990s compared to the lows observed in the 1970s. In contrast, both Australia and Canada have exhibited downward sloping trends since the 1960s. Germany has had a relatively stable APC since the mid-1970s, with a mean of 0.6079, despite a precipitous increase in the 1960s and 1970s.

issue of whether consumption in itself has driven up both the top wealth and income shares is partly considered in terms of entrepreneurial risk further below.

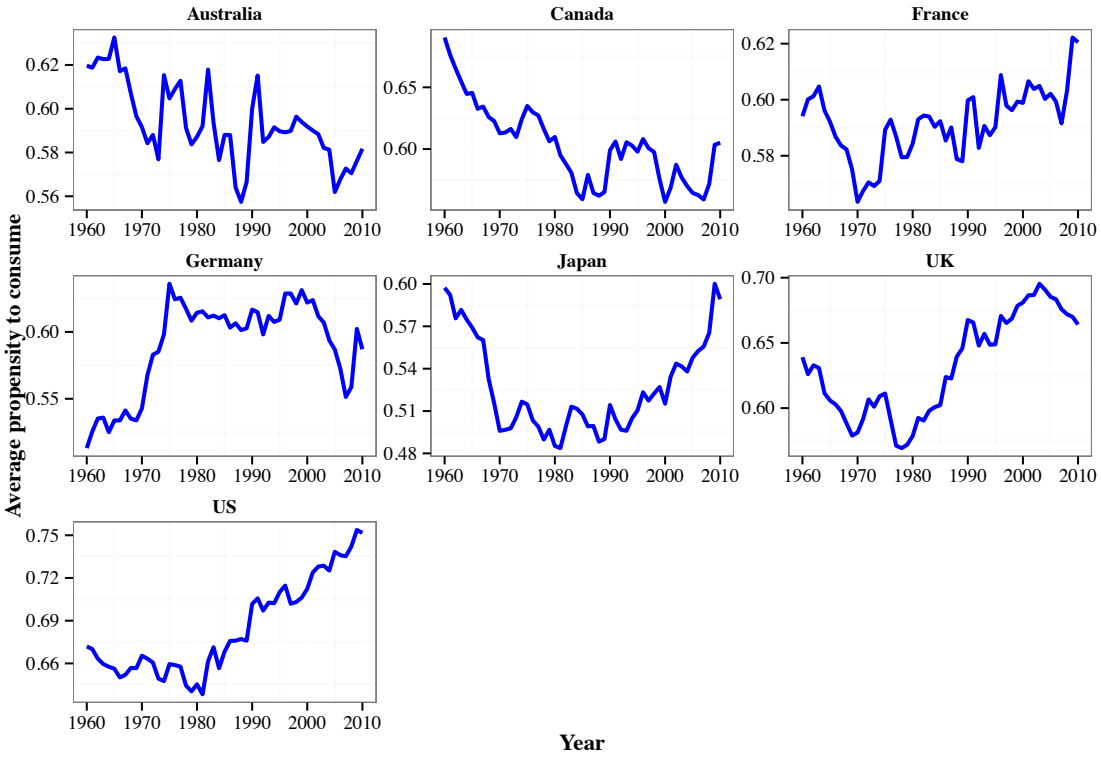


Figure 4.1 Average propensity to consume, 1960-2010

Source: Piketty and Zucman (2014b)

At what level of the distribution (wealth or income) has the increased propensity for consumption arisen. For Australia and the UK, there is enough statistical information at a disaggregated level to suggest that the less fortunate do consume much more than the wealthy (asset or income rich) relative to wealth or income. Table 4.1 presents the aggregate distributional patterns of consumption in Australia as a proportion of wealth and income from 2003 to 2011. Table 4.2 presents similar statistics for the UK from 2008 to 2013.[15]

Regarding the consumption to wealth ratio in Table 4.1 Panel A, the poorest Australian households consume, on average, 4.4 times their annual net worth in contrast to the wealthiest households, which only consume 0.04 times their net worth. Across the wealth distribution, there is a continuing downward shift in this ratio. The consumption to income and savings to income ratios in Panels B and C are less dramatic, but the relative disparity between the fourth wealth quintile and the highest wealth quintile demonstrates the extent to which the less fortunate, as well as the middle classes are

[15] Unlike Australia, household wealth holdings were not available. Further, the UK only produced distribution data relating to consumption, savings and income in 2013.

under greater budgetary pressures than the highest quintile households to sustain a lifestyle standard.

Table 4.1 Australia's consumption and savings ratios by quintiles, 2003-2011

Panel A: Consumption to Wealth

	Lowest	Second	Third	Fourth	Highest
2003-04	5.136x	0.498x	0.201x	0.113x	0.049x
2005-06	3.340x	0.444x	0.186x	0.112x	0.046x
2007-08	5.682x	0.600x	0.242x	0.139x	0.052x
2009-10	4.045x	0.449x	0.185x	0.107x	0.045x
2011-12	3.885x	0.531x	0.207x	0.113x	0.049x

Panel B: Consumption to Income

	Lowest	Second	Third	Fourth	Highest
2003-04	1.018x	0.908x	0.904x	0.899x	0.794x
2005-06	0.989x	0.876x	0.929x	0.941x	0.766x
2007-08	1.445x	1.044x	1.135x	1.142x	0.851x
2009-10	0.942x	0.772x	0.873x	0.884x	0.712x
2011-12	0.905x	0.759x	0.866x	0.848x	0.685x

Panel C: Savings to Income

	Lowest	Second	Third	Fourth	Highest
2003-04	-1.8%	9.2%	9.6%	10.1%	20.6
2005-06	1.1%	12.4%	7.1%	5.9%	23.4
2007-08	-0.5%	18.3%	9.7%	7.6%	25.3
2009-10	5.8%	22.8%	12.7%	11.6%	28.8
2011-12	9.5%	24.1%	13.4%	15.2%	31.5

Source: Australian Bureau of Statistics (2014)

Notes: Panels A and B represent simple ratios of average consumption/average wealth and average consumption/average income, utilising current prices. Panel C provides the average savings rates of households across the wealth distribution, estimated as average household savings/average household income.

The savings rates of the wealthiest tend to dominate the observations associated with lower income groups in Australia. In Panel C of Table 4.1, the Australian household savings rate of the highest wealth quintile ranges between 31.5% and 20.6% throughout the sample period, with a mean of 25.9%, in contrast to the average rate for the poorest wealth quintile at 2.8%. The second wealth percentile shows a substantial increase in the saving rate over the course of the sample, but also a considerable degree of variance relative to the mean (cv=0.37). Both the third and fourth quintiles reveal a substantially lower savings rate compared to the wealthiest households, averaging 10.5% and 10.1%, respectively. The most affluent households on average appear to exhibit greater savings rates while maintaining extremely low consumption levels relative to their wealth. According to the Australian Bureau of Statistics (ABS) data upon which Table 4.1 is constructed, the average annual consumption level for the poorest quintile is AUD93,938 compared to AUD167,441 for the highest quintile. For the third and fourth quintiles, consumption is AUD133,799 and AUD133,600, respectively.

Turning to the UK consumption to income ratio, presented in Table 4.2, Panel A, a similar pattern is observed.[16] The highest income quintile exhibits the lowest ratio. Over the years 2008 to 2013, it has averaged 0.749x compared to 1.207x and 1.017x for the lowest and third quintiles, respectively. As in Australia, there is a noticeable disparity between the fourth income and the highest income quintiles demonstrating once again the substantial advantages of the wealthier households, even between the two highest quintiles. The savings to income ratio better uncovers the extent to which savings diverge between the various quintiles. On average the lowest quintile savings rate is *negative* at 15.57%. Moving to the next quintile it only rises to 0.38%. The middle class (Fourth quintile) averages 9.07%. For the highest quintile an average of 29.33% is observed and closely mirrors the magnitude observed in Australia for the same quintile.

Table 4.2 The United Kingdom's consumption and savings ratios by quintiles, 2008, 2012-2013

Panel A: Consumption to Income

	Lowest	Second	Third	Fourth	Highest
2008	1.298	1.156	1.099	1.020	0.773
2012	1.159	0.988	0.968	0.911	0.732
2013	1.164	0.978	0.985	0.938	0.743

Panel B: Savings to Income

	Lowest	Second	Third	Fourth	Highest
2008	-23.0%	-9.6%	-4.2%	3.4%	26.8%
2012	-11.2%	5.9%	7.9%	13.6%	31.5%
2013	-12.5%	6.2%	5.4%	10.2%	29.7%

Source: Office for National Statistics. Tonkin (2013).

Notes: Panels A represents a simple ratio of average consumption to average income, utilising current prices. Panel B provides the average savings rates of households across the wealth distribution, estimated as average household savings/average household income.

International data on the distribution of savings rates on a time series basis is lacking, but the Organisation for Economic Co-operation and Development (OECD) has been driving an initiative to harmonise and produce such statistics.[17] Figure 4.2 presents part of this effort and provides a cross-sectional depiction of savings rates across several countries between 2006 to 2008 (2010 for the US). For the highest quintile, the variation between countries' savings rates is large, ranging between approximately 20% (New Zealand) and 41% (US). Progressing further down the income quintiles greater

[16] No data on the basis of wealth was available to make a direct comparison with Australia.
[17] Again, as with the UK, no OECD data based on wealth was available to make a direct comparison with Australia.

variation is revealed. At the lowest quintile, the majority countries exhibit a negative savings rate, with the US demonstrating the greatest negative saving rate at 80%. Conversely, France is the only country to show a positive savings rate, albeit close to zero.

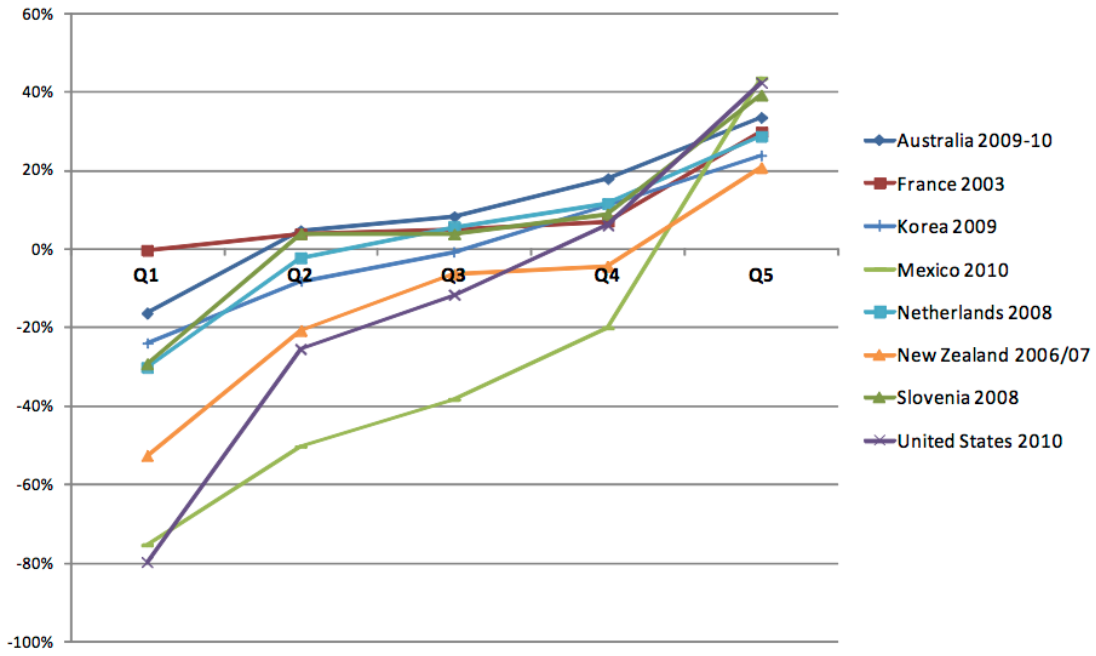


Figure 4.2 Saving as a % of adjusted disposable income, point estimates from eight countries

Source: Reproduced from Fesseau and Mattonetti (2013), *Distributional measures across household groups in a national accounts framework*, OECD.

What is driving the substantial savings rates of the wealthiest households in contrast to the poorest? Consumerism can partly explain the savings behaviour of the poor, but not of the wealthiest households. Given the finding of Carroll et al. (2014) that those with low wealth to income ratios (but high incomes from entrepreneurial activity) consume less, a natural issue to consider is how much more those receiving substantial income flows from entrepreneurial activities are saving and why. Dynan, Skinner and Zeldes (2004) explore whether there is any relationship between higher lifetime income individuals and the fraction that they save. Interestingly, they find that wealthier individuals faced with greater entrepreneurial risk will also exhibit a propensity to save in amounts higher than non-entrepreneurs. For example, 'the estimated median savings rates that range from zero for the first quintile to 22 percent for the fifth quintile to 49 percent for the top 5 percent of the sample' (Dynan et al., 2004, p. 426). Dynan et al. (2004) conclude that ultimately, the wealthy save more because of the entrepreneurial

risk they face. Savings rates are not necessarily due to consumer preferences being different compared to lower wealth classes.

The role of entrepreneurial income in wealth distribution has been examined by Quadrini (1999, 2000), Gentry and Hubbard (2004) and Hurst and Lusardi (2004). Quadrini (1999) finds that the key to upward mobility in the US is whether one is from a business family or an entrepreneur. More specifically:

> While worker families (both new and old), tend to stay in or move to lower positions of wealth, both new and old business families tend to stay in or move to higher positions. Therefore, the undertaking of an entrepreneurial activity is an important way through which families switch to higher wealth classes. (Quadrini, 1999, p. 8)

These findings are reinforced by Gentry and Hubbard (2004), who, using the US Survey of Consumer Finances, find that both new and continuing entrepreneurs tend to exhibit greater savings and that business income is an important part of this saving and wealth accumulation process. Significantly, the act of exiting entrepreneurship appears to result in 'dissaving'. Again, this finding suggests that savings by entrepreneurs are not necessarily tied to preferences but are due to chance associated with business or market processes instead. Dynan et al. (2004) argue that the observation that savings increase across the wealth distribution due to entrepreneurial activity signifies that savings (and as a corollary, wealth) are a matter of chance:

> Our finding that differences in saving behaviour across income groups are also an important source of the overall variation in wealth of the US population suggests a diminished role for choice. For example, wealth accumulation because of government or private policies that differentially affect saving (such as asset-based means testing or the availability of 401(k) plans) cannot be readily attributed to tastes or preferences. (p. 438)

Such a finding contradicts the view that the ultra-wealthy are solely a product of prudent decision making in savings. Rather, it is the risks of business and the associated stochastic process of free enterprise that have the most impact upon their consumption and savings behaviour.

Returning to the original issue of a potential link between the lack of upward mobility among the middle and lower classes and the greater propensity for the poorer to consume rather than save, two questions can be posed. Firstly, if diminishing savings rates (and increased consumption) are observed amongst poorer households, is this driven by disincentives to save? Secondly, are high consumption rates among the poor simply fuelling increased income growth among the rich, entrepreneurial classes? Bertrand and Morse (2013) allude to the possibility of 'reverse causality, where higher consumption by middle and low income households in a [US] state raise top income levels in that state' (p. 27). The existence of such a reverse causality could potentially be determined through an indirect channel via statistics on credit growth and the financialisation of household balance sheets.

4.3.2 Household Financialisation: Fuelling the Poor Consumer

The phenomenon of financialisation has often been used to describe a variety of observed economic outcomes in recent times. For example, financialisation is often observed at the corporate level where remuneration of upper management is tied to financial contracts. Alternatively, financialisation has been viewed as a process through which commodities typically outside the realm of financial markets have been packaged into investment vehicles that are actively traded on secondary markets across the globe.

Krippner (2005) provides one of the first formal definitions. Financialisation is defined as the 'pattern of accumulation in which profits accrue primarily through financial channels rather than through trade and commodity production' (Krippner, 2005, p. 174). This definition is formed from a broad body of studies on the changing nature of corporate activity, through any number of mechanisms. For example, Fligstein (1990) presents evidence on the increasing influence of finance in the organisation of corporate governance control structures for large enterprises in the US. The broadest definition, however, is provided by Epstein (2001) and encapsulates the multi-faceted nature of the phenomenon:

> Financialization refers to the increasing importance of financial markets, financial motives, financial institutions, and financial elites in the operation of

> the economy and its governing institutions, both at the national and international level. (p. 1)

Given the scope of financialisation, attempts to recast it as an element behind one of the variables in equation (4.1) may appear an intractable exercise, but there are aspects to which one can infer the impact of these developments on the dynamics of the wealth equation on households over recent history.

Here, it is posited that the increasing financialisation of household balance sheets (either the wealthy or poor) is having an impact in both reducing the potential for upward mobility and fuelling the substantial growth of wealth by the globe's richest citizens, including those in the finance industry. The ability of financialisation to impact household finances through wealth is not only tied to the capacity to generate greater returns through financial advice but also to enhance consumption beyond one's means. In equation 4.1, the two channels via which financialisation can impact is consumption (credit growth) and capital income (r_t^i).

The growth of credit demonstrates a remarkable association with the degree of wealth accumulation across the advanced economies. Figure 4.3 depicts the relationship between the average borrowing rate in an economy and its wealth to income ratio since the 1960s. The strongest association between borrowing rates and wealth to income ratios is to be found in Canada (0.95) and the UK (0.94), followed by Australia (0.93). The US exhibits the lowest degree of association between the variables (0.79), followed by France (0.87), Japan (0.86) and Germany (0.870). The link between credit growth and macroeconomic activity has been explored in a recent study. The findings of Stockhammer and Wildauer (2015) establish that economic growth across the OECD has largely been a debt fuelled process – rather than being driven by productivity growth by itself. The question is at which level of the wealth distribution this is being driven.

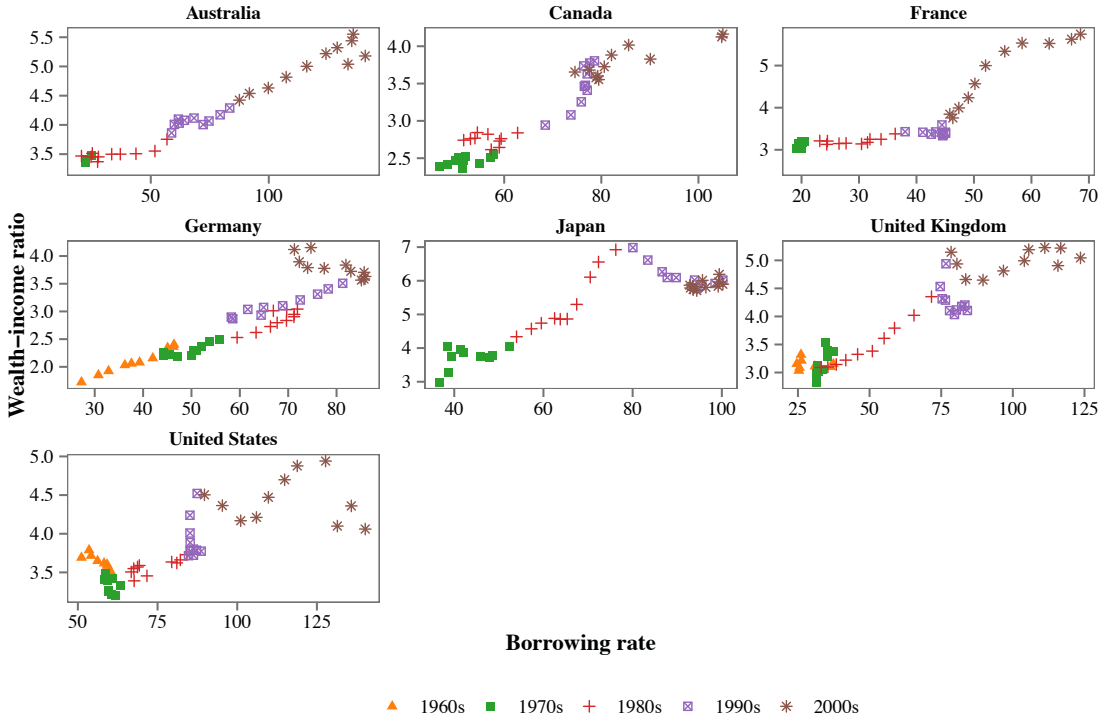


Figure 4.3 Borrowing rates and wealth to income ratios across advanced economies, 1960-2010

Source: Piketty and Zucman (2014b)

The impact of debt on households can be viewed from both the consumption side of the equation or from the investment returns perspective. The first view posits that the rise of financial products aimed at households is largely emblematic of the rise of the type of consumerism briefly explored in section 4.3.1. Cynamon and Fazzari (2013) examine the possibility of either in their study of the U.S. Survey of Consumer Finances and whether the growth in U.S. aggregate demand through household consumption is due to the rise of household credit. Adopting a Minsky perspective, Cynamon and Fazzari (2013) find that:

> With financial innovation and greater access to debt, the year-by-year budget constraint has become soft.... [H]ouseholds mimic the behaviours they observe around them, from both real people and media models, assuaging their uncertainty in the perceived comfort of acting like others in their social reference group. (p. 25)

Given the growth of an economic elite who made their fortunes in finance, the 'softening' of the budget constraint may provide an inkling as to why wealth to income

ratios have increased to such an extent in the US. There are, however, alternative perspectives. Trumbull (2012) argues that the liberal use of credit by poorer or low-income households was largely a cultural development in which easy access to credit was construed as a form of welfare substitution. Indeed, Trumbull (2012) rejects the notion of consumerism or materialism *per se* as a catalyst for increasing borrowing rates, arguing that, for the US, at least:

> the link that came to be made in the United States between credit access and social welfare was not a product of wage stagnation and welfare exhaustion in the 1970s, but instead traces its roots to the early years of the twentieth century in the United States. (p. 14)

In contrast, he argues that in France, access to credit was seen in a different light, with both the left and right historically rejecting the notion of easy access to credit markets for households (Trumbull, 2012).

The existence of different attitudes toward household borrowing rates across the seven countries would seem to imply differing patterns of household behaviour. Figure 4.4 shows the historical trends of private household debt to income ratios across the five countries. In every instance, the household debt to income ratios have demonstrated substantial growth rates. The four Anglo-Saxon economies have in the past decade exhibited the highest debt to income ratios in excess of 1x, with both Australian and US households exhibiting the greatest propensity to assume debt. France exhibits the lowest propensity to assume debt below those of the Anglo-Saxon economies, but has exhibited a dramatic increase since the mid-1990s.

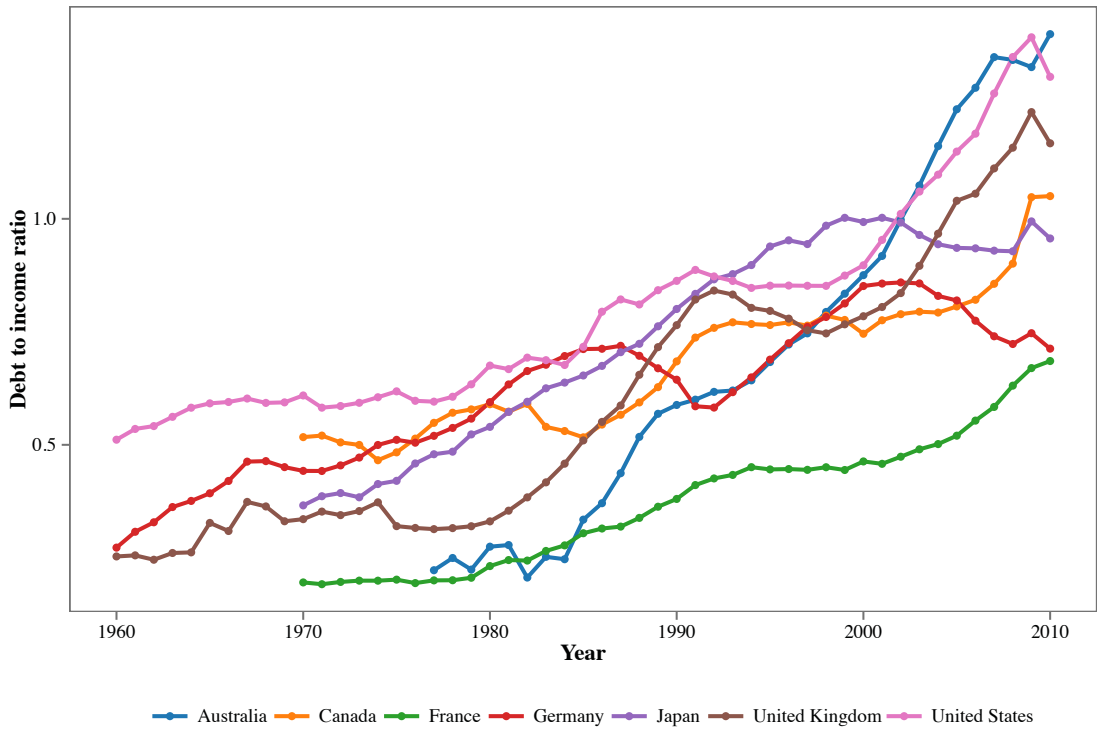


Figure 4.4 Debt to income ratio of advanced economies, 1960-2010

Source: Piketty and Zucman (2014b)

The aggregate increases in debt to income ratios may be fuelled across the whole wealth distribution, but the evidence suggests different dynamics across different percentiles, particularly amongst poorer and lower-income households. Fligstein and Goldstein (2015) find that poorer households in the US avail themselves of credit products more readily than wealth accumulation assisting products:

> For the 40% of households living at the bottom … life chances have declined dramatically in the past 20 years. Their income growth is negative, they are vulnerable to not having enough money to survive.... When they borrow, they tend to use their borrowing for routine household expenses such as paying bills, medical expenses or financing education. The rapid expansion of credit availability to those in the bottom 40% has not produced a finance culture. (p. 23)

The recent publication of household debt distribution data by the US Congress Budget Office reveals the extent of debt levels among the lower wealth percentiles. Debt here is defined as nonmortgage debt. Table 4.3 Panel A provides some details on the evolution

of average debt levels to average wealth across the three broad wealth percentiles. Beginning with the bottom 25th percentile, the debt to asset ratio averaged 92.13% (σ = 17.4%) over the 1989 to 2007 period. By 2010 and 2013, however, the debt to asset ratio had exponentially increased to 300x times total assets. The process driving this has not only been an accumulation of debt, but enormous falls in the value of home equity and a corresponding rise in credit card and student loan debt. In contrast, the 50th to 90th percentile exhibit very little variation over the entirety of the sample provided. Overall, the 50th to 90th percentile's average proportion of debt to assets was 4.99% with little variation (σ = 0.40%).

Table 4.3 Debt to total assets, US households

Year	Bottom 25th Percentile	25th to 50th Percentile	50th to 90th Percentile
Panel A, Debt to total assets:			
1989	110.0%	18.3%	5.5%
1992	65.0%	15.5%	4.4%
1995	83.3%	17.2%	5.1%
1998	117.6%	19.4%	5.4%
2001	89.5%	17.5%	4.6%
2004	87.5%	18.3%	5.0%
2007	92.0%	20.2%	4.9%
2010	1600.0%	26.7%	5.5%
2013	3300.0%	28.3%	6.1%
Panel B: Average debt levels of US households			
1989	$11,000	$11,000	$14,000
1992	$13,000	$9,000	$10,000
1995	$15,000	$11,000	$12,000
1998	$20,000	$14,000	$16,000
2001	$17,000	$14,000	$17,000
2004	$21,000	$15,000	$20,000
2007	$23,000	$19,000	$21,000
2010	$32,000	$16,000	$19,000
2013	$33,000	$17,000	$21,000

Source and Notes: Congressional Budget Office (2016). *Trends in Family Wealth, 1989 to 2013.* Assets consist of financial assets, home equity, and other assets. Other assets are defined as including real estate (non-residence) and business equity net of loans. For home equity, mortgage debt is subtracted from the primary residency. Debt in the table refers to nonmortgage debt, and includes a household's consumer debt, and other debt (primarily student loans).

The ratio approach may obscure some of the dynamics in relation to debt. Panel B Table 4.3 shows the average amount of household debt in dollar terms. Across the three percentile ranges for which data are provided, debt levels have systematically increased

since 1989. However, the largest debt burden is on average upon the poorest households. For example, in 2013 the average debt burden was USD33,000 for the bottom 25th percentile, compared to USD21,000 of the 50th to 90th percentile. The mean growth rate of debt for the poorest 25th percentile is 15.9% since 1989, compared to 6.8% for the 50th to 90th percentile.

The phenomenon of poorer households being unable to increase their income and accumulate wealth, and consuming out of credit, is not restricted to the US. As mentioned above, Australia exhibits the world's highest household debt to income ratio. Have the record levels of household borrowing led to a greater concentration of household debt by the lower classes as in the US? Table 4.4 presents the distribution of household debt in Australia across wealth percentiles. Home loans are mainly held by households in the 40-59% and 60-79% wealth percentiles, with the proportion increasing from 47% and 42% in 2002 to 50% and 46% by 2010, respectively.

Table 4.4 Distribution of Australian household debt

	Share of household debt from		
	home loan	**credit card**	**other**
Percentile of net worth			
		2002	
Less than 20	6	28	37
20-39.9	37	49	41
40-59.9	47	32	26
60-79.9	42	29	27
80-100	33	22	25
		2006	
Less than 20	5	28	51
20-39.9	40	37	46
40-59.9	48	30	31
60-79.9	45	28	31
80-100	36	18	30
		2010	
Less than 20	6	50	67
20-39.9	42	46	78
40-59.9	50	34	69
60-79.9	46	28	67
80-100	38	27	63

Source: Reserve Bank of Australia (2012)

Significantly, the two lowest wealth percentiles have credit card debt as the largest proportion of debt, which rose over the years for which the Reserve Bank of Australia provides data. In 2002, 28% of the poorest households had credit card debt, which increased by 2010 to 50%. In contrast, only 22% of the wealthiest households held

credit card debt in 2002, increasing marginally to 27% in 2010. Other personal debt increased across all wealth percentile ranges from 2002 to 2010, and especially among the lowest two percentiles.

The UK also acutely demonstrates the impact of financialisation upon the poorest of households. Figure 4.5 plots the ratio of debt to income against average income for UK households. Between GBP4,500 and GBP15,000 the level of debt held ranges between 1.2x for the poorest households to approximately 0.2x for those on GBP15,000. Beyond this point, the average level of debt to income ratio gradually decreases.

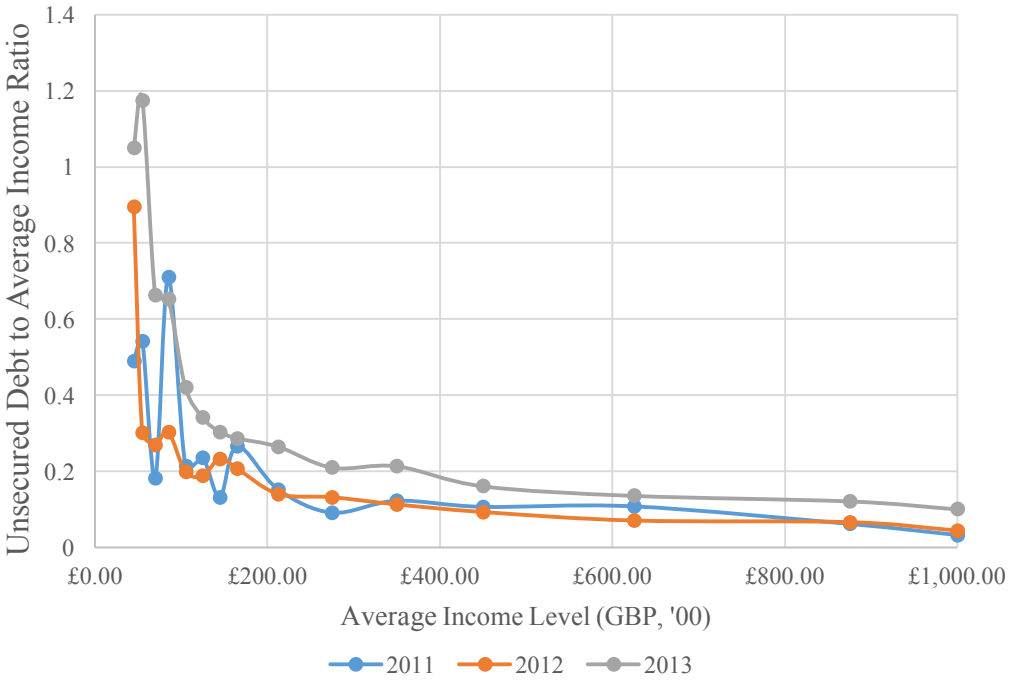


Figure 4.5 Distribution of household unsecured debt to income, UK 2011-2013

Source: Bank of England, NMG Consulting Survey 2011, 2012 and 2013.

4.3.3 Income Inequality – The Rise of the Top 1%

Under equation 4.1, a key element in the wealth accumulation process is the size of income. Obviously, *ceteris paribus*, higher incomes result in greater wealth accumulation. Here, the degree of wealth inequality is thus highly contingent upon the degree to which the highest income percentiles can increase their income shares. Further, the structure of income at the top is of major relevance. Piketty's (2014a) inequality relationship, $r > g$, suggests that the returns to capital (capital income) are of paramount import to any analysis of wealth distribution. As a first step, it is necessary to first establish the level of income inequality.

The evolution of income inequality has received considerable attention in the literature since the 1960s. Quantifying income inequality can take two approaches in general. One approach that is often employed to determine the level of income inequality in the economy is the Gini coefficient. An alternative approach is to examine the distribution of income via various percentiles or fractals of the income distribution. A significant advantage of this method is that it effectively accounts for the extremities in a distribution. In contrast, Gini coefficients place weight on the median observations, potentially under emphasising the amount of inequality present in the tails of a distribution (Piketty, 2014a).

The approach used here is the share of national income accruing to the top income 1% percentiles. The WWID (Alvaredo et al., 2016) provides various country by country data across different income share percentiles as discussed in Chapter 3, section 3.2.3. For some countries, the database provides a structural division between the share of income from either labour or capital. This aspect of the database is particularly important considering the growth of income generating financial products. If, in Western economies, credit growth has been a defining characteristic of the impact of financialisation on household balance sheets for the poor, the increase of income generation from wealth holdings is the defining characteristic on the right-hand side of the wealth distribution. Saez and Zucman (2014) document that income derived from capital has consistently and increasingly accrued into the hands of the wealthy. This structure of top incomes is explored in section 4.3.3.1.

To begin, income shares for the top 1% are depicted for the six advanced economies in Figure 4.6. Income here is defined as *pre*-tax income, combining income derived from both labour and capital. In all instances, the top 1% income share is observed as increasing across all countries since the late 1970s. For the US, the 1960s and 1970s show approximately 8.07% of income being captured by the top 1% income group. This period in part corresponds to the "great compression" mentioned in section 4.1. The lowest share over these two decades is observed for Australia at 6.08% followed by the UK at 7.2%, while the highest is observed in Germany at 11.2%.

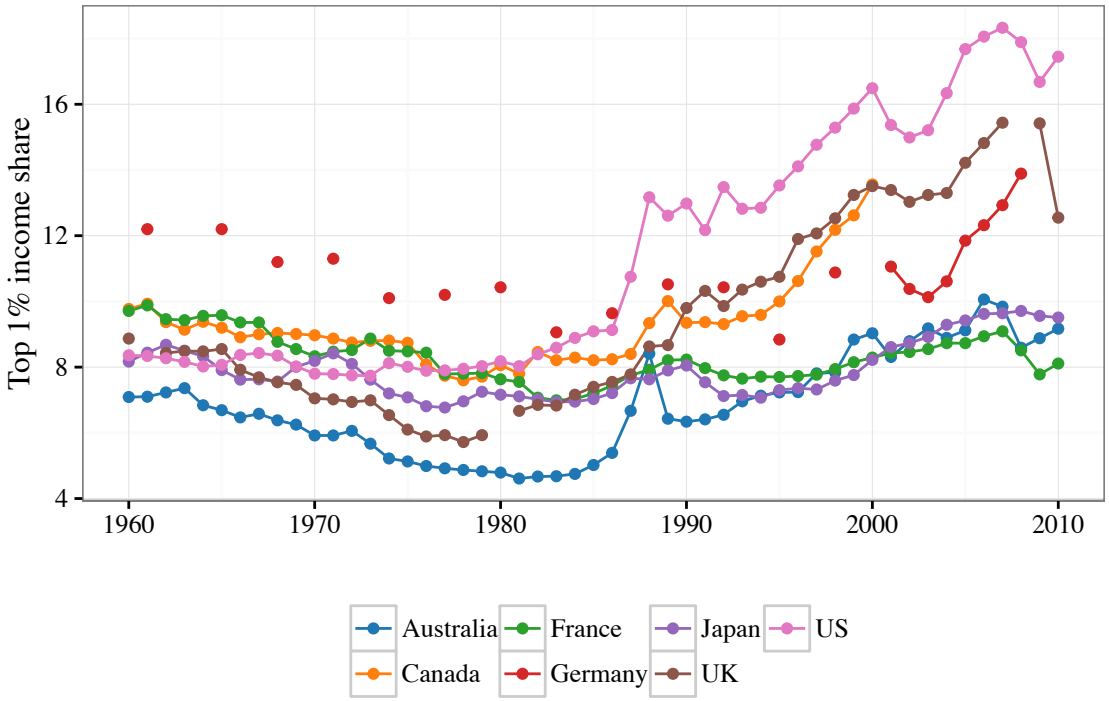


Figure 4.6 Top 1% income share, 1960-2010

Source: Income shares were obtained from the World Wealth and Income Database (Alvaredo, Atkinson, Piketty, Saez, and Zucman, 2015). The data is accessible from http://www.wid.com/

From the 1980s, there is a precipitous increase in the income shares of the top 1% across the sample. Both the US and the UK exhibit significant increases. Over the two-decade period, 1990 to 2010 the mean income share going to the top 1% share in the US increased to 15.35% from 8.07% (1960 to 1979). No less steep is the observed increase in the UK, where the income share rose from 7.2% (1960 to 1979) to 12.52% over the 1990 to 2010 period. On average, the majority of other countries reveal increased income shares for the top 1% albeit less than those observed in the US and the UK. In Australia, the mean income shares over 1990 to 2010 increased to 8.20% compared to

6.08% over the 1960 to 1979 period. Canada demonstrated an increase of similar magnitude, increasing from 8.84% to 10.69% across the same two periods. France and Germany exhibit little variation across the span of the two periods. Germany's top 1% share increased only marginally to 11.21% from 11.20%. France's top income share decreased to from 8.83% to 8.20%.

Increasing levels of income concentration at the top income percentiles across the globe have varied explanations. Neoclassical economists emphasise the increasing returns to skill and education. Keynesians or institutionalists point to a shift in the bargaining power of high-income earners or managers over those further down the income (or wealth) distribution.

The most recent econometric study on the determinants of income inequality is by Dabla-Norris et al. (2015). Their study utilised a cross-country longitudinal approach and examined the drivers of income inequality along various dimensions with a focus on the top 10%. These drivers encompass a variety of elements, including:

- Trade openness;
- Financial openness and deepening;
- Technological growth;
- Skill and education premiums;
- Labour market institutions; and
- Government spending.

Their regression estimates found that of the above, three features appear to have had the most dramatic impact upon income inequality over the past 30 years. These include labour market institutions, technological growth, and financial deepening.

The role of labour market institutions is measured as degree of regulatory control over firing and hiring, collective bargaining, and the setting of minimum wages. Dabla-Norris et al. (2015, p. 15) find that labour market flexibility has been particularly beneficial to the top 10% income decile and conclude that 'labor market flexibility benefits the rich and reduces the bargaining power of the lower-income workers'. Similarly, Jaumotte and Buitron (2015) view the decline in unionisation across the globe as giving rise to higher shares in the top 10% - once again achieved largely through the bargaining power of workers and top income shares. The weakening of

unions and the commensurate decrease in the bargaining power of workers has largely increased the proportion of capital income received by capitalists (Jaumotte & Buitron, 2015, p. 31). This shift, however, has been brought about by governments shifting support to capital over labour. This process is particularly evident in the radical labour market policy shifts with the elections of Margaret Thatcher in the UK in 1979, Ronald Reagan in the US in 1980, and the Howard Government in Australia from the mid 1990s. In the UK, the 'The Thatcher government's union reforms of the 1980's included limits on closed union shops, secret ballots, … weakened labor unions and led to a decline in union membership' (Bronars, 2013, para. 5). Similarly, in the US, 'President Reagan fired PATCO strikers and replaced them with non-union workers, sending a strong message that government would not support labor' (Pressman, 2016, p. 233).

The causal link between flexible labour markets and, or, de-unionisation and the growth of top income shares, although recognised as important, is not the only policy force in increasing *wealth* inequality. Piketty (2014a) stresses this point by arguing that it is wealth inequality to begin with that drives income inequality – through the returns to capital. Here taxation can have a substantial impact on reducing capital returns. In equation 4.1, capital income is reduced by the rate of capital income tax: $r_t^i \cdot (1 - \tau_k)$. As will be shown in section 4.3.5, tax shifting between wage and capital represents a real issue via which the wealthy can minimise tax paid given that capital is taxed lower than wage income.

Further, enhanced bargaining power of top executives or management enhances remuneration of this class. In this context, Piketty, Saez, and Stantcheva (2014) emphasise the impact of tax policy on *pre*-tax incomes in which unions have little if any role. The correlation between decreasing top marginal income tax rates and top wage incomes is not merely a statistical association but demonstrates a causal link. This causality story essentially argues that senior executives (and presumably, the owners of capital), with lower top tax rates, demanded greater compensation. Emphasising the role of incentives, Piketty (2014a), and Piketty, Saez, and Stantcheva (2014) argue that top income earners were prepared to fight now for greater income, since they got to keep more of the money they received. Labour unions, however, have little role in these empirical specifications whereas other institutional forces come to the fore.

These “institutional” factors primarily appear to be associated with the economic power found in the highest echelons of the corporate hierarchy. For example, corporate governance practices, in reality, tie remuneration packages of top executives to prevailing social norms rather than performance. The argument goes that with a shift in taxation policy, it is now permissible for executives to gain higher salaries as society permits this implicitly through government taxation policy. Performance does not provide an adequate explanation itself as the marginal productivity story would maintain. For example, empirical evidence suggests that executives receive large bonuses for increased sales or profit during periods of high economic growth (Bertand & Mullainathan, 2001).

The second major force according to the Dabla-Norris et al. (2015) is the impact of technological growth. The advancement in technology can affect income inequality through two mechanisms. Jan Tinbergen’s (1975) provided the main impetus for this viewpoint proposing that to a significant extent income inequality was the outcome of the race between education and technology. There are two channels through which technology can impact upon income inequality. Firstly, a required tertiary qualification to utilise the technology may demand a premium for the worker’s skill set, thereby increasing incomes for those possessing the requisite skills. In the second channel, technological progress replaces unskilled workers or reduces their incomes. The first of these channels is the standard neoclassical marginal productivity story. Piketty (2014a) argues that although technological change or growth certainly has an impact, the strength of this effect is not as pronounced as ordinarily expected. Advanced economies which have demonstrated significant technology progress or growth, such as Sweden, have not shown a concomitant increase in income inequality. Empirically, the evidence shows that income inequality is not as pronounced in other societies or economies (such as Sweden) compared to, for example, the US or the UK despite sharing similar levels of technological growth. Pressman (2016) summarises Piketty’s argument as follows: ‘The fact that there are large national differences [in income inequality] shows that marginal productivity is not driving the sharp rise in top incomes in Anglo-Saxon nations. The problem appears to be institutional rather than economic’ (p. 301).

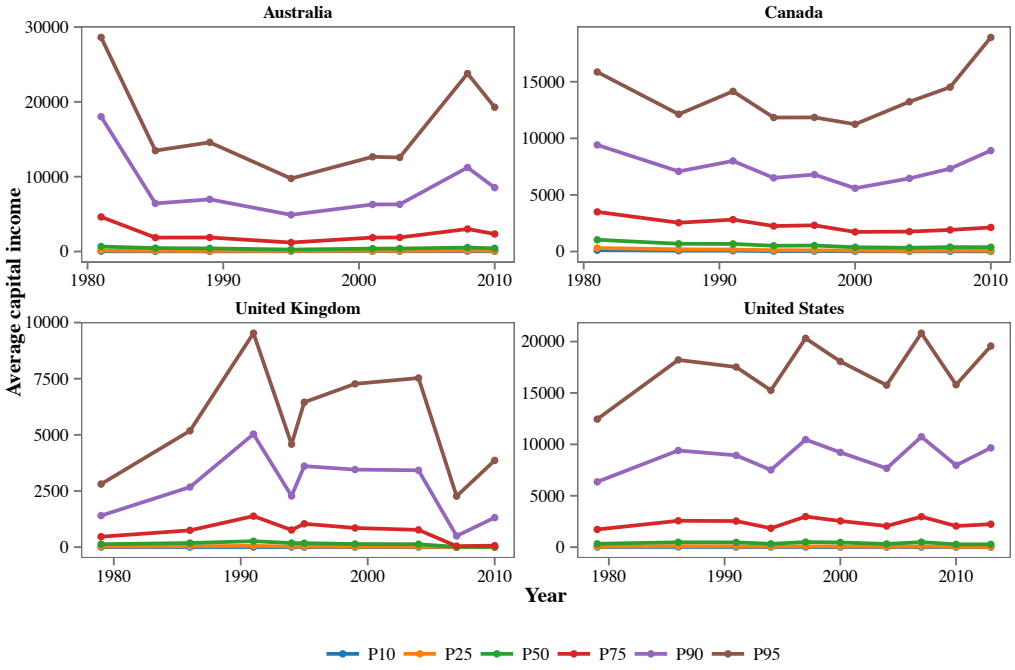
4.2.4.2 The Structure of Income at the Top – Inequality of Capital Income

According to Krugman (2014), research into income inequality has largely neglected or missed the emergence of an economic elite whose income is derived not from labour but capital. As Krugman (2014) points out, the general thrust of inequality research focused upon the rise of large managerial and chief executive officer compensation packages since the mid-1980s. Capital income though was largely neglected. *Capital* income here is defined as comprising capital gains, dividends, interest receipts, rents and business profits. Here, findings on the distribution between capital and labour income at the highest income percentiles are examined. The significance of capital income in the compensation structure of the wealthy is particularly important for the distribution of wealth, in so far as the Piketty (2014a) framework contends. Capital income, through the return to capital, *r*, is the main driver of inequality by amplifying initial disparities in accumulation models such as that presented in Equation 4.1. In societies where high wealth concentration prevails it represents a particularly important mechanism through which inequality is maintained.

There are some *a priori* reasons to expect that capital income may represent a substantially greater element of total income for the wealthiest income groups. In previous sections, the increasing financialisation of household balance sheets was viewed as depressing wealth accumulation for the poorest households through the accumulation of credit. Financialisation might be playing a similar role on from the asset side for the wealthy households. Fligstein and Goldstein (2015) find evidence that the upper and upper middle classes in the US from 1989 through to 2007 'adopted a more aggressive attitude towards risk and engaged in more financial activities to support their lifestyles' (p. 23). The greater risk tolerance among wealthier households is tested on Australian households in Chapter 5, but it is sufficient to note here that such risk taking enables rapid wealth accumulation by the upper classes compared to the lower classes in the long run through capital gains, dividend or interest receipts so long as the return to capital is greater than national income growth.

By way of a brief introduction, the extent to which the wealthy dominate capital income shares is presented in Figure 4.7. The data is sourced from the Luxembourg Income Study (n.d.), which provides a distributional breakdown of income up to the 95th percentile in monetary terms. At the highest income tier, mean capital incomes have

remained relatively stable, ranging between USD13,750 (Canada) and USD17,372 (US), but from 2000 there is a noticeable increase in Canada and Australia. Among the middle classes, the range is considerably lower, with the highest mean being USD545 (Canada) and the lowest USD389 (US). At the 75 percentile, it increases to approximately USD2,330 for all countries. For the 95th percentile it increases dramatically to USD20,000 for Australia, Canada and the US.



Note: All amounts are in US dollar terms, real base 1990.

Figure 4.7 Distribution of capital income across the Anglo-Saxon economies by wealth percentiles

Source: Luxembourg Income Study (n.d.).

Although useful as a guide, the Luxembourg Income Study data stops at the 95th percentile and does not provide further information on the structure of incomes at the very highest echelons of the income distribution. Examining the structural breakdown between labour and capital income by income group percentiles at the very top provides a better examination of the shifting changes utilising data sourced from the World Income and Wealth database. Below, the structure of top incomes, the proportion of income derived from capital or income, is presented at three different percentiles: top 1%, top 0.1% and the top 0.01%. By examining the data across the three percentiles, the shifting predominance or composition between income classes over time can be observed, and the reasons for the shifts can be explored.

The income structure decomposition for the Top 1% is presented in Figure 4.8. Since the late 1970s to early 1980s, the top 1% earners have increasingly earned their income from "non-capital" income sources. The shift is most acutely observed in Australia, Canada, and the US. In the US, the proportion of earned income has averaged 59.10% since 1975 to 2010. Australia has a similar average at 59.62%. Canada has similarly exhibited a relatively high portion of earned income, averaging 61.03%. Japan is well ahead with the 79.67% of the top 1% sourcing their income from non-capital labour. Only France deviates from the patterns observed in the other sample countries. There, although capital income demonstrates a decreasing trend since the 1960s, it has on average represented the majority source of income to the contemporary period for the top 1%. Taking a similar time frame from 1975 to 2005, 51.77% of the top 1% income earners in France received income from capital sources. Although labour income did at one stage constitute the majority of income for a brief period between 1996 to 2001, it subsequently reversed.

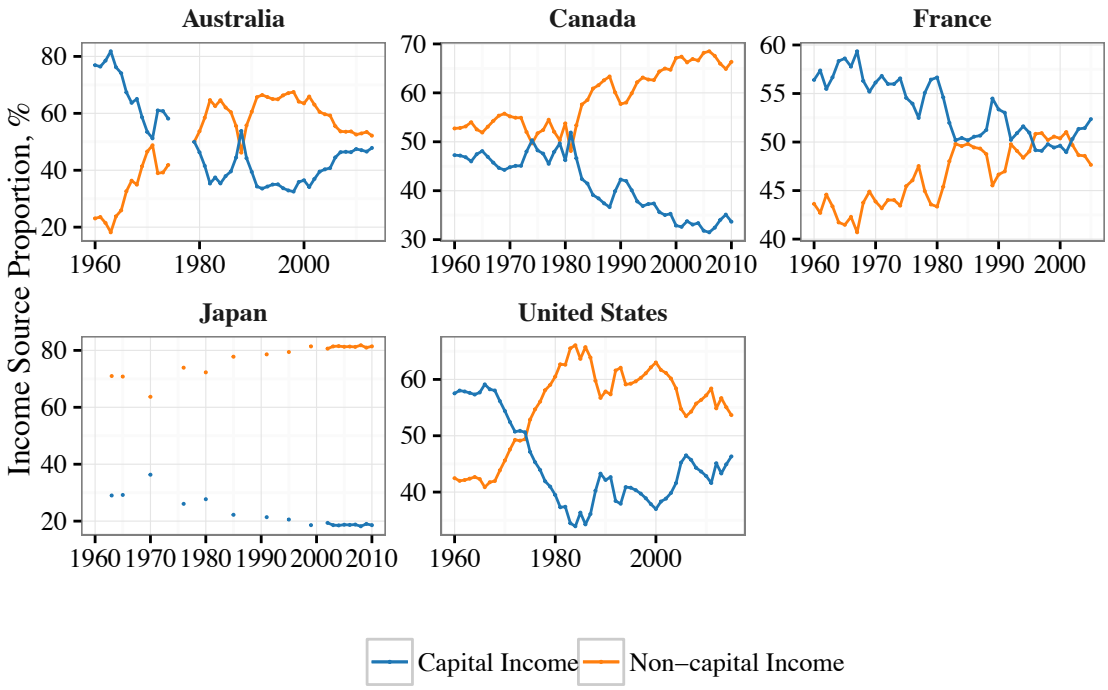


Figure 4.8 Capital and labour income shares, top 1%

Source: Income proportions were obtained from the World Wealth and Income Database (Alvaredo, Atkinson, Piketty, Saez, and Zucman, 2015). The data is accessible from http://www.wid.com/

Who are precisely are the top 1% of earners? It is ultimately dependent upon national context. Typically, the bulk of the top 1% of income earners are characterised as being

part of the professional and managerial classes. Saez (2006), for example, contends that the increasing income share of the top 1% observed in the Anglo countries is being driven not by increasing or higher capital incomes, but 'highly paid executives [who] seem to have replaced the capitalists and rentiers of the early part of the century at the top of the income distribution' (Saez, 2006, p. 238). In contrast, the French experience shows the dominance of capital income. This may, in part, be driven by the high rate of inheritance observed in France relative to the Anglo-Saxon countries, as identified in Chapter 3.

Advancing to a smaller more prosperous income percentile group, the top 0.1%, reveals *significant* differences compared to the top 1% in the income dynamics of the wealthy. The relative proportion of income sources for the top 0.1% are presented in Figure 4.9. Two important observations can be made regarding the data. Firstly, except for Canada, income derived from capital income sources now dominates. In the US and Australia, there were brief periods throughout the 1980s and 1990s where this observation does not hold. However, by 2002 the relative pre-eminence of capital income holds. Further, the observed proportion of capital income appears to be approaching the levels in the early observation period, from 1960 to the late 1970s. In the US, there is a degree of overlap between capital and non-capital income. For non-capital income, the highest spike occurs in the year 2000, which coincidently corresponds with the largest influx of new entrepreneurs from the fields of information technology and finance as presented in Chapter 3. However, since then capital income has once again become the dominant source of income.

In France, capital income continues to dominate the income structure. Between 1960 and 2005, the average proportion of income from capital, was 66.01% (σ = 2.2%), with no discernible trend up or down. Inheritance potentially explains the large role of capital incomes in France at both the 1% and 0.1% level. Daumard (1980) demonstrates that inheritance has always played a significant role in French economic life. Prior to the World War 1, the annual inheritance flow as a fraction of national income in France averaged 24%. The destruction wrought by the two World Wars had pushed this portion down to 4% by 1945. However, by 2010 the inheritance flow had increased to approximately 14% (Piketty, 2014, p. 378). Australia's experience largely follows that of the US, where the relative proportion of the two income sources converge between

1985 and the early 2000s before the ascendency of capital income becomes established again.

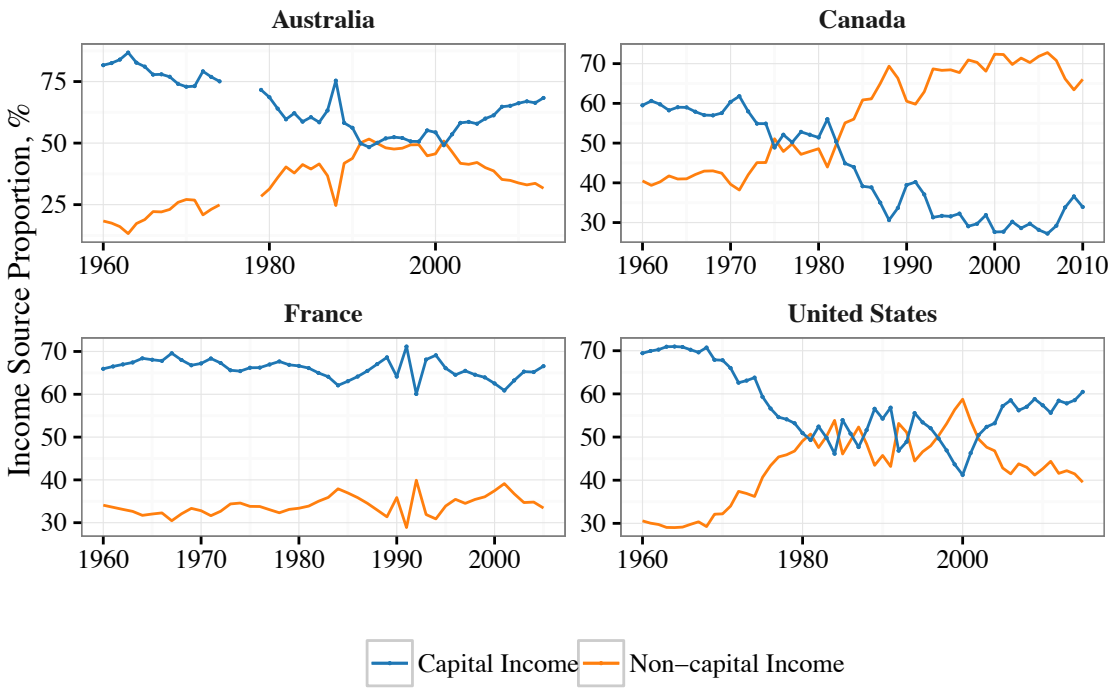


Figure 4.9 Capital and labour income shares, top 0.1%

Source: Income proportions were obtained from the World Wealth and Income Database (Alvaredo, Atkinson, Piketty, Saez, and Zucman, 2015). The data is accessible from http://www.wid.com/

Further advancing along the income distribution, to the top 0.01%, reveals trends similar to those presented in Figure 4.9 for the top 0.1%. Figure 4.10 shows the evolution of the top 0.01% income structure across the four countries for which data are available. The trends and relative contributions of capital and non-capital income to overall income for the top 0.01% mostly follow those observed for the top 0.1%, though capital income dominates for a greater length of the period. In the US, only between 1998 and 2001 is there a sharp but momentary increase in labour income, such that it dominates income derived by capital income. Beyond 2001, capital income once again dominates rising toward the proportions observed in the 1980s. For Australia, data on the top 0.01% is only available up to 1998. At least up until this point, a downward trend in the proportion of capital income emerges but is still well above non-capital income. Assuming Australia's relative proportion shares follow those of the US, it is reasonable to expect these levels to be maintained throughout the 2000s. Both France and Canada largely show patterns that are similar to those observed in Figure 4.9.

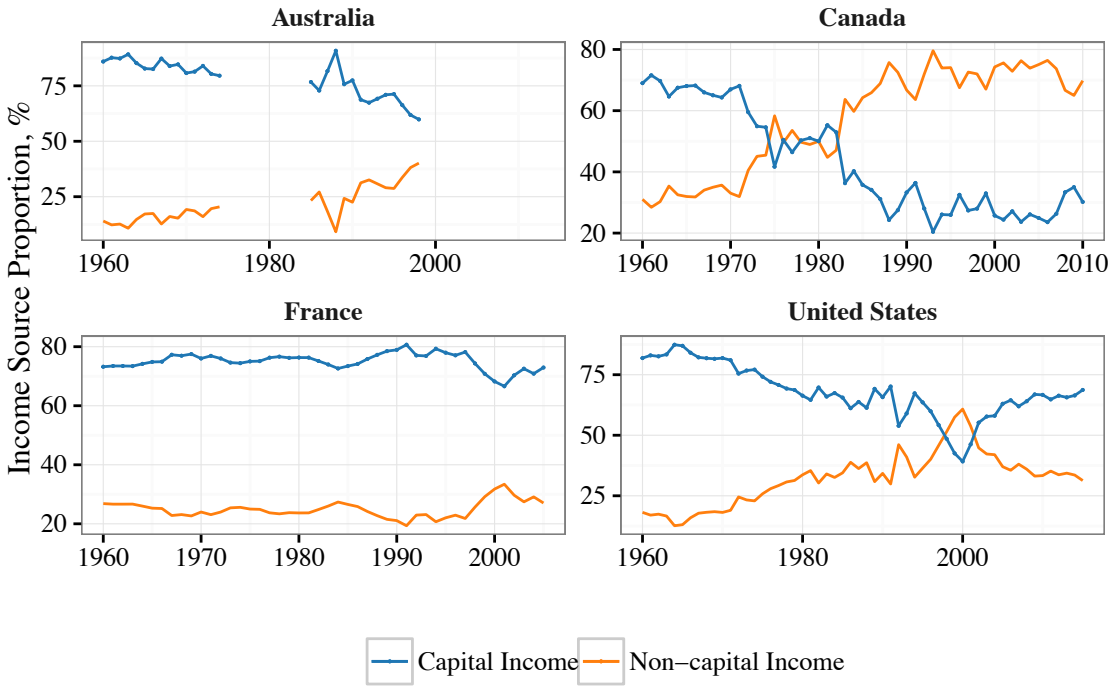


Figure 4.10 Capital and labour income shares, top 0.01%

Source: Income proportions were obtained from the World Wealth and Income Database (Alvaredo, Atkinson, Piketty, Saez, and Zucman, 2015). The data is accessible from http://www.wid.com/

In Section 3.2, the relationship between return to capital and national income growth is discussed. The greater returns to wealth relative to income growth invariably result in greater wealth concentration. At least in the Piketty (2014a) framework, capital income represents one of the major forces driving wealth accumulation and concentration at the top of the wealth pyramid. At the very highest income levels, this appears to be an accurate representation of economic reality. Capital income, at least for those countries that data exists, dominates at the top.

4.3.3.2 Income Shares in Latin America

Before proceeding into a discussion on taxation policy, it is worthwhile to briefly focus on Latin America. Although Latin America is one of the most unequal regions of the globe, since early 2000s it has been observed that inequality has declined, albeit from a high base (Gasparini & Lustig, 2011; Tsounta & Osueke, 2014). Estimates from Gasparini and Lustig (2011), for example, show that income inequality, as measured by the Gini coefficient, across Latin America has fallen. In 2002, the mean Gini coefficient was 53.7 and by 2008 had fallen to 50.9 approximately. Assigning causality to the

reduction in Gini coefficients has resulted in little consensus (Tsounta & Osueke, 2014). One favoured explanation is that stronger economic growth and a concomitant increase in the demand for unskilled labour reduced the wage differential compared to skilled labour (Gasparini & Lustig, 2011). In addition, expansion in the provision of education has also seen a reduction in the education wage premium throughout the continent. Lastly, and perhaps most significantly, the decline in Gini coefficients has been associated with large targeted cash transfers to the poor. In Brazil, for example, the *Bolsa Familia* program provides cash transfers to poor families, on the condition children are sent to school and vaccinated.

The extent of reduced inequality in Latin America has been countered on the basis that the Gini coefficients may be overstating the decrease in inequality. Alternative measures, such as the top income shares, may reveal differences in inequality trends compared to those based on the Gini coefficient estimates.

Figure 4.11 presents data from four Latin American countries for which income share data is available. One significant finding based on this data is that the absolute levels of top income shares are exceptionally high, rivalling or surpassing the observations in the US, and surpassing most of the advanced economies depicted in Figure 4.6. These trends suggest that reductions in the Gini coefficient might be overstating the reduction in income inequality. Argentina shows a steady increase in inequality, with the income share of the 1% increasing from 12.39% in 1997 to 16.75% by 2004. Colombia tends to exhibit the greatest income concentration in Latin America, rivalling the US observations. Over 1993 to 2010, the average income share of the top 1% was 19.57% for Colombia. Data for Uruguay is only available for 2009 through to 2012. Over this period the average income share going to the top 1% was 14.4%.

The Latin American data is perhaps too short to identify any prevailing trends. Only for Brazil is a longer time series available. Although there was a spike in inequality during the 1960s and early 1970s with the coming to power of the Brazilian junta in 1964, the spike proved to be only a temporary situation. A noticeable decrease is evident in the top 1% share of income from the mid-1970s.

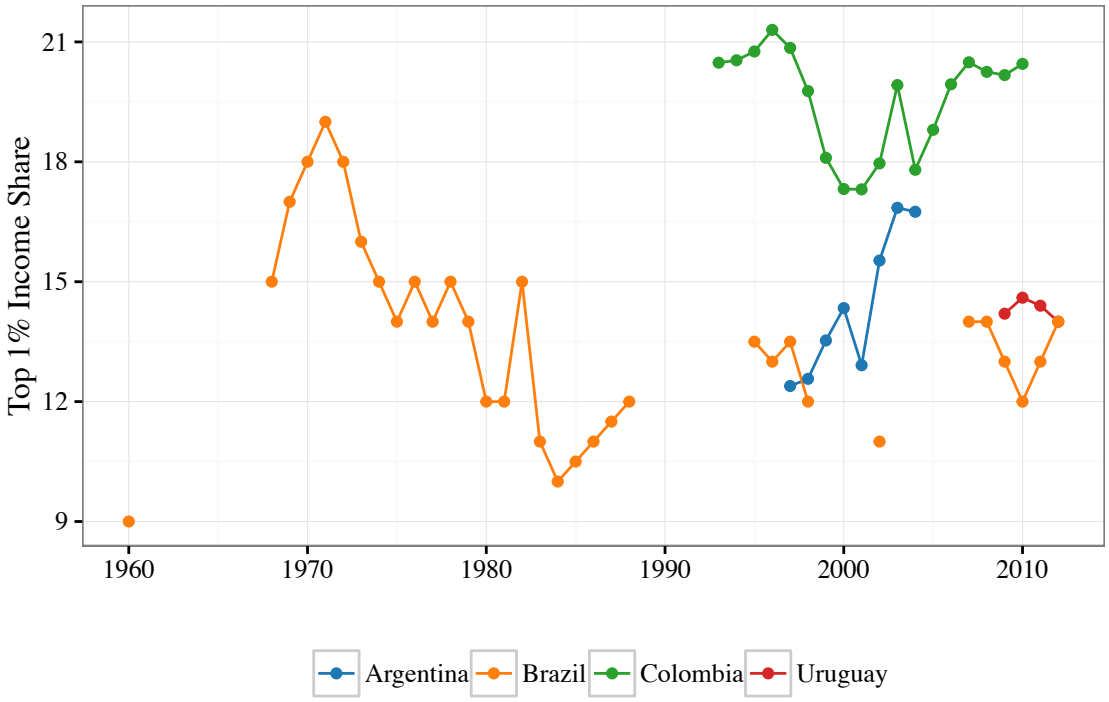


Figure 4.11 Top 1% income shares, selected Latin American countries

Source: The income shares for Argentina, Colombia and Uruguay were obtained from the World Wealth and Income Database (Alvaredo, Atkinson, Piketty, Saez, and Zucman, 2015). The data is accessible from http://www.wid.com/. For Brazil, top income shares were sourced from Souza and Medeiros (2015).

Souza (2014) argues that there are no abrupt changes or clear trends throughout the life of the sample since the 1990s for Brazil and that has settled into levels observed across the advanced countries. Significantly, Souza and Medeiros (2015) find that once controlled for the income shares of the top 1%, the observation of decreased Gini coefficients in Brazil effectively disappear. Further, they argue that:

> Different from what sample survey data alone shows, there are no major changes in the Gini coefficient when tax and sample survey data are combined to form a complete distribution of incomes among adults. The reduction of inequality in the bottom of the distribution was offset by the slight rise in top income shares revealed by the tax data.

Inequality therefore does not appear to have decreased in any meaningful sense.[18] There may be numerous reasons for this, but taxation policy might be a key element. Taxation is one area which has not been adequately addressed in Latin America. Byanyima and Ibrarra (2016) state that tax evasion in Latin America (personal and corporate) costs the

[18] This is not to imply that poverty has not been reduced.

region approximately USD190 billion in lost revenue in 2014 alone. In Brazil, 27% of corporate taxes are never received by the state. Progressive taxation systems are needed to raise the resources for the continued provision of public goods and services that have lifted many out of poverty.

In the next section, the role of taxation is considered in the context of advanced economies.

4.3.4 Tax and Inequality

The role of taxation policy in suppressing the amassment of great fortunes is now considered. The relationship between taxation policy and wealth accumulation arises through three channels, as presented in Equation 4.1. There is, of course, the direct impact on labour incomes which becomes more pronounced with progressive taxes. Secondly, there are taxes on capital income flows (corporate taxes, dividend taxes or capital gains taxation). Thirdly, there is the potential for direct taxes on the stock of wealth via estate or *inter vivos* gift taxation. This section explores the evolution of all three channels since 1970s. Further, the role of tax evasion via off-shore financial centres are considered.

4.3.4.1 Top Marginal Income Tax Rates

To begin, a comparison of the changes in the top marginal income tax rates for labour are examined since 1960. The impact of income taxation can either be direct in the sense of *after*-tax incomes or indirect on *pre*-tax incomes (see e.g. Piketty, Saez, & Stantcheva, 2014; Leigh, 2009). Both aspects are explored here.

Overall, all countries demonstrate a fall in the top marginal income tax rates as presented in Figure 4.12. The overall trends across all seven countries seem to follow a path that can be divided into through three different epochs. In the first epoch, roughly corresponding to 1960 to the early 1970s, top marginal rates were high. Except for Germany (in relative terms), all countries exhibited significantly higher top income tax rates during the 1960s. The maximum income tax rate was in the UK at 90.0%, followed by the US (78.7%) and Japan (74%). The second epoch begins in the mid-

1970s. By the mid-1970s, the average top income tax rates had fallen substantially, with some decreasing by more than 10%. France and the UK registered the largest decreases, dropping by 11.2% and 11.6%, respectively. The third epoch in tax policy changes across most countries manifests in the late 1980s through to 2010. On average, all countries exhibited significant falls in the top income tax rates over the 1990 to 2010 period. The lowest average top marginal income tax rates were to be found in the US (39.89%) and the UK (40.45%). Australia also imposed significantly lower marginal tax rates on the highest incomes, now averaging 46.63%. Continental Europe also enforced lower tax rates on top incomes during this period but maintained these at levels higher than the Anglo countries in the sample. France decreased its top tax rate to an average of 54.44%. Germany somewhat goes against the behaviour of other states in maintaining a stable top income tax rate over the sample period. From 1960 to 2010, the average top income tax rate was 56.45%. Over the 1990 to 2010 period, it had barely changed at 56.08%.

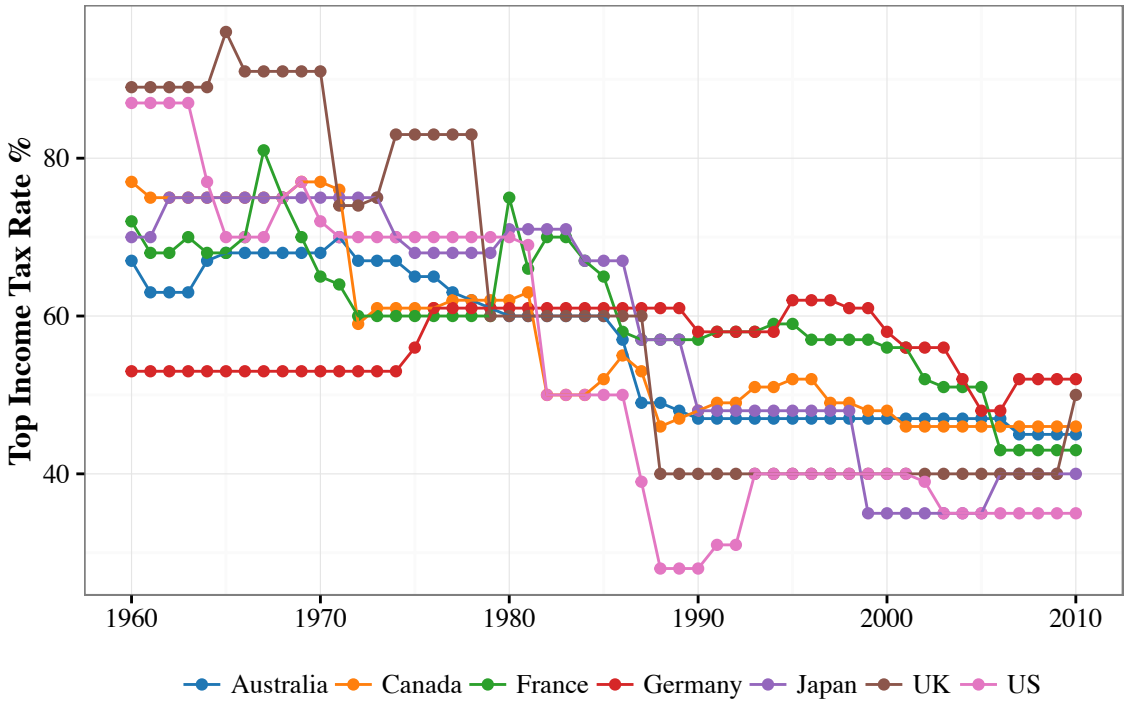


Figure 4.12 Top marginal income tax rates, 1960 - 2010

Source: Top marginal income tax rates from Piketty, Saez, and Stantcheva (2012).

Income Tax Progressivity, Kakwani Index Estimates

Measuring the impact of income tax policy changes upon after-tax income distribution can involve the use of various measures of tax progressivity. Two well-known measures are those developed by Kakwani (1977) and Reynolds and Smolensky (1977). The use of tax progressivity measures has been used in income distribution studies previously (see, for example, Leigh 2004). The Kakwani (1977) measure of income tax progressivity is estimated as:

$$P = \frac{(G - G^*)}{[\tau/(1-\tau)]} \tag{4.3}$$

where G is the pre-tax Gini coefficient, G^* is the post-tax Gini coefficient, and τ is the average income tax rate. According to Kakwani (1977), when $P > 0$ the tax system is progressive, when $P = 0$ it is proportional and when $P < 0$ it is regressive.

Figure 4.13 presents the Kakwani index across the advanced economies. Some facts emerge from the trends across the economies. Firstly, most countries appear to follow a U-shaped pattern in income tax progressivity. For example, in Australia, tax progressivity peaked in 1974 under the Whitlam Government, before undergoing a precipitous decline until the late 1980s before slight increases in the index throughout the 2000s, peaking in 2009. The shape of the Australian Kakwani Index calculated here follows that of Leigh's (2004) own calculations with a different index. Leigh (2004) applied the Suits Index measure of tax progressivity, who also noted an increase in tax progressivity from the 1990s to 2000s. The United States tends to follow a similar pattern, although the U-shape is more delineated compared to Australia. Enhancements in tax progressivity per the Kakwani Index are also observed in the UK, Canada, and Germany. The only country that deviates from the observation of increased tax progressivity is Japan; wherein the index decreased from a high of 0.55 in 1969 to approximately 0.20 in 2010 converging to the average observed for other countries. It should be noted that Japan demonstrated enormous entrepreneurial activity during the 1960s and 1970s.

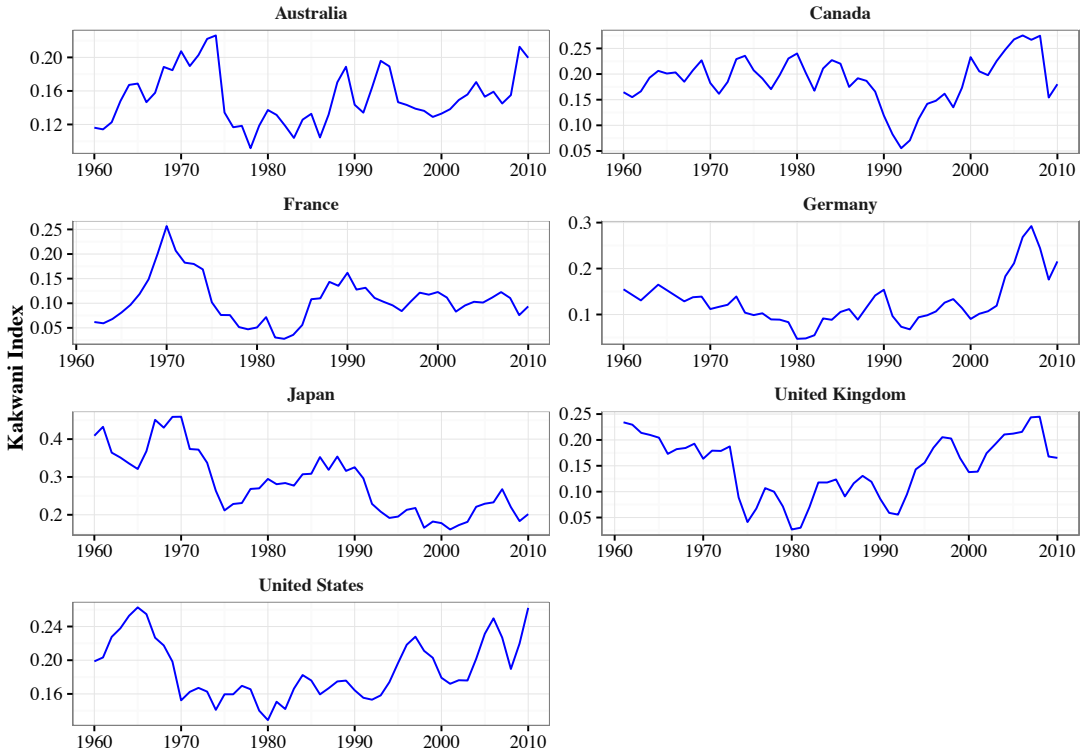


Figure 4.13 Kakwani income tax progressivity, 1960-2010

The observation that tax progressivity has increased since the 1980s and 1990s across the advanced industrialised economies ostensibly conflicts with the observed decrease in top tax rates depicted in Figure 4.12 and the increase in top income shares as reviewed in section 4.3.4.1. Numerous studies have shown a causal link between taxation rates and income shares. Piketty, Saez, and Stantcheva (2012) demonstrate that for the countries discussed here, the reductions in top marginal tax rates were highly correlated with a surge in top income shares (at the 1% level). DeLong (2002) points out that the United States generated hardly any billionaires from 1930 to 1980. The existence of a highly progressive taxation system in the United States constituted one of the strongest counters to the emergence of billionaires. The reversal in tax policy coincides with the almost immediate reappearance of the American billionaire.

Four explanations may partly conciliate the contradictory observations. Firstly, the estimation of the Kakwani Index utilised the after-tax *and* transfer income Gini coefficient. Transfers can, potentially, have a significant impact on inequality beyond taxation.[19] Secondly, it was noted in Section 4.3.3.1 that the ultra-rich, particularly the top 0.1% and above derive the majority of their income from capital (dividends, interest

[19] The discussion in section 4.3.3.2 mentions the impact of cash transfers to Brazil's poor and the reduction in the Gini coefficient.

receipts, or capital gains). These forms of income will not be impacted upon by changes in top marginal income taxes rates. Thirdly, the Gini coefficient tends to be less effective in capturing the extreme tails of the income distribution, placing greater emphasis on the median (Piketty, 2014a). Fourthly, the data on top income shares examine before-tax income shares. Very few studies have considered after-tax income shares which may permit a better estimate of progressivity of income tax rates.

Implicit Tax Rates Derived from Top Pre- and Post-Tax Income Shares

An alternative to the tax progressivity indexes is to estimate the direct impact of income tax on top incomes. The arithmetic impact of income tax on the top income shares is hard to assess across the all seven countries given a lack of data in this area. Previous studies by Atkinson and Salverda (2005) on the UK, Veall (2012) on Canada and the US (Piketty and Saez, 2006) permit some assessment of the arithmetic impact of taxation on the top shares. Figure 4.13 presents the "implicit tax rate" of the one percent. It is calculated as:

$$\tau_{IR} = 1 - \left[\frac{before\ tax\ share\ of\ the\ top\ 1\%}{post\ tax\ share\ of\ the\ top\ 1\%}\right] \qquad (4.4)$$

where τ_{IR} is the implicit tax rate.

For the United Kingdom and the US, the implicit tax rate on the top 1 percent shows a dramatic between fall from 1960 through to 1980. The implicit tax rate for the two countries went from a mean of 28.9% (UK) and 27.6% (US) in the 1970s to 21.4% and 13.4% in the 1980s, respectively. The subsequent two decades experienced slight reversals to this trend. By the 1990s, both the UK and the US had converged to implicit tax rates of 20%. In contrast, the Canadian experience somewhat reverses the observations in the UK and US. In the 1980s the mean implicit tax rate was 19% increasing to 26.4% in the 1990s and 24.7% in the 2000s. In contrast to the Kakwani Index, these estimates do suggest that the tax burden has systematically decreased across the UK and US, but data limitations limit the inferences that can be made.

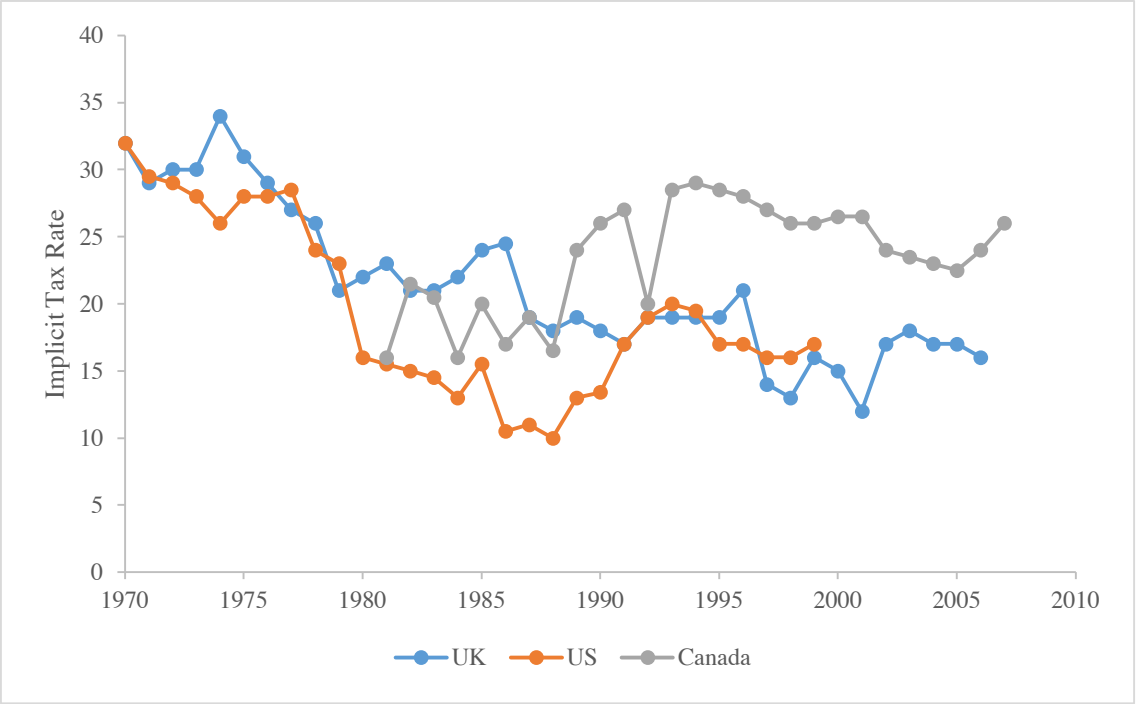


Figure 4.14 Implicit income tax rates, 1970-2006

Source: UK estimates from Atkinson and Salverda (2005), Canadian estimates from Veall (2012), and US estimates from Piketty and Saez (2006).

Response of Pre-Tax Top Income Shares to Income Tax Rate Changes

Numerous studies have econometrically examined the relationship between marginal tax rates and top *pre*-tax income shares.[20] Cross-country studies have typically found a correlation between the two, but the strength of the relationship is highly varied. Roine, Vlachos, and Waldenström (2008) found that countries that experienced substantial reductions in the top marginal top income tax rates only experience modest increases in top income shares. Numerically, a 10% decrease in the top marginal tax rate was found to be associated with a 0.4 percentage point increase in the share of the top one percent. However, Roine et al. (2008) also conclude that high marginal tax rates have an equalising effect beyond the direct impact of taxation such as societal norms briefly discussed in section 4.3.3 on executive pay. Another cross-country study finds a stronger effect. Atkinson and Leigh (2013) analyse the impact of a reduction in top marginal tax rates on top income shares across five Anglo-Saxon countries. They

[20] It is important to note that a reduction in the progressivity of income tax rates does not mean lower income tax collection. As Piketty and Saez (2007) show, lower tax rates for the wealthy have seen a commensurate increase in the level of tax collected for the US.

determine that a reduction in the top marginal rate can explain between one third and one-half of the rise in the income share of the top percentile.

Country-specific studies of the impact of changes in the top marginal tax rate upon top income shares largely corroborate the findings of cross-country studies, though some results establish no clear relationship. Dilnot, Kell, and Webb (1988) analysed the US 1979 top income tax reduction. They found that the level of tax receipts remained mostly constant from 1978 to 1985. The stability in tax receipts implying that incomes increased following the tax cut. The Canadian experience ostensibly reflects that exhibited by both UK and US. Saez and Veall (2005) find top income shares largely track income tax reductions, but this may represent a spurious correlation between the two variables. Instead, they argue that Canadian income shares more closely track US income shares. The authors suggest this is due to the competitiveness of the US after-tax regime relative to that of Canada. Workers with highly marketable skills move(d) to the US if after-tax compensation was more attractive there compared to Canada.

Studies on Europe reveals that the relationship between pre-tax income shares and tax rates may be somewhat ambiguous. Piketty (1998) and Landais (2008) both consider the relationship between income taxes and top income shares in France over time. Both find that personal income tax rates have had an insignificant impact on income shares. Piketty (1998) finds that the elasticity of taxable income with respect to taxation is far lower than what is observed in the US. Evidence from Germany shows evidence more in line with that of the US. For Germany, Gottfried and Schellhorn (2004) find that the elasticity of taxable income to changes in the tax regime is quite substantial for Germany, estimating an elasticity of approximately 1 – far higher than 0.4 for France.

A significant outlier is Japan. Moriguchi and Saez (2008) do not find any surge in top income shares in recent decades. As Figure 4.11 depicts, Japan has demonstrated a significant reduction in top income tax rates. In their conclusion, Moriguchi and Saez (2008) contend that neither changes in technology nor tax policies alone can explain the relative stability of top Japanese incomes shares, despite significant variations in both. Instead, economic policies beyond tax to those such as institutional arrangements surrounding corporate governance, and the lasting influence of occupation reforms of the US in the post-war era constitute greater influences on top income shares. Tax evasion and avoidance are, for the case of Japan, also largely dismissed as an

explanation for its low-income inequality trends (in recent decades). For countries beyond the focus of this study, empirical results demonstrate a clear relationship between falls in the top marginal income tax rates and increase in top income shares. For Sweden, Roine and Walenström (2008) find a significant inverse relationship between the two variables over the twentieth century. Similarly, in Finland the same causality is established.

The differing impact of reductions of the top marginal tax rate on pre-tax income shares could be explained by any number of alternatives as advanced in the literature. Leigh (2009) argues that there are two channels: 1) an immediate work disincentive effect and 2) a lagged effect via capital accumulation. Piketty, Saez, and Stantcheva (2012) argue that the impact of a reduced tax rate on pre-tax top income shares can be affected via three potential channels. These include:

1. An increase in hours of work supplied due to a fall in the income tax rate.
2. Increased rent seeking activity by executives or owners of enterprises. The increased rent seeking manifests through bargaining power.
3. Decreased tax avoidance.

On decreased tax avoidance Morelli, Smeeding, and Thompson (2014) state that the:

> reduction in top marginal tax rate could indeed reduce the propensity to evade taxation, increasing the tax collection and therefore income reported at the top. Hence, the increase in inequality may be due to a reduction in tax avoidance due to lower tax rates for richer groups. (p. 86).

Similarly, Reynolds (2007), for example, argues that the large growth in the top 1% income share, particularly during the 1980s, is owed to a shift in the tax base from corporate to personal income tax. Piketty, Saez, and Stantcheva (2012), empirically examine all three hypotheses. They argue that impact of changes in the top marginal tax rate upon pre-tax income shares are largely emblematic of greater institutional changes that favour the bargaining positions of executives. Decreased tax avoidance and increases in hours of work supplied (the marginal productivity story) are found to have little explanatory power.

4.3.4.2 Capital Income Tax and Base Shifting Between Income Sources

In Section 4.3.3.1, capital income was shown to be the dominate form of income amongst the highest earners. Therefore, it may be taxes related to capital income that might bear the clearest impact on capital income shares. Stilwell and Jordan (2007, p. 155) articulate the ultimate impact of this when stating that '[t]he unequalising effects of government policy have been further compounded by cuts in company taxes, dividend imputation and reduction of the effective rate of capital gains tax' (p. 155).

The evolution of statutory corporate tax rates and tax rates on dividends since the early 1980s are presented in Figure 4.14. Across all countries, there is a marked downward trend in both rates. In the 1980s, Australia's average corporate tax rate was approximately 45%. By 1999, this had decreased to 37%, before falling again in the 2000s. Throughout the 2000s, the average tax rate remained at 30%. The other sample countries largely mirror the Australian experience. In the 1980s, Japan's, the UK's and the US's average corporate tax rate was 42%. Germany exhibited the highest average through the 1980s at 56%. By the 2000s, all countries maintained corporate tax rates at or below 35%. The largest decrease is observed for Germany down to an average of 23% throughout the 2000s compared to 56% in 1980s.

The dividend tax rates also underwent significant falls across the sample. Since the early 1980s, taxes levied on dividends ranged 45% to 80%. In line with reductions in the corporate tax rate and top marginal income tax rates, the dividend tax rate was systematically decreased across all the countries in the sample. By 2010, most of the advanced economies taxed dividends between 10% to approximately 30%. The lowest tax rates in 2010 are observed in Japan (10.00%) and the US (19.99%). Australia, Canada, France and Germany all exhibited taxes ranging between 26.38% (Germany) to 30% (Australia).

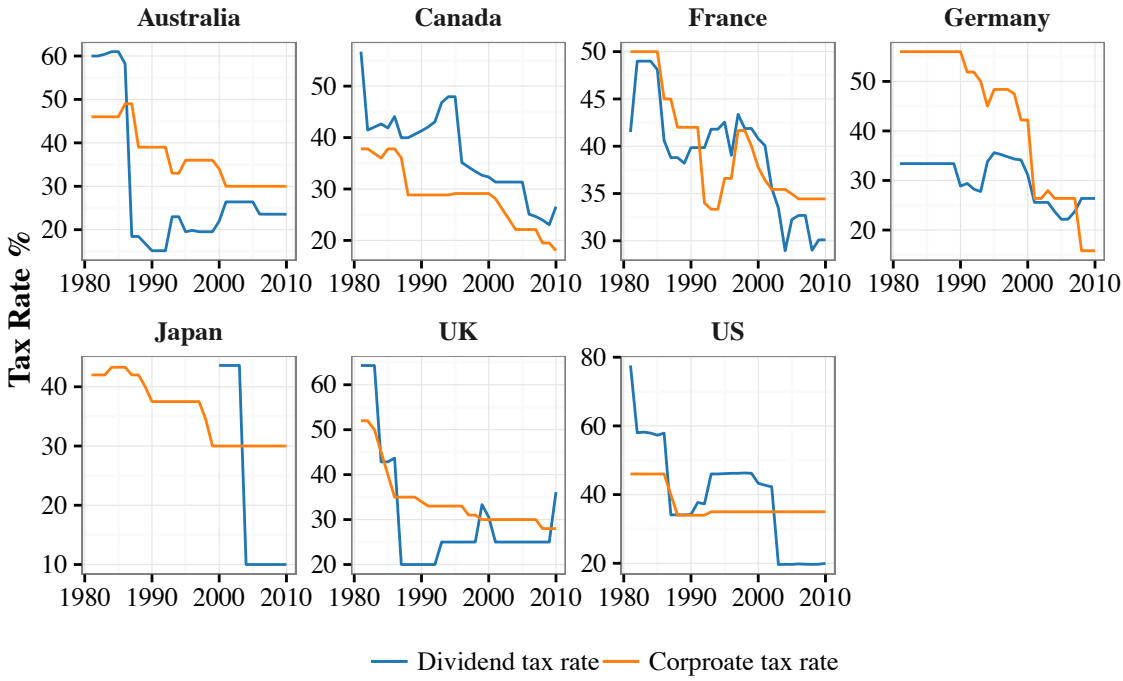


Figure 4.15 Dividend and corporate tax rates, 1980-2010

Source: OECD Tax Database. Retrieved from http://www.oecd.org/tax/tax-policy/tax-database.htm

Focusing solely on income taxes negates the various means via which the wealthy can circumvent or hide their large incomes from tax authorities by alternating between different income sources as required to exploit tax rate differentials (whilst also benefitting from decreases in the actual rate of taxation). Being wealthy permits routing earnings through other channels that are taxed effectively lower. The most obvious example of shifting between tax bases is that of executive compensation alternating between the use of wage compensation to stock options.

Directly measuring the impact of taxation on capital income is vastly more challenging due to the ways the wealthy can shift earnings between wages, dividends or capital gains. Piketty, Saez and Zucman (2013) recognize the potential for shifting income between different sources when stating: 'Sometime [sic] it is not all obvious to decompose these flows into a pure labor component (payment for labor services) and a pure capital component (compensation for capital ownership)' (p. 2). The point which Piketty, Saez and Zucman (2013) are conveying being that there is tremendous scope for the wealthy to shift income bases depending upon which provides the most favourable tax treatment.

The impact of changes in capital income taxes relative to wage income taxes can be observed through even casual empiricism. In Australia, dividend tax policy till 1986 implemented a classical tax approach to dividend payouts. In 1987, Australia abandoned the classical approach to dividend taxation and adopted a dividend imputation system. The change in policy also implemented a concomitant and drastic decrease in the tax payable on dividends. Dividend tax rates fell from 58.23% in 1986 to 18.4% in 1987. Commensurately, the top 0.01% share of capital income went from 59.94% in 1986 to 68.6% in 1986, and 82.64% in 1988. Throughout the 2000s, the dividend tax rate hovered at approximately 25%, while the capital income share of the top 0.1% averaged at 73%. Similar falls are observed across other countries in response to changes in the dividend tax system. The US registers one of the largest decreases on dividend tax. Throughout the 1980s the average tax rate on dividends was 52%, in the 1990s it fell to 43% before another precipitous fall to 26%. The large fall was met with a commensurate shift in the structure of top incomes in the US to that of capital income. Empirical studies on tax base shifting is sparse, though Gordon and Slemrod (2000) provide one of the best examples. Utilising time series data, they found that a one-point increase in the differential between the corporate tax rate and labour income tax rate 'raises reported personal labor income by 3.2%, and results in a fall in the reported corporate rate of return of 0.147 percent' (p. 46).

4.3.4.3 Wealth and Estate Taxation

Wealth and estate taxes have long been considered as a means of addressing perceived inequalities (Kopczuk, 2013). Taxation on stocks of wealth can take two forms, taxes on intergenerational transfers (after death of *inter vivos*) and taxes on an individual's net worth. For Piketty (2014a) a tax on the stock of wealth represents a key proposal to emerge from his treatise on wealth. In this subsection, the historical trends in both are considered as well as a brief review of the predictions of theoretical models and empirical studies that consider the impact of taxes in either form.

Intergenerational and Estate Taxes

To begin, intergenerational transfer and estate transfers are considered. For brevity, both are referred to as inheritance taxes from this point. Figure 4.16 depicts the top tax rates

on inheritances across the seven economies. Across all countries, with the exception of France, there has been a systematic decrease in the rate of taxation applicable to estates. Both Canada and Australia abolished their respective estate taxes in the 1970s. The abolition of the Canadian federal estate tax in 1971 was viewed in the era as being 'important in terms not of revenue but of what it symbolized: a retreat from decades of attempts to alter wealth distribution through taxation' (Bird, 1978, p. 134). In Australia, the *Estate Duty Amendment Act 1978* abolished estate duties that had been in place since 1915. Just as in Canada, the abolition of inheritance taxes had little impact on state revenues but represented a signal that Australia, as a nation, now appeared unconcerned by the concentration of wealth (Pedrick, 1982).

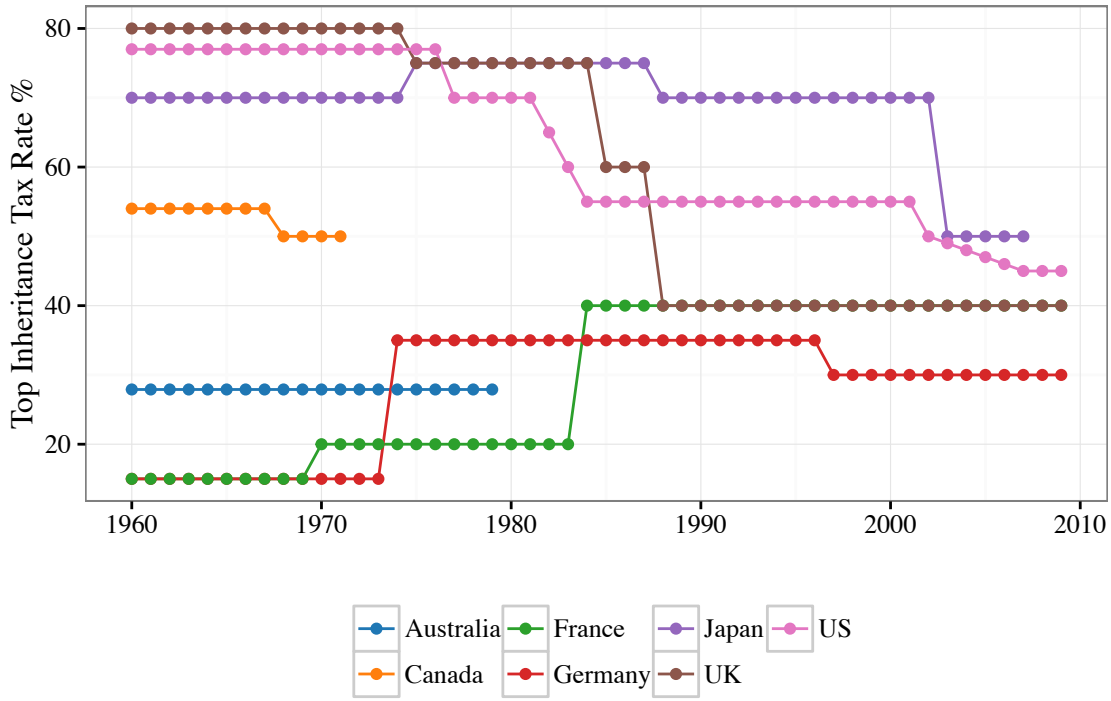


Figure 4.16 Top inheritance tax rates %

Source: Plagge, Scheve, and Stasavage (2010). Comparative Inheritance Taxation Database

In contrast to Australia and Canada, the other Anglo countries, the US and UK have both maintained inheritance taxes to the present day. In the US, the *Revenue Act 1940* had set top tax rates on inherited estates at 77% with a threshold of USD20,000. The rate remained stable until 1976, though the threshold had increased to USD40,000. In line with the observations in relation to income tax rates, and capital incomes, the inheritance tax rate underwent a substantial transformation. The *Economic Recovery Act of 1981* decreased the top tax rate to 65% and was further reduced in subsequent years

to 55% and the threshold exemption to USD325,000 in 1984 and further increasing to USD675,000 in 2001. The largest shake up in US inheritance taxes occurred in 2001 with the passing of *The Economic Growth and Tax Relief Reconciliation Act of 2001*. The new act provided for a ten-year schedule in decreases to the top tax rate to 45% in 2009 with the goal to repeal estate taxes, but was overturned by Congress. At the time of writing the top tax rate had been further reduced to 40%. The UK has also demonstrated similar falls to the US, with the top inheritance tax rate of 80% in 1960 decreasing to 40% with the passing of the *Finance Act 1987*. Roach (2003) finds that despite the falls in estate and gift tax rate, it remains the most progressive tax component in the US federal system.

Since the mid-1980s, the highest inheritance tax rates have been enforced by Japan. In 2003, tax rates fell to 50%, but remained above the rates observed in other countries. Figure 4.16 shows inheritance tax revenues in Japan have trended down since the 1980s. In addition, the proportion of estates taxed have also decreased significantly. This outcome appears primarily to be driven by an increase in the exemption threshold from 70 million Yen in 1988 to 275 million Yen. Further, the dramatic falls in Japanese real estate values would have had an impact in the number of estates meeting the minimum threshold.

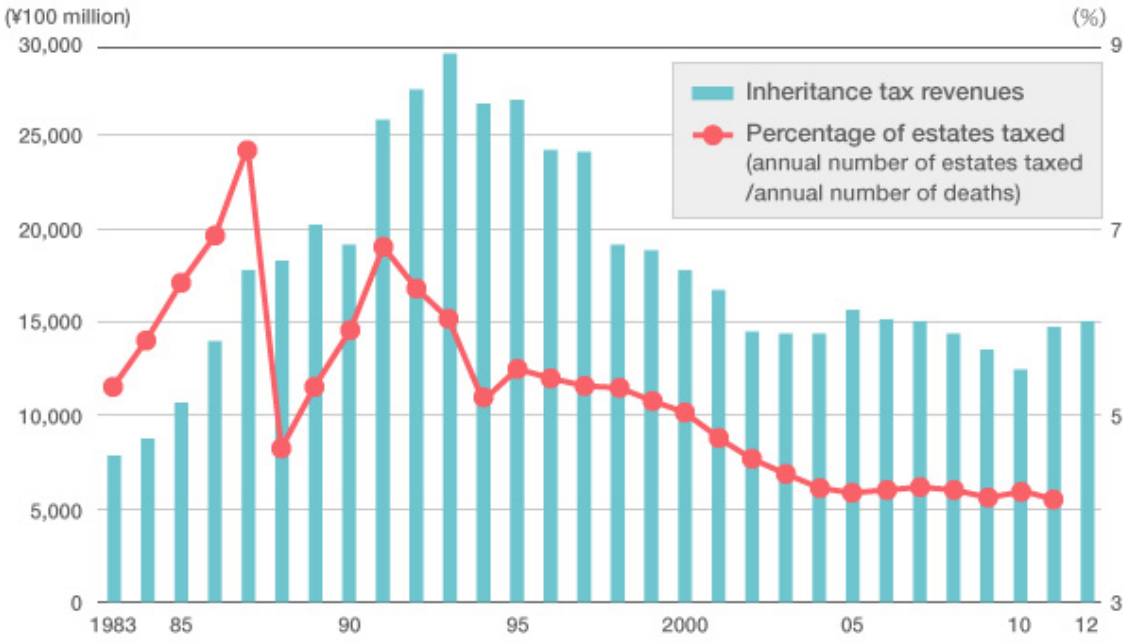


Figure 4.17 Percentage of Japanese estates taxed and revenues from estate and gift taxes

Source: Ministry of Finance, Japan. Retrieved from http://www.mof.go.jp/english/index.htm

Turning to continental Europe, both France and Germany have maintained modest levels of inheritance tax, but the progressivity of it has increased since the 1970s and 1980s. In contrast to the US and UK where the progressivity of inheritance taxes has declined significantly, for the two continental economic powers, it has increased. Piketty and Saez (2006) argue that the overall impact of the increase in estate and gift taxes is to have improved the *overall* progressivity of those nations' tax systems relative to the UK and US.

The review of inheritance tax rates only considers the progressivity of inheritance taxes and not their impact upon the wealth distribution. The relationship between inheritance taxes and the wealth distribution is ambiguous. Pedrick (1982) and Bird (1978) when advocating the reintroduction of death taxes were themselves sceptical of their overall *direct* impact on moderating wealth inequality. Pedrick (1982), for example, states that:

> In both countries [the UK and the US] there are still family fortunes of huge size notwithstanding that these family fortunes have passed through several generations with death taxes featuring rates that reach to seventy per cent. Plainly death taxes in the United Kingdom and the United States have been avoidable with expert guidance. (p. 453)

As mentioned in the above quote, much of these great fortunes escaped taxation through the rise of the professional family offices and trusts. Tuckman (1973) long recognised taxes directly on wealth, at least in the US, could be readily circumvented even in periods of high tax progressivity. Large family foundations such as the Ford Foundation or similar schemes by the Du Ponts largely rendered the effectiveness of estate taxes blunt (see e.g. Tuckman, 1983, pp 60-61).

A scarce number of theoretical papers have analysed the impact of changes in estate taxation on the distribution of wealth, with ambiguous results. Stiglitz (1978) utilising a general equilibrium framework finds that estate taxes may *increase* inequality. In the general equilibrium framework, estate taxes reduce capital accumulation and increase returns to capital[21]. Assuming that the elasticity of substitution between labour and capital is less than one, it will result in a greater amount of capital income than is

[21] This relationship is largely rejected by the empirical data presented by Piketty (2014a) that has shown a high degree of capital or wealth deepening and relative high returns to capital.

ordinarily received by the wealthy in the main. Dynamic general equilibrium models which have been augmented by more assumptions in relation to certain risks largely conclude that repealing estate taxes (or implementing them) will have minor impact on overall wealth distribution (Castaneda, Diaz-Gimenez, and Rios-Rull, 2003; Cagetti and Di Nardi, 2008).

Empirically, there is little contemporary work the considers the impact of estate and gift taxes on inheritance flows. Atkinson (2012) finds that the proportion of the UK population liable for estate taxation has fallen considerably today compared to the first half of the 20th century which may have significant implications for equity. For the US, Blinder (1976) found that even estate taxes of up to 60% had very little impact on distribution. Similarly, Verbit (1978) finds had no impact on the distribution of wealth from the 1920 to 1970 in the US.

Net Wealth Taxes

An alternative approach to tax estates is a net wealth tax. In Section 3.3, it was shown that wealth to income ratios have substantially increased across all the advanced economies since the 1960s. According to Joumard, Pisu, and Bloch (2012), a wealth on tax even at a modestly low rate could generate significant revenues for the state. Despite the mounting evidence of large increases in wealth to income ratios, national governments have largely ignored this as both a potential source of redistributing wealth or raising revenue. At the time of writing, only France, Norway (up to 0.7% at the municipal and 0.4% at the national level), and Switzerland (varies at the cantonal level) continue to levy a wealth tax. Germany abolished their wealth tax in 1998 as it was ruled unconstitutional. Australia, Canada, Japan, the UK and the US have never imposed an overall net wealth taxation (Price and Dang, 2011).

The French net wealth tax was introduced in 1981 by the Socialist Party. Labelled the solidarity tax on wealth (*Impôt de solidarité sur la fortune*) the tax was briefly repealed in 1986 but once again reinstated in 1989. The purpose of the scheme was to finance the minimum income scheme aimed at assisting those who could not find work and were not entitled to unemployment benefits. In terms of direct economic effectiveness, the

tax is a significant generator of income for the French state. Piketty and Saez (2006) estimate that the solidarity tax pushes the average tax rate in France up to 60%, and approaches the progressive tax regimes observed in the Anglo-Saxon countries in the 1950s and 1960s.

The impact of the solidarity tax on France's wealth distribution is difficult to assess. Much like other taxes, the behavioural response of individuals and households typically does not always accord with the intended purpose of the tax. Amoils and Read (2015) tracked the movements 323,400 French high net worth individuals from 2000 to 2014. During this period, they found that 42,000 high net worth individuals emigrated from France. Further, it was found that the majority of these individuals moved to countries that offered favourable tax treatment, including Luxembourg, Switzerland and the UK.

The ability of the wealthy to either move to more favourable locations due to tax advantages or to just shift wealth into jurisdictions with favourable tax treatment is considered in the next section.

4.3.4.4 Tax Avoidance and Evasion – Emergence of Off-Shore Financial Centres

Amongst the wealthy, a preferred method of minimising the effects of tax is via tax minimisation schemes through off-shore financial centres (OFC). What precisely are off-shore financial centres? The definition of an OFC has undergone substantial revision, particularly over the past two decades. At one end, the term off-shore financial centre is largely just a synonym, or a contemporary spin, for tax haven. Desai, Foley, and Hines (2004) define: 'Tax havens are low-tax jurisdictions that provide investors opportunities for tax avoidance' (p. 1). International governmental bodies have typically expanded the boundaries of OFC's roles beyond the strict tax evasion definition. For example, the 1998 OECD report, Harmful Tax Competition, is significantly more expansive than that of Desai et al. (2004). For the OECD (1998, pg. 23), a tax haven is defined as a jurisdiction that imposes or possesses:

1. No or only nominal taxes;
2. Lack of effective exchange of information;
3. Lack of transparency; and

4. The absence of a requirement that the activity be substantial.

Point (4) was an important inclusion as it recognised that these jurisdictions are typically synonymous with the "booking device" term, wherein transactions are not related to any real-world activity such as the creation of a shell company.

The term "tax haven" has subsequently become much more inclusive. Working towards an operational definition of off shore centres, Zoromé (2007) argued that the surveyed literature typically compromises three core definitional elements if aggregated. According to Zoromé (2007, pg. 4):

> Three distinctive recurrent characteristics of OFCs have emerged from these definitions: (i) the primary orientation of business toward nonresidents; (ii) the favourable regulatory environment (low supervisory requirements and minimal information disclosure) and; (iii) the low-or zero-taxation schemes.

Another definition provided by Di Nicola (2006, pg. 3), provides a similar meaning:

> An offshore centre is a country which provides to the residents of other countries the opportunity to establish companies and to use its financial services for activities outside this centre, offering in most of the cases some advantages such as low taxation rates. In other words, the aim of the users of the offshore centres is to take advantage of the lower tax rates offered by the offshore centre which is not synonymous to tax evasion as is the general perception….

The importance of an operational definition is essential from three aspects. Firstly, there is, of course, the taxation dimension, and the associated lost taxation revenue due to tax avoidance related of off-shore centres. Secondly, there are substantial anomalies in international payments data of which offshore centres play a significant role. Thirdly, establishing a more inclusive definition of an offshore centre necessarily permits a wider context on how ultra-high net worth individuals can hide their wealth, often in plain sight, in *jurisdictions not necessarily associated with tax havens* in the popular mind.

Exploring the full impact of OFCs wealth accumulation is beyond the scope of this study. A recent Zucman (2014) presents numerous estimates as to the wealth hidden in

these centres and the tax revenue lost. Wealth here is taken to mean financial wealth and does not incorporate assets such as yachts. Table 4.5 presents the estimates produced by Zucman (2014). Notable in the estimates is the dominance of Europe, with an estimated $2.6 trillion held in OFCs, representing a tax revenue loss of $75 billion. Although the advanced economies hold the most wealth in *absolute* terms, developing regions maintain the highest proportions of their respective wealth in these centres. Both Russia and the Gulf countries maintain up to and over 50% of their financial wealth in OFCs. Wealthy individuals in Latin America and Africa also hold a large proportion of their wealth in these centres.

Table 4.5 Statistics on offshore wealth and associated tax revenue losses

	Offshore wealth ($ bn)	Share of financial wealth held offshore	Tax revenue loss ($ bn)
Europe	2,600	10%	75
USA	1,200	4%	36
Asia	1,300	4%	35
Latin America	700	22%	21
Africa	500	30%	15
Canada	300	9%	6
Russia	200	50%	1
Gulf countries	800	57%	0
Total	**7,600**	**8.0%**	**190**

Source: Reproduced from Zucman (2014)

Estimates of the amount of wealth held in off shore financial centres or tax havens vary substantially depending upon the methodology employed. Zucman (2014) derives the $7.5 trillion estimate via the presence of anomalies in the national accounts of countries. Henry (2012) furnishes vastly higher estimates, valuing the total wealth held in tax havens between $21 trillion and $32 trillion in financial wealth. More recent estimates by Henry (2016) further present divergent estimates particularly for the developing world. Henry (2016) estimates that flows into OFCs from the developing world total approximately $12.1 trillion compared to Zucman's (2014) estimate of $3.5 trillion. The major variations occur concerning Russia (Zucman estimate of USD200 billion, Henry estimate of USD1.3 trillion) and Asia (Zucman estimate of USD1.3 trillion, Henry estimate of USD4.5 trillion).

Previous estimates have tended to align with Zucman (2014) or been more conservative in their estimates. For example, the IMF estimated $1.7 trillion in wealth was held in OFCs (IMF, 2000). The IMF estimate was based on the portfolio flows through off shore financial centres. In the same year, the NGO Oxfam (2000) estimated that OFCs held in custody between $6-$7 trillion in financial wealth. In 2007, the Boston Consulting Group estimated the wealth hidden in tax havens at approximately $7.3 trillion.

Notwithstanding the divergent estimates of wealth in OFCs, the cost to societies and their national governments in the form of lost tax revenue are substantial, even when assuming the conservative estimates of Zucman (2014). Zucman (2014) estimates that being able to tax the top 0.1% of the population's wealth would impact significantly not only on government revenue but reduce global wealth inequality to a material degree. Zucman (2014, p. 53) argues that assuming 'all unrecorded offshore wealth belongs to the top 0.1%, eradicating offshore evasion would thus raise as much revenue as increasing the top 0.1%'s federal income tax bill by close to 18%.'

The revenue loss estimates of Zucman (2014) do make some simplifying assumptions that potentially overestimate the losses from OFCs. The US estimated revenue loss assumes that income tax is paid at the dividend rate of 30% and an estate tax of 40%. Clarke (2016) points out that the effective tax rates paid by the top 1% are below both these estimates, and that, further, the return on capital that Zucman (2015) assumes at 7% is historically high.

International Effectiveness – A Note on the Political Economy of Tax Treaties and Havens

Thwarting the returns to wealth by reducing the level of tax avoidance and evasion in tax havens has received policy attention on a global and regional scale. At an international level, the core mechanism through which personal capital incomes can be taxed is via the implementation of an information exchange between two countries. The two primary forms of information exchange entail automatic exchanges or direct information requests by a government to another national government. Although the former is viewed as the more effective means of detecting tax evasion or avoidance, it is

often the latter that is enshrined in bi- and multi-lateral treaties (Keen and Lighart, 2006).

The primary international institutional framework for dealing with tax evasion is through the OECD (Hanlon, Maydew and Thornock, 2015). Beginning with a working group on tax havens in 1998 (OECD, 1998), the OECD issued a report listing 35 jurisdictions as tax havens. According to Hanlon et al. (2015, p. 8),

> By 2002, 31 of the countries had agreed to cooperate with the OECD, though implementation in some cases took much longer. By 2009, there were no countries on the OECD blacklist and only four countries on the grey list… and those were labelled as "other financial centers" rather than tax havens.

The decision by tax havens to cooperate with OECD seemingly has had a positive impact if considered from the viewpoint of the number of treaties signed. Table 4.6 lists the number of double tax treaties (DTCs) and tax information exchange agreements (TIEA) since 2008. The turning point was the G20 London Summit where states proposed a four-tier system of blacklisted havens. Since then the number of treaties has increased from 65 to 725 by October 2011. Although the growth is on the surface impressive, it potentially masks two problems. Firstly, a proportion of the treaties would be DTCs. Double tax treaties have been criticised as being ineffective in the instance of tax havens as they permit a requested party to remain concealed behind bank secrecy. Sheppard (2009) argues that this is particularly present in the treaties signed by Luxembourg and Switzerland. The provision to permit bank secrecy and confidentiality effectively provides a mechanism for Switzerland and Luxembourg to rebuke requests for information on the basis of the secrecy clauses. Secondly, the use of direct tax agreement between a country and a tax haven country may not be appropriate as the latter may have very low or no taxes on income or profits to begin with.

Table 4.6 TIEAs/DTCs signed between G20 summits

Summit	Signed Treaties
G20 Washington DC Summit (15 Nov, 2008)	44
G20 London Summit (2 Apr, 2009)	65
G20 Pittsburgh Summit (25 Sep, 2009)	229
31 Dec, 2009	364
G20 Toronto Summit (26 Jun, 2010)	524
G20 Seoul Summit (12 Nov, 2010)	606
13 Oct, 2011	725

Source: *OECD*, http://www.oecd.org

By contrast, TIEAs are meant to provide a more effective legal mechanism of reducing tax evasion. Tax information exchange agreements are far less broad in scope than DTCs as they are specifically designed to focus on information exchange. The effectiveness of TIEAs can be considered both from a legal efficacy perspective and from an economic perspective where the portfolio responses of individuals can be observed.

Legally, numerous problems have been identified with the efficacy of TIEAs in their current form. Firstly, a tax haven may not possess the information in a form to be useful to tax authorities (Sullivan, 2009). Often this may be due to the tax haven not requiring clear identification when individuals set up accounts or shell companies. For example, the British Virgin Islands do not require any identification of shareholders or directors despite being home to thousands of registered corporations. Therefore, a request for information may not give rise to any genuinely useful information. Secondly, tax information exchanges only take place on a request basis (Munizer, 2009; Sullivan, 2009). For tax authorities, this presents two significant impediments to persecuting cases of tax evasion. First, requests for information require significant effort on the part of tax authorities involving the use of detailed evidence and case arguments. Assuming such an application is made, the matter would likely be tied up in courts for years – beyond that provided by the statute of limitations in each jurisdiction (Sheppard, 2009). The onus upon tax authorities is such that use of TIEAs is low. In the US, only 894 information requests were made between 2006-2010. Contrast this with the estimated 19,000 US residents who maintained bank accounts at a *single* Swiss bank.

The empirical evidence on the economic efficacy of tax treaties is small, and that which does exist is mixed. A recent study by Hanlon, Maydew and Thornock (2015) investigate a form of tax evasion termed "round-tripping" where individuals conceal funds in offshore tax havens and plough those funds back into the US securities markets. Specifically, they test whether foreign portfolio investment into the US from tax havens decreases with information exchange initiatives covering the period 1984 to 2008. Hanlon et al. (2015) report that their regression model estimates show reduced inbound foreign portfolio investment from tax haven countries after the OECDs initiatives to combat tax evasion since 1998. However, a potential issue of the Hanlon et al. (2015) analysis is that it does not model for the possibility that the decrease in inbound foreign investment via tax havens is compensated by an increase in investment flows from other havens that have not signed a treaty with the US.

The analysis of geographical portfolio shifting between tax havens largely reveals that the effectiveness of tax treaties is mostly rendered ineffective due to the bilateral nature of said treaties. Gorea (2015) specifically explores this possibility for US investors for the period 2002 to 2013, a period that saw greater tax treaty formulation activity than the period covered by Hanlon et al. (2015). Two findings of significance emerge from Gorea (2015) study. Firstly, no statistically significant evidence is found that the amount of debt and equity held by a tax haven is reduced by the signing or implementation of a tax treaty between the US and a tax haven. Secondly, and most importantly, the signing and or implementation of a treaty is found to have a statistically significant impact on the flow of equity and debt funds into havens that have not signed a bilateral treaty with the US.

Alternative investments in the form of bank deposits also represent an important aspect of offshore tax haven services. The evidence on the response of bank deposit flows to tax treaties is limited but mainly signals the problems inherent in bilateral tax treaty arrangements. A recent investigation by Johannesen and Zucman (2014) analysed the response of bank deposit flows in a panel setting, covering 52 tax havens and 220 potential country partners for the period 2004 to 2011. In line with the findings of Gorea (2015), Johannesen and Zucman (2014) find that in response to the establishment of a tax treaty, deposits invariably flow to the least compliant tax havens. Hence, although there have been shifts in the allocation of deposits, global levels of deposits held in off shore accounts have largely remained stable.

While the TIEAs represent a multilateral approach (in so far as it is designed by the OECD), unilateral attempts have been made at increasing tax compliance. These have largely emanated from the EU in the form of the EU Savings Directive and from the US in the shape of the *Foreign Account Tax Compliance Act* (FATCA). The EU Savings Directive was introduced in 2005 and provided that Swiss banks withhold tax on interest income on the accounts of EU residents. As an incentive to EU resident savers, '… [s]avers can escape the withholding tax if they voluntarily declare their income to their home country tax authority' (Johannesen and Zucman, 2014, p. 87). Although the EU directive has not provided a major increase in revenues, Johannesen and Zucman (2014) do attribute it improving tax compliance modestly. A major factor of differentiation between the EU Saving Directive and TIEAs was that the former incorporate elements of automatic information exchange.

4.3 Summary

The purpose of this chapter was to place the accumulation and distribution of wealth in the context of broader socioeconomic mechanisms.

The chapter adopts the framework of Saez and Zucman (2014) who decompose wealth accumulation per an accounting identity. The disparity in wealth accumulation was explored in the context of the great consumerist and financialisation forces that have had an impact on households. The degree of consumption has increased since the 1960s across most countries. However, the propensity to consume *decreases* with household wealth in both the US and Europe. In Australia, too, the extent of consumption as a proportion of wealth diminishes with wealth percentiles, and the highest wealth percentile exhibits the lowest relative consumption to wealth.

Financialisation has also enhanced wealth accumulation for the wealthiest households, a point that will be tested in Chapter 5. It was found that capital income is increasingly becoming an important source of wealth accumulation relative to labour income for the wealthiest households. Conversely, the poorest households are increasingly assuming greater debt levels, as demonstrated by the Australian, UK and US data, to sustain consumption levels.

In addition, for countries that data is available, capital income was found to constitute an increasing share of income for the wealthiest households. The exception to this observation is Canada where labour income dominates even at the highest income percentile.

The reduction in the level of taxation was also advanced as a contributory factor to the process of wealth accumulation. Since the 1980s, the level of top marginal tax rates has systematically declined across most advanced countries. Pre-tax income shares have also increased, in line with less rigorous oversight from tax authorities. Further, tax base shifting potentially has had an impact on wealth accumulation with the wealthy shifting their main sources of income between capital and labour whenever it is advantageous to do so. Calls to mitigate the impact of tax evasion were considered. The considerable amounts of wealth held in off-shore financial centres makes it an important aspect of taxation policy. However, the political will to deal with these issues may mitigate the effectiveness given the adoption of bilateral framework.

Chapter 5 The Role of Wealth in the Risk Aversion of Australian Households Portfolios

Chapter 5 purpose is to econometrically test to what extent wealth impacts household portfolio allocation. In Chapter 4, it was shown that the increasing financialisation of household balance sheets has resulted in an increasing shift toward higher returns generating assets by wealthier households. In this Chapter, this is further empirically tested in the framework of utility theory and relative risk aversion. Standard neoclassical economics often assumes no relationship between wealth holdings and an individual's asset allocation. This hypothesis is used as the benchmark in Chapter 5. To test the hypothesis, the analysis utilises a sample of Australian households from the HILDA longitudinal survey.

5.1 Introduction

The objective of this chapter is to empirically determine whether household risk aversion is a function of wealth. Providing evidence for the distribution of risk aversion has relevance not only to issues relating to finance such as the equity risk premium, but potentially also to those relating to wealth accumulation and distribution. Saez and Zucman (2014), in their work on the inequality of wealth in the US, emphasise the importance of risky assets as a channel through which large wealth can accumulate. Baranzini (1991) formally recognise the importance of risk aversion to both wealth accumulation and distribution, arguing that assuming the existence of decreasing relative risk aversion (RRA) with the amount of wealth, a two-class society can emerge in which the wealthiest end up with very high capital stock per capita.

In Australia, the debate has added complexity with powerful structural and institutional changes seeing an equity revolution over the last 15 years. These changes have seemingly released risky investing opportunities from the purview of the rich to the masses. In 1998, the then Australian Prime Minister John W. Howard sought to establish Australia as the 'greatest share owning democracy' in the world (Howard, 1998). Becoming the linchpin of conservative Coalition policy, Australia did indeed experience a dramatic upward shift in equity ownership across all levels of society. Donoghue, Tranter and White (2003) find that in 1991, one in seven Australian adults allocated a part of their wealth to equities. By 2004, this had increased to over half of the population (Australian Stock Exchange, 2005, p.6). In many ways, the financial risk tolerance now displayed by Australian households more closely reflect the predictions of standard utility theory where risk aversion is assumed to be constant across all wealth levels. Although the equity revolution ostensibly has seen a shift in the portfolio structures of the average household, there may exist substantial wealth effects, which this research aims to unveil.

Still, the rise of the Australian wealth management industry suggests that, for those who can afford it at least, households are increasingly holding riskier portfolios than has previously been observed. From 1988 to 2013, the funds under management have grown at approximately 10.4% per annum. By December 2013, $2.3 trillion in wealth was being managed by the wealth management industry (Australian Bureau of Statistics, 2013). A substantial portion of the growth is associated with Australia's compulsory pension contribution scheme, superannuation. However, the increases in funds under management have seen a concomitant increase in the financial planning sector and private banking. According to the Boston Consulting Group (2013, 2014), the number of millionaire households in Australia, spurred by a booming economy, has increased from 178,000 in 2013 to 195,000 in 2014. Private banks, both Australian and foreign, have been the beneficiaries of this immense growth and are increasingly courting and offering their services to high net worth individuals (Dunn 2013). In Europe, Hackethal, Haliassos and Jappelli (2012) find that wealthier investors tend to make more use of financial advisors than the less wealthy households do. Commercial research reports that of the Australian mass affluent, those earning AUD150,000 or more, 25% use financial advisors compared to 10% of the less affluent (BlackRock, 2013). Despite much anecdotal evidence that the wealthier Australian households

exhibit DRRA preferences, as manifested in their greater demand for wealth management services, there is scant direct evidence of this.

The revolution overtaking Australia during the Howard Government years seemingly reconciled household portfolios with the standard preferences story in financial economics. An assumption of most asset pricing theories is that utility functions exhibit constant RRA in wealth. The modern approach to portfolio theory predicts investors select portfolios that maximise the expected utility of their final consumption when assuming decision making under uncertainty (von Neumann & Morgenstern, 1947). Uncertainty or risk is the constraining factor on how much utility is gained from marginal increases in wealth. The degree of RRA is assumed to be constant at any given level of wealth, consumption or life-cycle stage. Alternative preference specifications to the standard utility model have been formalised and advanced wherein wealth has a great impact on RRA levels, including: (i) habit formation (Constantinides, 1990); (ii) direct preferences over wealth (Gong and Zou, 2002); and (iii) loss aversion preferences (Tversky and Kahneman, 1991).

In Chapter 1, section 1.2, the utilisation of neoclassical models is heavily criticised. The purpose of this Chapter, is to test the empirical validity of a key neoclassical assumption, that of constant relative risk aversion. The assumption regarding risk aversion plays a significant role in the estimation of wealth distributions and the process of wealth accumulation. Several studies that calculate, for example, aggregate wealth holdings, assume CRRA preferences (see for example, Skinner, 1988; Hubbard, et al 1994; Aiyagari 1994; and Hugget 1996). While there has been extensive theoretical work in this area, empirical evidence to support the existence of nonconstant RRA preferences, particularly in the Australian context, is still relatively scarce. This study presents results on the distribution of risk aversion across Australian households and the concomitant influence of wealth and other socioeconomic characteristics that households exhibit.

A potential avenue that has not been fully explored is the impact of financial advice on risk aversion. More recently, with the publication of Thomas Piketty's (2014) book, *Capital in the Twenty First Century,* the issue of wealth inequality among societies of advanced Western economies has been highlighted in both academia and popular media. An important argument made by Piketty (2014a) is that wealthier households

can generate greater returns on capital. Typical financial economic models often assume that households exhibit constant RRA, which implies that the return on capital is the same for all households. Piketty (2014a) argues, however, that this does not necessarily reflect common sense, for two reasons:

> [a wealthier person] has greater means to employ wealth management consultants and financial advisors. If such intermediaries make it possible to identify better investments, on average, there may be 'economies of scale' in portfolio management that give rise to higher average returns on larger portfolios. A second reason is that it is easier for an investor to take risks, and to be patient, if she has substantial reserves than if she owns next to nothing. (pp. 430-431)

The chapter contributes to the literature in three ways. Firstly, it focuses on risk aversion, in contrast to Cardak and Wilkins (2009) and Worthington (2009) who focus on background risk and diversification levels, respectively. Cardak and Wilkins (2009) found a negligible relationship between wealth and risk aversion. Further neither of the previous papers provided a direct estimate of Australian households' risk aversion. This study uses a measure of risk tolerance based on the methodology developed by Bucciol and Miniaci (2011), where risk tolerance parameters are derived from the observed mean-variance space of the portfolios held by households. Secondly, the measure of risk tolerance can be used to estimate the overall levels of risk aversion in the Australian economy. To the researcher's knowledge, this is the first study to do so in Australia using a micro panel dataset.

Lastly, the chapter presents cautious preliminary results on the relationship between risk aversion, wealth and financial advice. Unfortunately, there are two significant limitations on using this data with the estimate RRA parameters. Firstly, the question posed in the HILDA survey focuses on retirement advice and not on general financial advice. Secondly, is the issue of timing and what period the question covers. Wave 7 questions were conducted in late 2006, a full year after wave 6 from which the RRA parameters are estimated. In addition, no information is provided as to what year the actual financial advice was sought and may have occurred in the early part of the decade.

Section 5.2 surveys the theoretical and empirical literature on risk preferences. Sections 5.3 and 5.4 introduce the empirical framework and describe the HILDA survey (waves 2, 6 and 10) and financial time series data. Section 5.5 reports on the magnitude distribution of RRA across the Australian sample and various wealth quartiles, presenting the results of various pooled and fixed effects regressions involving the derived estimate of risk tolerance from the construction of mean-variance portfolios. Preliminary results on the relationship between financial advice and risk aversion are also presented. Section 5.6 concludes and discusses possible future research avenues.

5.2 Literature Review

5.2.1 Theoretical Review

The modern approach to portfolio theory predicts investors select portfolios that maximise the expected utility of their wealth, not their expected wealth itself. Uncertainty or risk here is the restraining factor on how much utility is gained from marginal increases in wealth. Arrow (1971) and Pratt (1964) developed a number of hypotheses in which RRA is either decreasing, increasing or constant in wealth: decreasing relative risk aversion (DRRA), increasing relative risk aversion (IRRA), and constant relative risk aversion (CRRA).

These hypotheses have received considerable theoretical attention. Meyer and Meyer (2006) state that the literature numbers well into the hundreds, with most offering strong support. One of the earliest is Cass and Stiglitz (1972), who build on Arrow's (1971) and Pratt's (1964) work, exploring the impact of wealth fluctuations on portfolio changes by utilising three characterisations: 1) Portfolio characterised as the proportion of wealth invested in risky and riskless assets; 2) The statistical properties of the portfolio; and 3) Portfolios characterised in terms of certainty equivalents. Under all three scenarios, DRRA is found to be the optimal hypothesis.

Latter models have introduced more realistic economic phenomena. A related strand of literature examines how risk aversion alters according to investors' life cycles. Stochastic life-cycle models approach the problem of portfolio choice by either incorporating income or consumption risk. Significantly, these studies assume that the coefficient or RRA is constant in wealth. Changes or shocks in wealth, for example, do

not have an impact on risk tolerance. Consequently, as Carroll (2002) argues, the standard stochastic life-cycle model predicts that wealthy households are essentially scaled-up versions of the rest of the populace, that is, risk aversion is assumed to remain constant with wealth fluctuations. Instead, any variation in risk aversion is typically explained by income or business risk held by investors. Wachter and Yogo (2010), for example, build a consumption-based model in which households with high permanent incomes are less risk averse and, therefore, allocate a higher share of their wealth to equity. The key insight of Wachter and Yogo (2010) is that transitory wealth variation is less (if it has any effect at all) important in determining portfolio allocation than permanent income. Heaton and Lucas (2000) argue that in the presence of business income, households with entrepreneurs will be more risk averse and reflect this in their portfolio holdings.

The strong assumption of CRRA in wealth has been criticised. Carroll (2002) points out, for example, that under such models, counterintuitive predictions emerge. It can be argued that as wealth grows, future consumption is more likely to be financed out of wealth rather than income. Thus, financial risk tolerance would be expected to decline with wealth, as consumption levels are vulnerable to risk. This counterintuitive outcome is at odds with the view that the wealthy often have more exotic portfolio structures (Carroll, 2000).

Before launching into a discussion of alternative theories, it is worth stating what standard theory has to say about age effects on financial decision-making. Earlier models of portfolio choice assumed that even life-cycle considerations did not produce heterogeneity in risk preferences. Intuitively, one would expect that portfolio decisions will be constrained by the time horizon of the investor, as would be evident in the context of investors planning for their retirement. For example, given the existence of an equity premium, one would expect, in particular, younger investors to allocate the majority of holdings to risky equity holdings to maximise capital growth. Papers by Mossin (1968), Merton (1969) and Samuelson (1969) provide theoretical predictions as to the relationship between life-cycle and portfolio structure. According to each, an optimal static portfolio is also dynamically optimal; therefore, portfolio allocations can be decoupled from life-cycle considerations. Such a conclusion, therefore, demonstrates that risk aversion preferences should not only be constant in wealth, but also in life-cycle stages. All papers assume, however, that risk aversion is constant in wealth.

Theoretically, accounting for the possibility that the rich are indeed different in terms of attitudes to risk lends itself to two alternative explanations. The simplest explanation is that risk tolerance is *ex ante* immutable and heterogeneous across households. Under this framework, households that possess a higher risk tolerance allocate resources to higher expected return portfolios. In the long run, high-risk portfolio holders are rewarded with higher returns, hence generating more wealth than households with lower risk tolerance, resulting in a compound effect.

Alternatively, a number of theories have been advanced under the collective heading of The Spirit of Capitalism paradigm. Although these models may not necessarily share the same motivations, they do share the notion that wealthier individuals will exhibit DRRA in wealth. The Spirit of Capitalism was first articulated by Weber (1958) and is the foundation upon which more formal models with DRRA preferences rest. Weber (1958) argues that:

> Man is dominated by the making of money, by acquisition as the ultimate purpose of his life. Economic acquisition is no longer subordinated to man as the means for the satisfaction of his material needs. This reversal of what we should call the natural relationship, so irrational from a naive point of view, is evidently a leading principle of capitalism. (p. 53)

Bakshi and Chen (1996) formalise Weber's (1958) thesis by assuming that wealth enters directly as a luxury good into the utility function of an investor. Whereas the standard life-cycle approach restricts the utility of wealth to the implied consumption benefits it provides, Bakshi and Chen (1996) argue that wealth in itself confers substantial social status advantages upon households beyond that for which consumerism alone can provide. For Bakshi and Chen (1996), preferences can be expressed as $max\Sigma e^{-pt}E_0[u(C_t, S_t)\Delta t]$, where *C* and *S* represent consumption and social status, respectively. Bakshi and Chen (1996) assume that *S* is strictly increasing in wealth and, therefore, wealth can be incorporated directly into the utility function instead. It should be emphasised that for Bakshi and Chen (1996), it is the relative social standing that increases risk taking, which protects or enhances their social status against a reference group. The intensity of this drive increases at higher wealth levels where social referencing is more acute. In a somewhat similar vein, Carroll (2000)

develops a framework to explain why wealthier households tend to save more and consume less without reference to social status. Carroll (2000) develops a bequest motive in which risk taking is increased to bolster wealth levels over the investor's life in a bid to maximise terminal wealth. Here, consumers decide how to allocate resources between current consumption or end-of-life wealth, with bequeathing fortunes to future generations being the primary motive. All else being equal, both Bakshi and Chen (1996) and Carroll (2000) predict that the wealthy will have greater risk tolerance.

5.2.2 Empirical Review

Empirically, a number of studies have used the availability of micro panel data to establish the level of risk aversion and the extent to which risk levels change with wealth. Typically, the majority of studies estimate models in which the ratio of risky assets to total assets or net wealth is used as a proxy for risk tolerance. In this vein, Cardak and Wilkins (2009) utilise the HILDA survey to explore the risk tolerance of household portfolios across a range of variables. Their principal focus is on determining the roles of different sources of background risk, although they do investigate wealth effects. Using a censored Tobit model, Cardak and Wilkins (2009) find that the proportion invested in risky assets is determined by a range of socioeconomic factors that show a stronger effect than net wealth. Cultural heritage, age and education all have a positive impact on the degree of risk that investors are prepared to assume. A limitation of Cardak and Wilkins (2009) is that they do not provide estimates on the level of risk aversion in the economy. Further, given the possibility that risk aversion and wealth are potentially endogenous, their estimates may be biased. Chiappori and Paiella (2011) argue that the wealth and risk aversion relationship is difficult to establish *a priori*. For example, more risk-averse individuals may choose investments with lower expected returns, therefore generating less wealth relative to risk-tolerant individuals. A pooled regression may not be able to disentangle the relationship between the two.

Reflecting the availability of data, the relationship between wealth and risk tolerance has received more empirical attention internationally. One of the earliest studies is that of Blume and Friend (1975), who measure how risk varies with wealth by using the proportion of wealth allocated to risky assets and dividing their sample of US

households across five wealth categories. Further, they use various definitions of wealth. Under none of the categories do they find that risk aversion (risky assets to assets) systematically varies with wealth, concluding that CRRA preferences hold. In addition, they find that risk aversion hovers between 2 and 3 (Blume & Friend, 1975). Mankiw and Zeldes (1991) utilise data from a 1984 US survey, Panel Study of Income Dynamics, to explore how consumption levels vary between stockholders and non-stockholders with a view to testing the empirical validity of the consumption with the Capital Asset Pricing Model (CAPM). In contrast to Blume and Friend (1975), Mankiw and Zeldes (1991) found that consumers demonstrated little risk tolerance with only 47.7% holding equity, with the RRA coefficient at approximately 21, but the wealthier did demonstrate less risk aversion. Barsky, Juster, Kimball and Shapiro (1997) use the US Survey of Consumer Finances and establish an RRA estimate of approximately 12, finding evidence that this is decreasing in wealth. Here, it should be emphasised that the lower the RRA coefficient, the lower the risk aversion.

With the increasing abundance of longitudinal data, it is surprising that very few studies have exploited the advantages that panel data can confer to the modeller. An exception is Chiappori and Paiella (2011), who study whether Italian households possess CRRA preferences using the Bank of Italy's Survey on Household Income and Wealth. Utilising a first differences model, they find little evidence to support the existence of DRRA preferences, concluding that, at least for Italian households, CRRA preferences hold. They argue that the level of household mortgage debt and whether the household is engaged in business ventures are the main drivers of risk preferences. Like Blume and Friend (1975), risk preferences are measured as the proportion of risky assets to net wealth. Age also was found to have a strong, concave relation to risk preferences, with middle-aged households exhibiting less risk aversion. Further, the RRA coefficient was found to average approximately between 2 and 4 depending on the year, which are levels similar to those of Blume and Friend (1975) but well below those found by Mankiw and Zeldes (1991).

An alternative approach to measuring risk preferences is provided by Blake (1996) and Bucciol and Miniaci (2011), who derive risk preferences assuming a mean variance framework. Using aggregate UK data, Blake (1996) finds strong evidence of very high DRRA when dividing across five wealth quintiles. The magnitude of risk aversion was found to vary substantially, but averaged approximately 29.8 across the whole sample.

These values are substantially higher than those of Blume and Friend (1975) and Chiappori and Paiella (2011), who found risk aversion levels averaging between two to eight. Bucciol and Miniaci (2011) also take a mean-variance framework to US household data but assume that market frictions restrict the ability of households to hold portfolios on the efficient frontier. Again, they find strong evidence that risk tolerance increases with higher wealth levels. Further, they establish that risk aversion levels average around 8. Significantly, and in contrast to Cardak and Wilkins (2009) and numerous international studies, they find that risk tolerance is not dependent upon education, gender, race or household size. This is a striking finding as it demonstrates the sensitivity of coefficients to the definition of risk tolerance employed in the study.

5.3 Empirical Strategy

5.3.1 Measuring Risk Tolerance

In seeking to estimate the coefficient of risk aversion for households, a mean-variance model of investor behaviour is assumed. The discussion below is based on Bucciol and Miniaci (2011) and Blake (1996). Similar approaches have been used in the literature, for example, DeMiguel, Garlappi and Uppal (2009). A potential criticism is that using the statistical properties of a portfolio, in this instance the first two moments, is a deficient means of exploring risk aversion in an expected utility framework. A number of studies, however, have shown that there is congruence between the two parameter mean-variance and expected utility frameworks (see Eichner & Wagener, 2004; Meyer, 1987).

Informally, for each household, i(i=1,...,N) the risk tolerance measure γ_i, is estimated from the vector of optimal set of portfolio weights w_i=$[w_{i,1}(\gamma_i)\ w_{i,2}(\gamma_i)\ \ldots\ w_{i,n}(\gamma_i)]'$. A power utility function of wealth exhibiting CRRA is implicitly assumed:

$$U(W) = \frac{W^{1-\delta-1}}{1-\delta} \tag{5.1}$$

where δ is the coefficient of RRA. Assuming investors maximise expected utility, indifference curves are determined by:

$$\mu = \overline{U} + \frac{1}{2}\delta\sigma^2 \tag{5.2}$$

where $\overline{U}$ is an index of expected utility and σ^2 is the standard deviation of returns. Practically, it is possible to derive a measure of risk tolerance from equation (5.2), however, this requires the strong assumption that households hold efficient portfolios. It is possible to estimate the efficiency of household portfolios using the Gibbons, Ross, and Shanken (1989) test, however, this still requires the estimation of *ex ante* expected returns.

To overcome this issue, divergence between the optimal and observed portfolios are allowed. Following Bucciol and Miniaci (2011), it is assumed here that observed household portfolios of weights, $\omega_i = [\omega_{i,1}(\gamma_i)\ \omega_{i,2}(\gamma_i)\ ...\omega_{i,n}(\gamma_i)]'$, are a proxy for the optimal weights, w_i. Unlike Blake (1996), who imposes significant priors on the data-generation process to construct portfolios that reside along the efficient frontier, the approach of Bucciol and Miniaci (2011) allows for the observed portfolio to deviate from the optimal portfolio in deriving the risk tolerance parameter. To construct the risk tolerance parameter, an identity is imposed on the portfolio variances on the two portfolios:

$$w_i(\gamma_i)'Sw_i(\gamma_i) = \omega'_i S\omega \tag{5.3}$$

where S is the second asset moment. In the absence of portfolio constraints, efficient weights are given by:

$$w_i = \gamma_i S^{-1}e, \tag{5.4}$$

where e, is the first asset moment. By substituting (5.4) into (5.3), it is possible to solve for the identity problem and to obtain the risk tolerance parameter:

$$\gamma_i = \left(\frac{\omega'_i S\omega_i}{e'S^{-1}e}\right)^{\frac{1}{2}} \tag{5.5}$$

The estimated parameter forms the core of this study's empirical strategy in establishing whether households hold constant, increasing or decreasing relative risk preferences in wealth. Specifically, the null hypothesis can be stated as: $H_0: \beta_1 = 0$ where β_1 is the wealth coefficient from a linear regression. If $\beta_1 > 0$, then DRRA preferences hold.

5.3.2 Empirical Model

Although the primary focus is to examine how risk aversion varies with wealth, a number of control variables that have been found to have an impact on risk preferences are included in the model specification. Building on both Worthington (2009) and Cardak and Wilkins (2009), the panel nature of the data is exploited in this study and a fixed effects regression is employed for two reasons. Firstly, given the volatile nature of the equity markets in the second half of the past decade, risk preferences may show considerable time variation. Assuming such time variation is revealed, how does time varying risk preferences covary with wealth? Secondly, given the hypothesis that risk preferences are heterogeneous and that the heterogeneity is a function of wealth, a simple pooled estimate would yield a biased estimate because the pooled error term is correlated with the regressor on wealth. To overcome this issue, the Chiappori and Paiella's (2011) modelling approach is followed, applying a first difference estimator framework to the fixed effects model. To ensure the validity of the first differences in preference to a within effects transformation estimates the presence of serial correlation in the idiosyncratic error term is tested utilising the Wooldridge (2002) test. If detected, the presence of serial correlation suggests that a first differences approach is preferable against the within effects estimator. The panel regression is written as:

$$\gamma_{it} = \alpha_0 + \beta_1 lnWealth_{it} + \beta_2 Income_{it} + \beta_3 Age_{it} + \beta_4 Age^2{}_{it} + \beta_5 Debt_{it} + \beta_6 Yr2010_{it} + \beta_7 MortgageRatio_{it} + \beta_8 RentalRatio_{it} + \beta_9 University_{it} + \beta_{10} MaritalStatus_{it} + \beta_{11} Children_{it} + \beta_{12} BusEquity_{it} + \varepsilon_{it} \quad (5.6)$$

The chosen level of analysis here is the household. Although this is standard practice in this field, a degree of caution is warranted in interpreting the results. For example, Haddad, Hoddinott and Alderman (1996) demonstrate that the individual risk preferences of household members can significantly impact on aggregate household preferences. (Our research effectively assumes that the household preferences are those of the household head.) However, this study differs from previous household studies in that the chosen household head is chosen as the individual who undertakes the majority management of household finances and not the oldest household male.

A difficulty emerges when deciding how to define the portfolio used to estimate risk tolerance. Specifically, should housing form part of the portfolio definition. Bucciol and Miniaci (2011) adopt both broad and constrained portfolio definitions, where the former includes housing and human capital whilst the latter is restricted purely to financial assets. In contrast, Blake (1996) includes three financial assets (equities, bonds, and deposits) and treats them all as risky assets. The same approach is adopted here. Although housing constitutes a large component of Australian household wealth, there are both conceptual and data issues that make it problematic in including it. Conceptually, many argue that housing represents a stream of non-random services where the primary form of the return is in the shelter benefits (Meyer & Meyer, 2006). Practically, there is substantial difficulty and cost in obtaining relevant housing data to include when constructing the portfolio. Hence, this study follows Blake (1996) and assumes that risky assets are restricted to deposits, cash investments and equities. Further, nominal returns are utilised in estimating portfolio returns. It is reasonable to expect that most households would use nominal returns when estimating expected returns as well as when reviewing past performance (Bucciol & Miniaci, 2011).

5.3.2.1 Control Variables

Equation (5.6) includes a number of control variables, beyond wealth. These variables are guided by the theoretical papers outlined in section II as well by the empirical literature.

Inclusion is guided by previous studies which have found variables to represent background risks and life-cycle constraints that explain heterogeneity in risk tolerance. Perhaps one of the largest constraints facing households is that of housing. To control for the impact of housing consumption this study includes two measures, adopted from Cardak and Wilkins' (2009) definitions, that is mortgage repayments (*MortgageRatio*) and rental repayments (*RentalRatio*) divided by household income. Cardak and Wilkins (2009) find a positive association between risk aversion and mortgage payments and a negative relationship with rent. In addition, a control variable is added here for leverage, *Leverage*, which is defined as the ratio of household debt to total financial wealth. Throughout the sample, the main debt obligation is found to be mortgages. Yamashita

(2003) argues that there should be no relationship between risk aversion and household debt obligations.

Life-cycle and income risk considerations constitute a significant aspect of risk aversion literature. The relationship between age and risk aversion is one that has received considerable attention. Samuelson (1969) argues that risk taking should not vary with age. Bodie, Merton, and Samuelson (1992) argue that financial risk tolerance will decrease with age due to labour inflexibility of older workers. Empirically, contradictory evidence exists as to the direction of this relationship. Hallahan, Faff, and McKenzie (2003) use survey based risk measures and find that financial risk taking decreases with age. Using the proportion of risky assets to total assets, Wang and Hanna (1997) find risk taking increases with age, whilst using a similar measure, Palsson (1996) finds a negative relationship between the two. Recent research provides more contradictory evidence. Using both survey based risk questions and household financial data, Jianakopolos and Bernasek (2006) find that, after controlling for cohort effects, risk taking decreases with age. Cardak and Wilkins (2009) find that risk tolerance is positively associated with age, even after retirement. To control for age, the age of the household head is used. The age variable is derived as the cantered average of the whole sample minus the age of the household head. In addition, a quadratic age term is added to capture the possible convex relationship between risk taking and age.

Following Cardak and Wilkins (2009), income risk is measured as the coefficient of variation age and period adjusted household income. Annual household income is regressed on age and quadratic term for age, and a time trend. The predicted change in a given survey wave is then subtracted from wave 1.

The level of education attained is often used as a proxy to measure financial sophistication. Cardak and Wilkins (2009) find that investors holding a university degree to also possess greater risk tolerance, though this is contingent on the model used. Guiso and Jappelli (2005) find that education proxies for financial sophistication which fosters greater risk tolerance. However, they also find that the type of field in which the degree was received to be more influential than possessing any degree *per se*. Bucciol and Minaci (2011), however, do not observe any relationship between the two variables. To control for education, a dummy variable is used, where if the household head has completed any form of tertiary education it equals one.

The composition of the family, whether it is made up of a married or de-facto couple, single, and the overall size of the household potentially exert powerful influences on the degree of household risk tolerance. To control for marriage or de facto relationships a dummy variable is used, with one being married or zero if single. Some literature, grounded in matching theory has considered the impact of marriage on risk tolerance. The literature suggests that married couples with a male household head are likely to maintain lower risk tolerance profiles relative to their single counterparts (Roussanov & Savor, 2011). The number of children in the household and those who are under the age of 18 are included. Intuitively, the impact of children on risk tolerance might be viewed through the impact on consumption with parents assuming lower risk aversion to maintain purchasing power of a growing family. However, given the existence of family tax benefits in Australia for relatively well-off, middle class households, the impact of children on household risk tolerance may be mitigated by such welfare programmes.

5.4 Data

5.4.1 Household Data

This study utilises the HILDA survey, obtained from the Australian Federal Government Department of Families, Housing, Community Services and Indigenous Affairs. It is a longitudinal study that began in 2001 with the mission of tracking Australian households annually. Beginning in 2002, wave 2, the survey included a range of questions recording the financial characteristics of Australian households, including the composition of their wealth allocation across various asset classes. Following Cardak and Wilkins (2009), data on superannuation is not included. The survey at most provides data on aggregate household superannuation levels, but does not provide data on how super is allocated across asset classes. Household wealth data is provided across three waves, 2002, 2006 and 2010.

The study sample only incorporates households that provide data across all three waves. Table 5.1 provides descriptive statistics on the sample. In total, the sample consists of 3,181 households, with a total of 9,000 observations. The average age of the household head is 49, with approximately 1.84 children per household. The sample consists of

48.24% of households that are headed by a female.[22] Despite the onset of the GFC, both mean wealth and income are found to rise over the observation period. Significantly, the absolute dollar amounts invested in equities has slightly decreased over the years, whilst the amount held in deposits has increased from AUD25,837 to AUD47,429. Further, given the increases in average incomes (and possibly the low interest rate environment), the mortgage payment ratio has seen a decline from 9% in 2002, to 4% in 2010.

[22] Gender is considered in this study due to the use of fixed effects model. However, very little evidence was found of any meaningful variation in risk aversion between the genders. For brevity, the results are summarised here. For male households: 12.30 (2002), 17.52 (2006) and 45.16 (2010). For female headed households: 12.01 (2002), 17.03 (2006) and 43.17 (2010). The null of no difference in the means could not be rejected for the mean pairs in each year.

Table 5.1 Descriptive statistics Australian households, 2002, 2006, & 2010

Year		*Wealth $*	*Income $*	*Equity$*	*Deposits $*	*Cash $*	*Mortgage Ratio*	*Rent Ratio*	*Age*	*Children*	*% female headed*
2002	Mean	69,594	33,649	41,482	25,837	2,274	0.09	0.02	45.37	1.69	48.24
	Std. Dev.	167,444	31,515	143,587	58,335	22,956	1.65	0.21	15.65	1.48	
	Max	1,900,481	598,696	1,602,831	963,986	482,352	83.33	6.73	89	8	
	Skewness	5.91	4.94	7.4	7.47	16.34	43.14	27.53	0.12	0.64	
	Kurtosis	49.04	71.31	71.64	95.24	315.23	2074.41	822.06	2.18	3.26	
2006	Mean	98,883	43,138	63,118	33,277	2,488	0.03	0.01	49.37	1.86	48.24
	Std. Dev.	286,131	39,020	261,661	75,851	30,959	0.15	0.05	15.65	1.44	
	Max	3,934,015	691,836	3,646,015	1,075,403	881,406	3.79	1.3	93	9	
	Skewness	8.14	3.65	9.95	6.85	23.15	17.7	17.2	0.12	0.57	
	Kurtosis	91.58	36.39	126.23	75.86	625.5	391.26	386.55	2.18	3.58	
2010	Mean	97,144	51,101	47,285	47,429	2,399	0.04	0.01	53.37	1.98	48.24
	Std. Dev.	221,113	53,492	169,343	107,227	32,145	0.49	0.08	15.65	1.4	
	Max	3,657,055	829,808	3,429,055	1,024,712	815,324	25.67	3.86	93	10	
	Skewness	6.6	5.44	10.05	5.99	21.66	46.32	34.7	0.12	0.54	
	Kurtosis	73.17	63.87	164.18	49.17	526.07	2,341	1,525	2.19	3.93	
Overall	Mean	88,531	42,629	50,628	35,514	23,87	0.05	0.01	49.37	1.84	
	Std. Dev.	230,439	42,929	198,315	83,447	28,972	1	0.13	15.99	1.44	
	Max	3,657,055	829,808	3,646,015	1,075,403	881,406	83.33	6.73	93	10	
	Skewness	5.43	5.27	10.71	6.96	21.98	66.92	38.73	0.11	0.57	
	Kurtosis	48.73	68.92	164.74	71.42	578.82	5,218	1,751	2.25	3.54	

Notes: All the data in Table I has been sourced from the HILDA Survey, Waves 2, 6, and 10, Department of Families, Housing, Community Services and Indigenous Affairs and Melbourne Institute. Monetary values denominated in AUD. Equity % = Equities to Total Financial Assets, Mortgage Ratio = Mortgage Payment Monthly Household Income, Rent Ratio = Monthly Rent to Monthly Household Income

5.4.2 Asset Time Series

In order to estimate the risk tolerance parameter, γ_i for each household, various asset times series data have been obtained. Financial return (equities, deposits and other cash investments), are taken from *S&P/*ASX 200 Accumulation Index, cash investments are taken from the UBS Warburg Cash Management Trust Index, and the 90-day yields on Australian Treasury notes to proxy for deposit rates are used. Like Blake (1996), all assets are assumed to contain some risk, including deposits. In estimating the expected returns and co-variances to input into the mean-variance optimisation problem, the use of *ex ante* versus *ex post* returns is of concern. To overcome this issue, Blake (1996) estimates the expected returns using an Autoregressive Distributed Lag–Autoregressive Conditional Heteroskedasticity (ARDL-ARCH) framework. Fortunately, the approach of Bucciol and Miniaci (2011) somewhat circumvents this since the historical, observed portfolio returns are assumed to be proxies of the optimal portfolio weightings via the imposition of the identity in equation (5.4).

5.5 Results

5.5.1 The Distribution of Relative Risk Aversion

This section uses equation (5.5) to establish point estimates for the distribution of risk aversion across Australia households. Specifically, the inverse of the estimated parameter is taken to establish the estimate of RRA. The estimates are presented in Table 5.2 for the three survey years. As in Chiappori and Paiella (2011), substantial variation in RRA is found across the sample period. Overall, the mean risk aversion in 2002 for the population is 12.16, but declines to 2.7 if agents who have less than 6% of their financial wealth invested in equities are dropped. Figure 5.1 provides a graphical depiction of the distribution across the three waves of the HILDA survey. What is evident even with a cursory glance is the dramatic and consecutive shift to the right from 2002 through to 2010 of the RRA coefficient. For example, the divergence is exposed by the change in the mean of risk aversion, whereby it increased from a low of 2.7 in 2002, to 10.8 in 2010. This reflects the overall flight to liquid cash style investments in 2010, as also shown in Table 5.1, where deposit holdings increased on average from AUD33,277 in 2006 to AUD47,429 in 2010, whilst the average equity holdings fell from an average of AUD63,118 to AUD47,285. The downward trend of

risk aversion has been captured by West and Worthington (2014) who found that Australian households generally reduced their tolerance for risk over time. However, as Figure 5.1 demonstrates, there are significant outliers causing the distribution to be positively skewed, particularly in 2010. Using the median instead, the aversion levels are found to be much lower, ranging from 1.71 in 2002 through to 6.7 in 2010 placing the study results in the same range as previous studies.

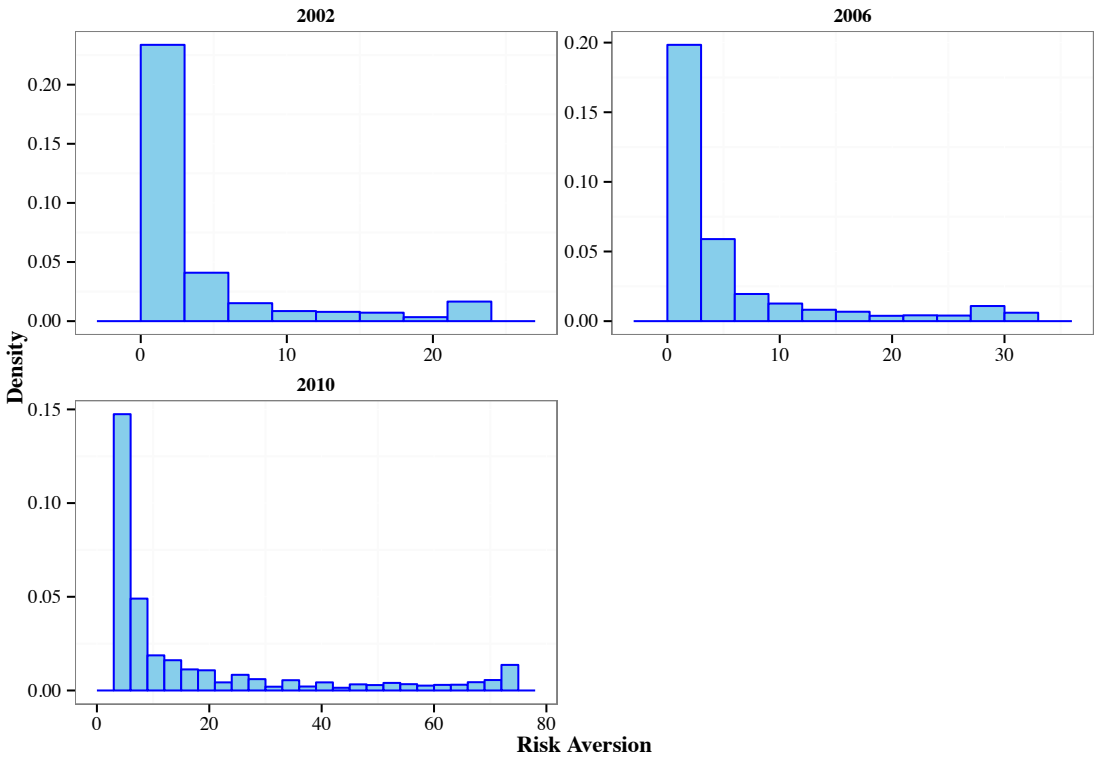


Figure 5.1 Distribution of risk aversion across time

Notes: Distribution excludes non-stock holders.

The truncated risk aversion estimates are in line with international evidence. However, it is interesting to note that when the full sample is included, the coefficient of RRA dramatically increases, as presented in Table 5.2. The RRA ranges from 12.14 in 2002 to an exceedingly high of 44.20 in 2010 when using the unweighted mean.

International comparisons are difficult to make due to the myriad of methodologies employed and sample periods examined. Empirically, earlier studies found coefficient of RRA tending towards one. Blume and Friend (1975), using individual portfolio holdings found that the coefficient to be around two. Relatively more recent studies have derived significantly different values. Mankiw and Zeldes (1991), estimate a RRA

of 26.3 while Blake (1996) arrives at a weighted average value of 35.04. Bucciol and Miniaci (2011) find an aversion parameter of 8.24.

Table 5.2 Distribution of risk aversion across time, weighted mean

Year	*Truncated Mean*	*Full Sample Mean*	*Weighted Mean*
2002	2.76	12.16	5.78
2006	3.81	17.28	6.77
2010	10.78	44.20	24.29
Overall	5.59	24.55	12.92

Notes: Estimates calculated as the inverse of equation (5). The weighted mean is weighted by household wealth. The truncated column excludes households who have less than 6%of investments in equities.

The variance in results between the present study and those of Blake (1996) and Bucciol and Miniaci (2011) is most likely attributable to the different definitions of portfolio. Like Blake (1996), the definition of portfolio is purely restricted to financial assets, whereas Bucciol and Miniaci (2011) expand the scope of the portfolio holdings to include human capital and housing. Inclusion of these asset classes would likely decrease risk aversion levels to those found in that study. Meyer and Meyer (2002) argue that studies incorporating more asset classes as risky, will, by definition, decrease the level of risk aversion. Another concern is whether one should measure the mean as weighted or unweighted by wealth. Barsky et al. (1997) argue that any estimates should be weighted by wealth. The rationale being that in capital markets, wealthier investors are likely to hold more equity, therefore the mean should be weighted accordingly. When weighting the risk aversion parameter by wealth, much lower levels of risk aversion are found. The weighted mean column of Table 5.2 shows that risk aversion levels in 2002 and 2006 were 5.78 and 6.77, respectively. However, for 2010 a dramatic shift is again observed in the average aversion level to 24.29. Overall, the weighted mean across all three years is 12.92, which is close to those reported by Barsky et al. (1997) for the US.

The differences between the unweighted and weighted means presented in Table 5.2 suggest that there is a negative relation between risk aversion and wealth. To construct a

more transparent picture of the relation between wealth and risk aversion, wealth is divided according to nine percentiles and the mean risk aversion is taken within each percentile. Table 5.3 presents the results. Of note are the exceedingly high levels of risk aversion among the lowest wealth percentiles (15th to 40th percentiles). For these percentiles, mean RRA ranged between 18.90 to 10.85 in 2002, increasing over the next two waves. By 2010, the range was 64.60 to 47.70. These estimates are in the ranges established by Blake (1996), who found that for UK households in 1992, risk aversion levels ranged between 30 to 50 but were lowest among the wealthiest households. The 85th and 95th wealth percentiles consistently exhibit the lowest RRA levels, which were 5.99 and 3.19, respectively, in 2002. The following survey wave saw minor increases in risk aversion. However, the dramatic shift in the level of risk aversion, from 4.25 in 2006 to 15.78 in 2010, a change of 271.5%, suggests that even at the highest wealth levels a substantial premium was being demanded by wealthy investors to hold equity in light of the financial crisis, which saw Australia's equity market experience large falls. The results provide preliminary evidence that for Australian households, DRRA preferences hold when tabulating by wealth percentiles.

Table 5.3 Household risk aversion by wealth percentiles

Percentile	2002	2006	2010
15th	18.90	26.57	64.60
25th	14.11	20.85	51.92
35th	14.93	19.57	49.87
40th	10.85	19.01	46.70
50th	8.88	15.35	42.79
65th	9.11	11.56	37.39
75th	7.84	11.67	35.55
85th	5.99	8.41	26.40
95th	3.19	4.25	15.78

A clearer image of the relationship between wealth and risk aversion emerges when the two variables are plotted. Figure 5.2 plots a smoothed line over the entire range of wealth for every survey wave. The full extent of the dramatic divergence between the various wealth levels becomes apparent in these plots. The relationship between wealth and risk aversion appears to follow that of a logarithmic specification. From approximately AUD300-500,000 and beyond the rate of risk aversion, visually, appears to decrease at a slower marginal rate.

To confirm the reasonableness of these risk aversion estimates, the estimated risk aversion parameter is compared to a question of self-assessed measure of risk aversion in the HILDA database. This approach is adopted by Bucciol and Miniaci (2011), who use the self-assessed risk measure from the US Survey of Consumer Finances to establish the reasonableness of their aversion parameter. The HILDA question asks:

Which of the following statements comes closest to describing the amount of financial risk that you are willing to take with your spare cash? That is, cash used for savings or investment:

1. Takes substantial risks expecting substantial returns.
2. Takes above-average risks expecting above-average returns.
3. Takes average financial risks expecting average returns.
4. Not willing to take financial risks.

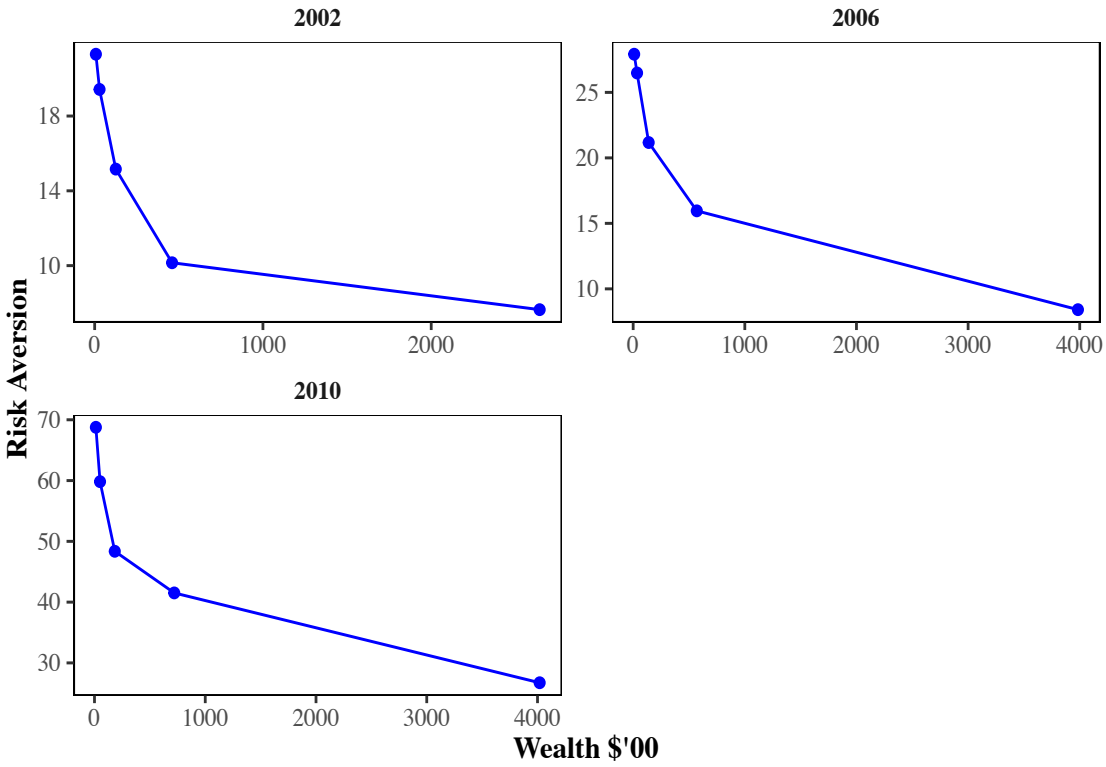


Figure 5.2 Scatterplot, risk aversion against wealth

Following Bucciol and Miniaci (2011), 1 and 2 are recoded as *risk tolerant* households, and those responding 3 or 4 as *risk averse* households. Although there is substantial

disagreement as to the relative merit of self-assessed measures, one would expect some congruence between these figures and any measure of revealed preferences. It would be expected that for individuals self-classifying as risk tolerant (risk averse), their associated risk-aversion parameter should be lower (higher). The results are reported in Table 5.4, where the median of the estimated risk aversion figures for self-assessed risk-averse individuals is indeed lower relative to the risk-tolerant group. When examining the congruence between the study's measure and the survey's measure, measured risk aversion is found to be lower for those in the self-assessed risk-tolerant category, whereas the converse holds true for the self-assessed risk-averse group. Across wealth groups, however, it is interesting to note that the wealthier households are self-assessed as risk averse and actually display greater risk tolerance than the bottom two wealth quartiles that are self-assessed as risk tolerant. This may be due to the notion of 'Keeping up with the Joneses'. Roussanov (2010) finds that risk preferences can vary depending on the degree to which households reference their neighbours or social circle. Whether such an issue is at play here is a question for future research.

Table 5.4 Comparison: HILDA based self-assessed risk measurement and γ estimates

	2002	*2006*	*2010*
Self-assessed risk tolerant	7.31	11.20	30.92
Wealth Class:			
Quartile I	18.21	26.78	69.63
Quartile II	6.30	14.04	43.91
Quartile III	6.74	7.86	22.57
Quartile IV	3.04	4.76	15.64
Self-assessed risk averse	13.08	18.23	46.30
Wealth Class:			
Quartile I	19.07	26.45	64.10
Quartile II	13.57	19.98	49.26
Quartile III	9.46	14.51	42.16
Quartile IV	7.00	9.40	30.78

5.5.2 Pooled Regressions

To formally test the hypothesis that risk tolerance is a function of wealth a pooled linear regression is performed initially. Table 5.5 reports the results of the estimation of pooled regressions, with risk tolerance defined as estimated from equation 5.6 and takes the logarithmic form $ln(1+\gamma)$. The baseline specifications appear in columns 1 through to 3, which controls for the main variable of interest, natural log of financial wealth, and for aggregate shocks with year-period dummies. The coefficient on *lnWealth* measures

the elasticity of risk tolerance to wealth. If CRRA holds, *lnWealth* would not be expected to be statistically different from zero, that is $H_0: \beta = 0$. However, in columns (1) through to (3), the coefficients range from .3008 to .3734 and are statistically significant. These results are directly comparable to Bucciol and Miniaci (2011) who report coefficients of approximately similar magnitude. The wealth effect remains strong even in the presence of both socioeconomic and life-cycle control variables, including the age of the household head, the presence of mortgage or rental payments, debt levels, income risk as well as marital status and the highest level of education attained by the household head.

The presence of serial correlation in the error term can suggest that a modelling approach exploiting the panel structure of the data is preferred. Recall that Chiappori and Paiella (2011) argue that a pooled regression might positively bias the relationship between wealth and risk tolerance if risk tolerance is heterogeneous and positively correlated with wealth. Following their suggestion, this study takes a fixed effects transformation via a first difference transformation of the variables.

5.5.3 First Differences Regressions

To remove potential bias, a fixed effects approach is employed. An immediate concern is the form that the fixed effects transformations should assume, that is, first differences or within effects transformations. Although the within transformation is considered to be the most efficient of the two, the presence of autocorrelation in the idiosyncratic error term of the model can potentially significantly bias standard errors down (Wooldridge, 2002). Serial correlation can potentially exist for any number of reasons, including common shocks, herding behaviour or correlation arising due to geographical proximity (for discussion, see Driscoll and Kray (1998)). To test for serial correlation in the idiosyncratic error, the Woolridge test is performed on the full model containing all of the variables. The Wooldridge test has the null that there is no first-order serial correlation in the idiosyncratic error term, $\boldsymbol{H_0: Corru_i t = 0}$. The null of no first-order serial correlation is significantly rejected for this model, with an F statistic of 455.29 (Probability > F = 0.000). Therefore, the within effects transformation is rejected here in favour of the first differences model as used by Chiappori and Paiella (2011).

Table 5.5 Pooled regression results

Variables	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*
lnWealth10	0.3734	0.3008	0.3751	0.3872	0.3819
	(0.0182)***	(0.0154)***	(0.0170)***	(0.0169)***	(0.0165)***
Income10	0.0124		0.0105	0.0092	0.0020
	(0.0161)		(0.0159)	(0.0156)	(0.0157)
Yr2010	-0.1576		-0.1570	-0.1538	-0.1540
	(0.0036)***		(0.0035)***	(0.0034)***	(0.0034)***
Debt	0.0043			0.0001	
	(0.0026)			(0.0035)	
Age	0.0008		0.0006		
	(0.0002)***		(0.0002)***		
Age^2	-0.0000		-0.0000		
	(0.0000)		(0.0000)		
MortgageRatio	0.0053			0.0050	
	(0.0008)***			(0.0008)***	
RentalRatio	0.0162			0.0170	
	(0.0220)			(0.0231)	
University	-0.0061				-0.0051
	(0.0055)				(0.0054)
Marital	-0.0130				-0.0050
	(0.0069)*				(0.0066)
Children	-0.0017				0.0019
	(0.0020)				(0.0017)
BusEquity	-0.0043				
	(0.0068)				
Constant	-0.2710	-0.2251	-0.2791	-0.2950	-0.2805
	(0.0289)***	(0.0194)***	(0.0261)***	(0.0241)***	(0.0250)***
F	182.65	381.38	424.71	362.42	352.26
N	7,395	7,434	7,434	7,395	7,434
R^2	0.18	0.04	0.18	0.18	0.18

Notes: One, two and three asterisks denote statistical significance at the 10%, 5% and 1% levels, respectively. Standard errors in parentheses.

The results of the first differences regression are presented in Table 5.6. To minimise the possibility of biased standard errors, standard errors are clustered by households. It is immediately apparent, that the coefficient estimates for *lnWealth* are lower in the first differences model relative to the pooled estimates. Comparing the coefficient estimates from Table 5.5 (column 1), to Table 5.6 (column 1), the coefficient is found to have fallen from .3734 to .2476. Further, there is an increase in the standard errors but their magnitude is in line with other studies. Although there is a decrease in the coefficient size, wealth retains a statistically significant positive influence on risk tolerance, in line with the DRRA hypothesis. Given the measure of risk tolerance adopted here, there are limited studies to which it can be directly compared. The magnitude of the wealth effect is close to that established by Bucciol and Miniaci (2011) at .224 for US households. In

addition, the variability of the *lnWealth* coefficient is very small across the various specifications in Table 5.6 (Columns 1-5). The results suggest that Australian households exhibit risk preferences that are consistent with DRRA.

Table 5.6 First difference regressions

Variables	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*
Δ.lnWealth10	0.2476	0.2645	0.2436	0.2530	0.2592
	(0.0345)***	(0.0320)***	(0.0340)***	(0.0332)***	(0.0337)***
Δ.Income10	-0.0046		-0.0058	0.0038	-0.0003
	(0.0201)		(0.0199)	(0.0199)	(0.0197)
Δ.Debt	0.0038		0.0032	0.0040	0.0041
	(0.0043)		(0.0042)	(0.0041)	(0.0042)
Δ.Yr2010	-0.0352		-0.0354	-0.0370	-0.0360
	(0.0062)***		(0.0062)***	(0.0062)***	(0.0062)***
Δ.Age	0.0219		0.0221		
	(0.0113)*		(0.0113)*		
Δ.Age²	-0.0001		-0.0001		
	(0.0000)***		(0.0000)***		
Δ.MortRatio	0.0050			0.0049	
	(0.0007)***			(0.0007)***	
Δ.RentalRatio	-0.0125			-0.0130	
	(0.0086)			(0.0096)	
Δ.University	-0.0207				-0.0264
	(0.0130)				(0.0126)**
Δ.Marital	0.0160				0.0150
	(0.0119)				(0.0119)
Δ.Children	0.0018				0.0051
	(0.0058)				(0.0055)
Δ.BusEquity	-0.0002				
	(0.0087)				
Constant	-0.1636	-0.0926	-0.1630	-0.0741	-0.0767
	(0.0454)***	(0.0025)***	(0.0453)***	(0.0045)***	(0.0047)***
F	16.52	68.24	21.73	26.50	15.73
N	4,917	4,956	4,917	4,917	4,917
R^2	0.03	0.02	0.03	0.03	0.03

Notes: One, two and three asterisks denote statistical significance at the 10%, 5% and 1% levels, respectively. Standard errors in parentheses.

The results are robust to the inclusion of period effects as well as a range of socio-economic control variables. Unlike other studies, income risk was not found to have any bearing on the amount of risk assumed. The coefficient for $\Delta.Age$, 0.0219, and associated quadratic term, $Age2$, -0.0001, suggest that the relationship between risk tolerance and age is concave, although the smallness of the coefficient suggests that the curvature is close to being flat during the middle ages. Only in later life is a substantial

reduction in risk tolerance observed. Figure 5.3 shows the relationship between risk tolerance and age. As one would expect, the elderly experience a significant reduction in risk tolerance beyond the age of 70. Theoretically, the positive relationship between risk tolerance and age effects can be explained either by the Samuelson et al. (1992) argument that risk tolerance increases due to the labour flexibility of workers in their younger years. When retirement is reached, however, labour inflexibility compels a reduction in the degree of risk tolerance. Alternatively, an idea rooted in prospect theory can be put forth that the increase in risk tolerance is due to an inability of older individuals to gauge risk tolerance accurately. This is a discussion for future research. The results of the present study are generally in agreement with those of Chiappori and Paiella (2011), who also find a concave relationship between age and risk tolerance. However, the results differ from Cardak and Wilkins (2009) who find risk tolerance increases across all ages.

Turning to the other explanatory variables, only variables associated with housing are found to have any statistically significant impact on risk tolerance. A change in the mortgage ratio is found to be positively associated (and statistically significant) with risk tolerance. The effect of mortgage payments, although statistically significant is economically insignificant 0.004. It is safe to conclude that mortgage payments have a constant impact on risk tolerance. Yamashita (2003) argues that in standard portfolio theory, heterogeneity in risk tolerance should not be a function of the proportion debt held or the mortgage payments being made. Interestingly, the coefficient estimates of this study closely resemble those of Yamashita (2003), who found the impact of the mortgage ratio to range between 0.002 and 0.004.

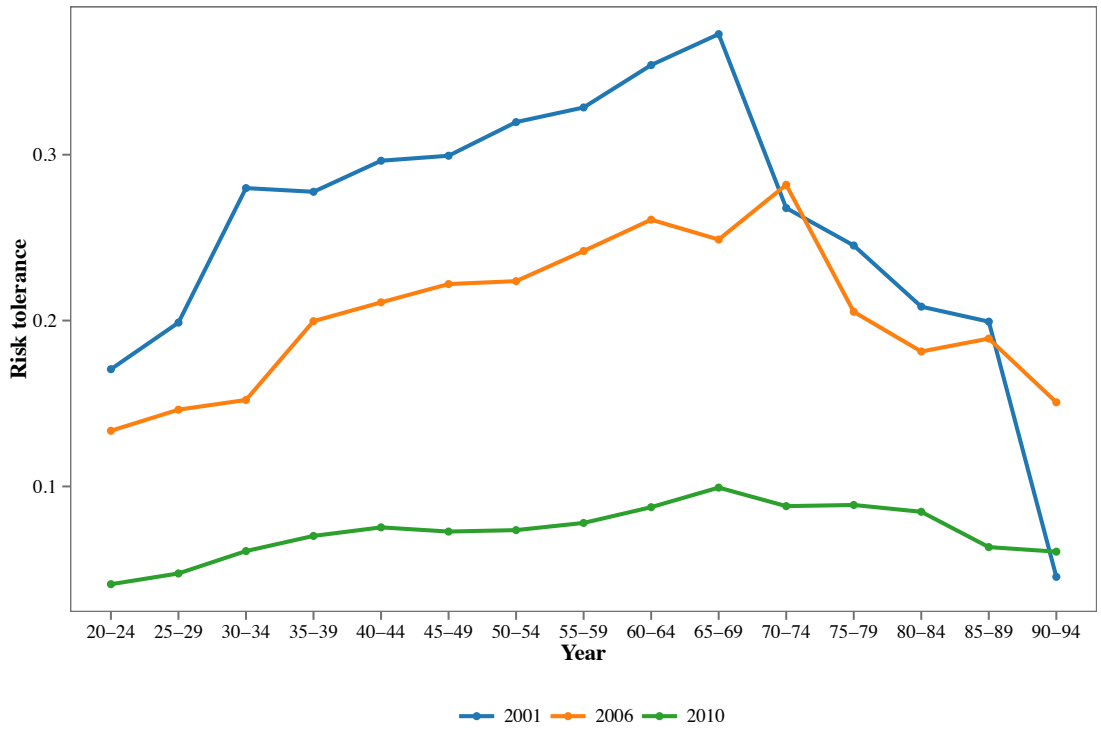


Figure 5.3 Profile of risk tolerance and age

For the other control variables, heterogeneity in risk tolerance is not found to be a function of any of the variables. Perhaps most strikingly, having completed a university degree does not appear to have any effect on risk tolerance. This is not only in contrast to Cardak and Wilkins (2009) but various other studies. The results do, however, conform with those of Bucciol and Miniaci (2010), who also found that a university education does not weigh upon the level of household risk tolerance. There are two potential explanations for why this result has emerged. The first is that degrees are not differentiated here by the discipline in which they were attained. Guiso and Jappelli (2005) document that individuals who are more comfortable with mathematics tend to exhibit greater financial sophistication. These potentially key details are lost in the aggregation of university attainment into a simple dummy variable. The second explanation is simply one of model misspecification. Given a first differences model has been used, the number of individuals going from not having a degree to having one is arguably small. However, even in the pooled estimates the coefficient is statistically insignificant at -0.0061 versus -0.0207 for the first difference model.

5.5.4 Robustness Results

So far, the study results suggest that any heterogeneity in risk tolerance is a function of wealth, age and period effects. To verify the robustness of the results, more models that accommodate liquidity and age considerations are estimated. Vissing-Jørgensen (2003) argues that liquidity constraints and transaction costs erect barriers that make it difficult for those with less wealth to engage in investment activities. As a consequence, any sample that incorporates the poorest households is likely to increase the magnitude of the wealth effect (that is, the coefficient slope will be steeper). To control for this possibility, the sample is restricted to those who have financial wealth greater than AUD10,000 and AUD100,000. By restricting the sample size to those endowed with greater wealth, the wealth coefficient is expected to be smaller (flatter) than those reported in Table 5.6 if CRRA holds. Table 5.7, column 1 reports the result. Restricting the sample to households with more than AUD10,000 shifts the wealth effect to 0.27 compared to 0.23 in Table 5.6 column (1), and is suggestive that the liquidity constraint hypothesis does have merit. Nevertheless, the magnitude of the coefficient, 0.23, is still large and economically significant. In column (2), the sample is restricted to households that have greater than AUD100,000 in wealth. The wealth effect is substantially more robust now, at 0.426. This finding is interesting as it suggests that risk tolerance increases exponentially at the higher wealth levels. Further, wealth and the period effect (*Yr2010*), remain the sole factors in provoking heterogeneity in risk tolerance levels, with marriage and the change in the number of children having only marginal effects. Other factors, such as age, or education now do not have a statistically significant influence on observed risk tolerance levels.

Hurd (2001) argues that the elderly might be subject to substantial liquidity constraints due to a lack of work that lead to a revealed risk preference different than what they otherwise would prefer. To control for this possibility, the sample is restricted to those above the age of 65. The impact of wealth on risk tolerance is now diminished, falling from .248 in Table 5.6 for the whole sample to a statistically significant .204. Restricting the sample to those below 65, no significant change is found in either the $lnwealth$ variable or the various control variables.

Given the robustness of the result to the presence of the various controls, it can be concluded that RRA is decreasing in wealth, in contrast to Chiappori and Paiella (2011),

but largely in agreement with Bucciol and Miniaci (2011) and Blake (1996). The divergence here may be due to either the method of measuring risk tolerance (mean variance or risky asset share) or the presence of sociocultural differences between the three Anglo dominated cultures (Australia, the UK and the US) *vis-à-vis* Italy with its concomitant divergence in language, religion and legal traditions. The extent to which culture causes variations in risk preferences is beyond the scope of this study.

Further, the results of this study are at odds with those of Cardak and Wilkins (2009) who only find a negligible impact of wealth on risk tolerance (measured as the risk share to total assets). However, Cardak and Wilkins (2009) adopt a different measure of risk. Whereas the definition in this study is derived from the variance of the portfolio, they use the proportion of risky assets (equities) to total assets. Maintaining the null of a CRRA, the model from Table 5.5 is estimated again, but this time using the Cardak and Wilkins' (2009) definition of financial risk. The results are presented in Table 5.6 in the column labelled 'risk ratio'. Overall, wealth does not have an economically significant relationship with risk tolerance, in line with the findings of Cardak and Wilkins (2009). The results suggest that the divergence in wealth effect estimates are probably attributable to the method of risk tolerance measurement employed.

Table 5.7 Robustness regressions

Variables	*Wealth ≥ $10,000* (1)	*Wealth ≥ $100,000* (2)	*Age 65* (3)	*Age ≤ 65* (4)	*Risk Ratio* (5)
Δ.lnWealth10	0.261	0.345	0.204	0.252	0.023
	(0.055)***	(0.115)***	(0.097)**	(0.035)***	(0.024)
Δ.Income10	-0.010	-0.029	-0.002	-0.010	0.021
	(0.021)	(0.041)	(0.046)	(0.019)	(0.010)**
Δ.Yr2010	-0.063	-0.111	-0.039	-0.032	-0.010
	(0.007)***	(0.011)***	(0.011)***	(0.006)***	(0.004)***
Δ.Debt	0.014	0.039	0.017	0.007	-0.010
	(0.008)*	(0.013)***	(0.015)***	(0.007)	(0.006)*
Δ.Age	0.024	0.022			-0.005
	(0.012)*	(0.025)			(0.009)
Δ.Age²	-0.000	0.000			-0.000
	(0.000)*	(0.000)			(0.000)**
Δ.MortgageRatio	0.001	-0.012	0.037	0.004	0.001
	(0.009)	(0.022)	(0.033)	(0.001)***	(0.000)***
Δ.RentalRatio	-0.009	-0.043	-0.114	-0.014	0.001
	(0.007)	(0.112)	(0.079)	(0.008)*	(0.007)
Δ.University	-0.013	-0.071	-0.032	-0.024	-0.008
	(0.017)	(0.038)*	(0.086)	(0.012)**	(0.005)*
Δ.Marital	0.007	0.050	0.039	0.008	0.006
	(0.016)	(0.026)*	(0.024)	(0.014)	(0.009)
Δ.Children	-0.001	-0.027	0.006	0.004	-0.002
	(0.008)	(0.014)**	(0.014)	(0.006)	(0.004)
Δ.BusEquity	0.002	-0.001	0.011	-0.009	-0.009
	(0.009)	(0.014)	(0.021)	(0.008)	(0.004)**
Constant	-0.164	-0.145	-0.083	-0.080	0.018
	(0.049)***	(0.101)	(0.009)***	(0.005)***	(0.037)
F	12.52	11.93	3.32	12.04	3.76
N	4,098	1,373	1,326	4,662	6,110
R^2	0.05	0.11	0.02	0.03	0.01

Notes: One, two and three asterisks denote statistical significance at the 10%, 5% and 1% levels, respectively. Standard errors in parentheses.

5.5.5 Risk Aversion and Financial Advice

This section discusses the possible relationship between risk aversion, wealth and the use of financial advice, though these are highly preliminary results requiring further investigation and inclusion of new HILDA survey waves. In 2007 HILDA survey wave 7, sought responses as to the question as to whether the respondent had sought financial advice as to retirement. The responses are cross tabulated with the risk aversion estimates for 2006.

The impact of financial advice on the risk preferences of households has only received limited attention. The increasing role of financial intermediaries in household finances was emphasised by Campbell (2006). Utilising a proprietary database, Bluethgen, Gintschel, Hackethal and Müller (2008) typically find that in Germany, financial planning clients tend to be more wealthy and risk averse than those without an adviser. Additionally, they find that financial advice tends to enhance diversification. In contrast, Bhattacharya, Hackethal, Kaesler, Loos and Meyer (2012) find that the impact of financial advice on Germans tends to be negligible, with most clients foregoing their planners' advice.

Unfortunately, present study could not have access to the comprehensive datasets of the aforementioned studies. Despite these severe data restrictions, some preliminary results can be presented. Table 5.8 presents average risk aversion between those that have and have not received financial advice. A one-way ANOVA test between subjects was conducted to compare the impact of advice on the mean level of risk aversion overall and by wealth percentile. There was a significant financial advice effect overall on the proportion of observed risk aversion at the $p<.05$ level [$F(1, 971) = 83.42$, p = 0.000]. Numerically, the level of risk aversion among those who had received advice was 12.38 compared to 12.82. Although statistically significant, the difference does not appear to be economically significant.

Table 5.8 Mean RRA comparison of those with and without financial advice, by wealth percentile

Percentile	Advice received	No Advice
15th	26.81	26.12
25th	18.09	22.58
35th	16.88	19.97
40th	15.02	19.22
50th	10.32	17.37
65th	7.13	12.21
75th	8.24	10.69
85th	7.03	11.49
95th	3.65	9.58

Once again, however, it may be possible that the aggregate results shroud the impact of financial advice on risk aversion without incorporating the wealth dynamics. Table 5.8

decomposes the mean risk aversion by wealth percentiles. A number of interesting inferences can be made. Firstly, the degree of risk aversion decreases among both groups in accordance with the level of wealth as established in Section 5.5.1. Secondly, and most significantly, the intra percentile dynamics reveal that for those that have received advice there is a significant difference compared to the aggregate result mentioned previously. At the very lowest percentile, 15th, there is effectively no substantial difference with those having received advice averaging 26.81 versus 26.12. However, as one proceeds up the wealth ladder the difference progressively becomes larger. For example, at the 35th percentile the level of RRA for those receiving advice is 16.88 compared to 19.96, a difference of 15.4%, at the 50th percentile this difference increase by 40.6% with those receiving financial advice exhibiting a mean RRA of 10.32 compared to 17.37.

At the most extreme wealth levels that are observed in the HILDA Survey data, the relative magnitudes differences between the two groups are maintained. This is illustrated in Figure 5.4, which plots the mean RRA across the percentile for the two groups. At the 85th wealth percentile, RRA is 7.03 for advice seekers and 11.49 for those who had not sought out advice. The largest gulf is found at the 95th wealth percentile where the difference between the mean RRA is 61.8%. Among this group, the RRA for those having received advice at some time is 3.65 compared to 9.57. Given the relative small sample sizes at the highest wealth percentile (n_{Yes}=8, n_{No}=35), caution should be adhered too when relying on these results. However, given the general trends one could infer two cautionary findings from this data. Firstly, ultimately wealth is the dominating factor when explaining risk aversion heterogeneity. Secondly, although wealth is a dominant factor, it appears that receiving financial advice (in this instance in the limited capacity of retirement), does have an accentuating effect on the RRA levels. Given the limitations mentioned above, it does suggest that receiving advice does provide some, to borrow Piketty's (2014) parlance, form of 'economies of scale' in portfolio management, assuming that higher expected returns in a portfolio generally equate to lower risk aversion levels.

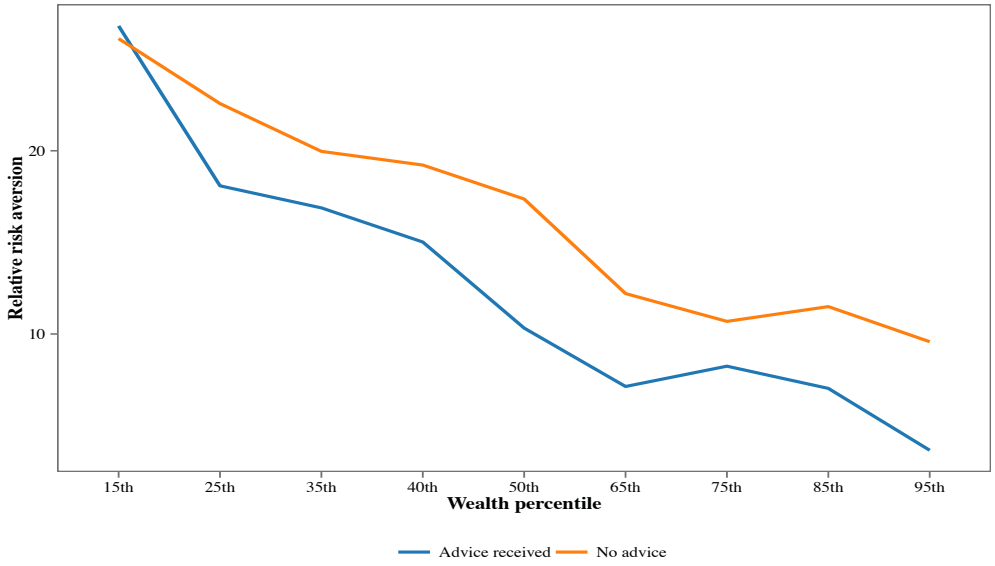


Figure 5.4 Profile of risk aversion by advice and wealth percentile

5.6 Summary

At the core, the purpose of this chapter is to explore and document whether Australian households exhibit decreasing relative risk aversion in wealth. Policy makers and sections of Australian society are increasingly discussing the role that financial wealth is playing in augmenting a path of increasing inequality in Australia. Despite vigorous debate there has been little empirical evidence to demonstrate that Australia's wealthy actually exhibit greater risk tolerance. To close this gap, we utilize the HILDA survey in conjunction with historical asset prices to estimate the level of risk aversion across the Australian population.

The main finding is that wealth has a strong positive effect on risk tolerance, and unlike Cardak and Wilkins (2009), this is found to be economically significant. Theoretically, the results presented here could be explained by the "capitalist spirit" model developed by Bakshi and Chen (1996). Given the degree to which wealth dominates over all other variables, the holding of wealth as an ends in itself may very well be at the core of what is being observed. The finding is robust to a number of life cycle and demographic variables. In addition to wealth, age and mortgage effects were found to be statistically significant, with risk tolerance rising in both. Overall, risk aversion levels were found to average between 6 and 60, depending on the wealth quartile and the year examined. Risk aversion was shown to be heavily countercyclical with all wealth levels exhibiting

increased risk aversion during the Global Financial Crisis period. Further, although the least wealthy had the highest levels of risk aversion during this period, the wealthy exhibited the greatest swing in risk aversion. However, given that equity markets recovered in 2011, wealthier investors were in a much better position to take advantage of the positive returns.

The findings have a number of important policy implications. Firstly, it has been documented that the upper income distributional cohort of Australian society has been able to augment their already high labour incomes with substantial income from capital (Greenville, Pobke and Rogers 2013). Our findings appear to add greater weight to these studies as wealthier households can allocate a greater proportion of their wealth to higher return generating portfolios. Secondly, given that wealthier households have greater access to wealth management services (see Hackethal, Haliassos and Jappelli 2012 and BlackRock 2013), the disparity between wealthy and poor is likely to become exacerbated.

Preliminary results that at the very least suggest that those who receive financial advice tend to exhibit RRA coefficients an order of magnitude below those who do not. Perhaps more significantly, the effect becomes much more pronounced as one proceeds up the wealth ladder. This the ongoing policy debated regarding financial advice reform in Australia must factor in the cost of accessing such advice for the less well off. The extent to which financial planning drives revealed household risk preferences, especially amongst the wealthy, is a potential fruitful question worthy of further exploration be it through HILDA or any number of private data collection agencies and consultancies. Even at this early stage though, the policy question to be asked is whether wealthier households can generate significant “economies of scale” in portfolio management and should there be an intervention to ensure that wealthier households are not being advantaged beyond their already financially superior position in the wealth ranks.

Chapter 6 Sources of Great Fortunes in the World

Chapter 4 and 5 have largely abstracted from the actual individuals explored in Chapter 3 by performing a macro and microeconomic analysis of wealth accumulation. The objective of Chapter 6 is to focus upon high net- wealth individuals and their associated sources of wealth. The Chapter assumes a cross-regional comparison – to better analyse and identify the sources of great fortunes today. The analysis pays attention to the role of self-made and inherited wealth, the social and economic conditions when many of the fortunes were first made and the links between great fortunes and government policy, particularly in sustaining inherited fortunes. Further, a link is made between diversification strategies and inherited wealth.

6.1 Introduction

This chapter analyses two aspects of wealth accumulation via a cross-regional comparison. Firstly, it explores the industrial activities that have enabled individuals and family dynasties to amass great fortunes and places this process firmly in its social, economic and/or political context. Secondly, it examines the extent to which individuals made their fortunes through their own entrepreneurial effort as opposed to inheritance, focusing on why inheritance levels among the ultra-rich should differ between advanced economies and, where relevant, how that wealth is sustained across generations.

Much like the Gilded Age, entrepreneurship appears to have played the dominant role in the process of massive wealth accumulation observed today. Although the US continues to lead the world in producing large fortunes, the phenomenon appears to have been replicated across the globe, as first observed in Chapter 3. However, given the disparate paths in historical and institutional developments across the globe, there may be substantial differentiation in not only the patterns of entrepreneurial development, but also how societies accept the emergence of a patrimonial capitalism.

The term "patrimonial capitalism" or patrimonialism is a concept characterised by notions of inheritance, state paternalism, and a concentration of wealth. The degree to which one of these characteristics dominates is contingent upon whether the approach is based on an economic or sociological analysis. Piketty's (2014a) use of the term appears to be largely centred on the notion that the economic elite's fortunes are mainly derived through inheritance rather than entrepreneurship. Piketty (2014a) argues that the concentration of wealth savings behaviour alone cannot explain the concentration of wealth, but must be combined with evidence on the importance of inherited wealth.

This Chapter in scope is most closely aligned to Kaplan and Rauh (2013) who use a similar database (US Forbes 400). Their explanation for the rise of great fortunes in modern society are ensconced in theories of human capital and the return to skills as exemplified by the information technology entrepreneur. However, this thesis strives to firmly place the sources of great fortunes, and to quote Watkins (1907), '[to] changes in external conditions' (p. 5). It argues that the sources of great fortunes are just as much due to the existence of fortuitous historical and political circumstances from which traditional notions of randomness can then come to the fore. As the countries examined have high levels of human capital, if Kaplan and Rauh's (2013) thesis were correct, a wealthy elite in highly technical industries would be expected to emerge in other countries where these skills exist to a similar degree. By restricting their analysis to skills scalability and human capital for example, Kaplan and Rauh (2013) ignore the role of both family and state patrimony in the growth of great fortunes. Further, they do not consider the type of risks assumed under which initial self-made fortunes were made, and what sort of investments are subsequently made in states of inheritance.

To explore the first objective, the key trends and defining patterns of growth among the most prominently represented industries across the relevant regions are considered in order to: 1) systematically identify patterns of variation in the industrial sources of wealth; 2) the era when the first big opportunities arose; and 3) the general political, social and macro conditions that ensured significant payoffs. Differentiating self-made from inherited wealth at an intra-industry level is important for a number of reasons. Firstly, the preponderance of inheritance in each industry may signal significant barriers to new entrants into an industry. As argued by Figueroa (2008) and Bodley (1999), the existence of an economic elite erects barriers to entry (see Chapter 2). In addition, Shorrocks (1988) argues that such barriers may exist because of the unique risks

ensconced in certain project are more optimally performed (from an atomistic not socially optimal perspective) at different wealth levels. Secondly, the dominance of patrimony may, *ceteris paribus*, result in lower economic growth (Piketty, 2014a).

Finally, it will be argued that how wealth is sustained, particularly in family dynasties, may be intimately bound up in a movement towards a more rentier-based wealth class than one derived from purely entrepreneurial effort. The following questions are also asked: Why should inheritance come to dominate a given country's wealth ranks? And how is it possible that family dynasties are able to secure, and often, expand the scope of their influence and control across an industry or industries?

As detailed in Chapter 3, rates of return across the advanced economies have demonstrated a secular downward trend since the 1960s, while the wealth accumulated has significantly increased. Although the decrease has been far from uniform across the advanced economies of the world, it does signal that entrepreneurial effort may have been higher during the 1950s to 1970s. Piketty (2014a), it will be recalled, argues that periods of high entrepreneurial effort are usually synonymous with higher rates of return and high national income growth. A natural question then to consider is how do entrepreneurs or those who inherited wealth respond? Watkins (1907) argued that it is during periods of high returns that entrepreneurs emerge. Conversely, when confronted with low returns, the degree of entrepreneurial application will diminish to the extent that they can easily increase their fortunes through speculative ventures beyond their expertise. The means through which this is achievable is not clearly outlined but Watkins (1907) offers various possibilities, chiefly speculation brought upon by the emergence of abstract financial property. Alternatively, in contemporary times, diversification (be it through mergers or acquisitions or greater asset allocation diversity) may provide such means through which already wealthy entrepreneurs shift from entrepreneurial activity to a rentier-style existence. For family dynasties, it is posited that this tendency is just as pronounced. This theme can be further motivated in the theoretical framework of Shorrocks (1988) discussed in Chapter 2.

Lastly, the relationship between government and the ultra-rich is an area lacking in the literature (Medeiros & Pedro, 2014) point out that this is an area of research that is sorely lacking. The relation is multifaceted and need not necessarily be due to direct subsidisation of capitalist interests, and will manifest itself substantially different

depending upon the historical trajectory of a country's political and economic landscape.

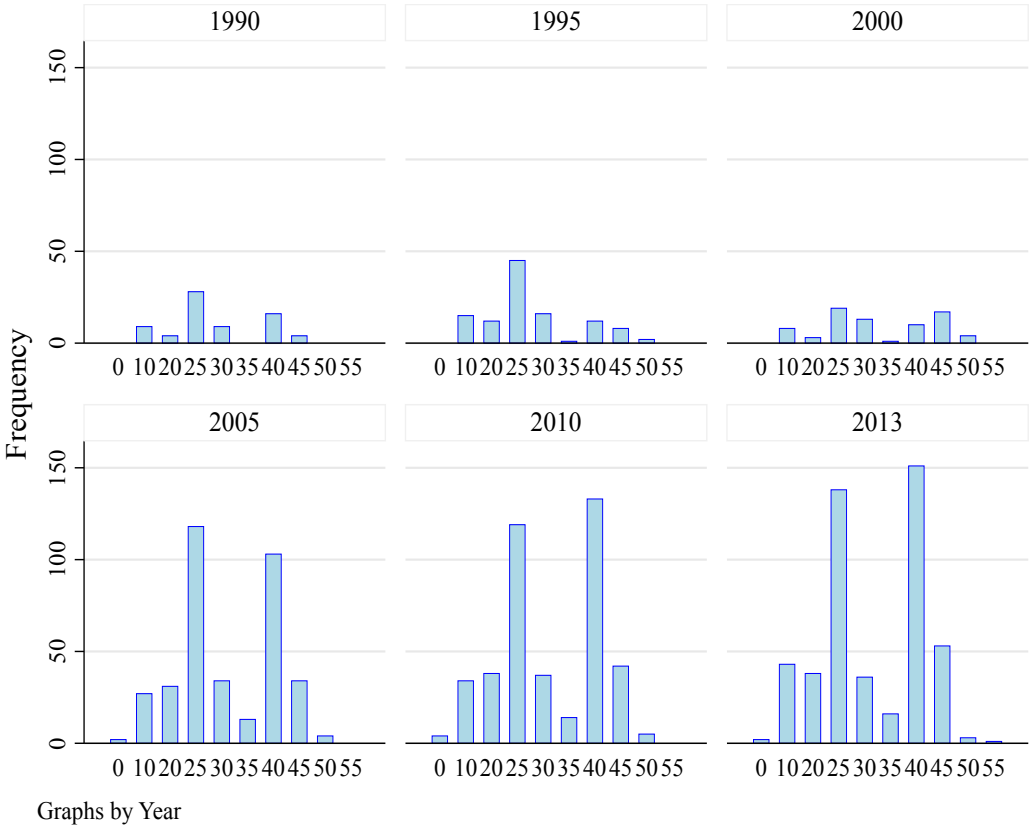
This chapter offers policy implications, as it demonstrates that many of the great technological and welfare enhancing activities enacted by entrepreneurs, upon which today's great fortunes were built, were not blunted by more onerous tax regimes or high labour wages throughout the 1950s, '60s or 70s. Indeed, Solow (2014) argues that the 'rich-get-richer' dynamic of Piketty's (2014) thesis does not necessarily work 'through individual incentives to innovate' (para. 22). Hence, policy that seeks to blunt wealth accumulation should not necessarily be inhibited by arguments relying on notions of stifling innovation or unfairly reducing returns to human capital.

This chapter is divided along regional and country dimensions to facilitate the organisation of a large amount of data under consideration. Section 6.2 explores the billionaire factory of North America. Despite the rise of East Asia and reassertion of Western Europe as an economically powerful bloc, North America still remains the primary driver of the extraordinary growth of billionaires in the past 30 years. Section 6.3 shifts to Western Europe, focusing on Germany, France and the UK. Section 6.4 investigates the rise of great fortunes in the new economic powerhouses of India, China, and Russia. East Asia, specifically Japan and South Korea are the focus of Section 6.5. These two countries, despite sharing similar cultural and historical underpinnings, have exhibited dramatic and divergent evolutionary paths in the rise of their respective billionaires. Section 6.6 examines Latin America, where it is found that the political economy has had a manifestly strong role in the economic elite of that continent. Section 6.7 examines Australia and New Zealand, which, despite their relative small population bases, have exhibited a sizable growth in vast fortunes in the past decade. Lastly, Section 6.8 provides a summary of the chapter.

6.2 North America: Billionaires' Factory

The detailed regional exploration of billionaires begins with North America, which here includes the US, Canada and Mexico. The bulk of the billionaires do come from the US, although there are notable examples from both Canada and Mexico. For example, Mexican Carlos Slim often vies for the richest individual in the world with Bill Gates and Warren Buffett. In our era, how did the US once again manage to emerge at the

forefront of producing individuals who can accumulate extreme wealth? Watkins (1907) and Rubinstein (1980) both recognised that during the Gilded Age, the US led the world not only in terms of the size of fortunes, but also in the number of ultra-rich. In contemporary times, how did the average North American billionaire establish their fortune? Figure 6.1 presents the distribution of North American billionaires by industrial group.



Notes: The chart provides a visual summary of the distribution of individuals across North American industries using the two-code GICS. The data is presented on a 5-year interval basis. The numbers for associated sectors are: **10:** Energy, **15:** Materials, **20:** Industrials, **25:** Consumer Discretionary, **30:** Consumer Staples, **35:** Health care, **40:** Financials, **45:** Information Technology, **50:** Telecommunication Services, **55:** Utilities.

Figure 6.1 Distribution of North American billionaires by GICS industry group

Source: Forbes (1990-2013), Author's compilation from various secondary sources

The first salient fact that should be noted in Figure 6.1 is that no industry has shown a general retreat overall, with at most ephemeral reversals during the outbreak of crises. Across every industry, there is a demonstrable increase in the population of billionaires. This increase is particularly evident between 2000 and 2005 with certain sectors registering a three-fold increase. Contrary to popular perception, these increases are not necessarily tied to 'new economy' industries *only*. For example, consumer discretionary increased by almost 380% from 29 billionaires in 1990 to 139 in 2013, exhibiting one of the slowest growth rates at 8.7% *per annum*. Finance, which includes banking,

diversified financials, insurance and property, has demonstrated even greater growth, increasing from 17 in 1990 to 151 by 2013, the equivalent of a 790% increase in their population ranks and a 13% *per annum* growth rate. In 2013, financial services represent the bulk (31.1%) from where North American great fortunes emanate. IT has, unsurprisingly, demonstrated exceptional growth, albeit from a smaller base. In 1990, there were four billionaires in IT, which increased to 53 in 2013, the equivalent of an 1,225% increase or a 12% per annum growth rate. The second key point is that the year-on-year distribution of billionaires across industries has been far from uniform throughout the sample period. Rather, a dramatic shift between the 1990s and the 2000s is observed. According to Figure 6.1, throughout the 1990s, consumer discretionary (25), industrials (10), consumer staples (30) and financials (40) dominated. However, throughout the 2000s a radical shift in the composition in the sector distribution is observed. Now, materials (15) consumer discretionary (25), financials (40), and IT (45) all tend to dominate the North American billionaire wealth ranks. The combined sub-group accounted for 71.1% of billionaires during 2013.

The variation in sector dominance from the 1990s to the 2000s is also reflected in a concomitant change in the demographical profile of North America's billionaires. The mean age profiles are presented in Figure 6.2. At first glance, there is substantial cross-sectional variation in the mean age exhibited by the various industries. The mean age ranges from a low of 50 in IT and services to a high of 82 in utilities. Overall, the mean age is 66, in line with the US study by Canterbery and Nosari (1985), who attribute this finding to a life-cycle dynamic. Across time, all industries demonstrate a general upward trend although there appear to be bouts where much younger individuals enter the billionaire ranks.

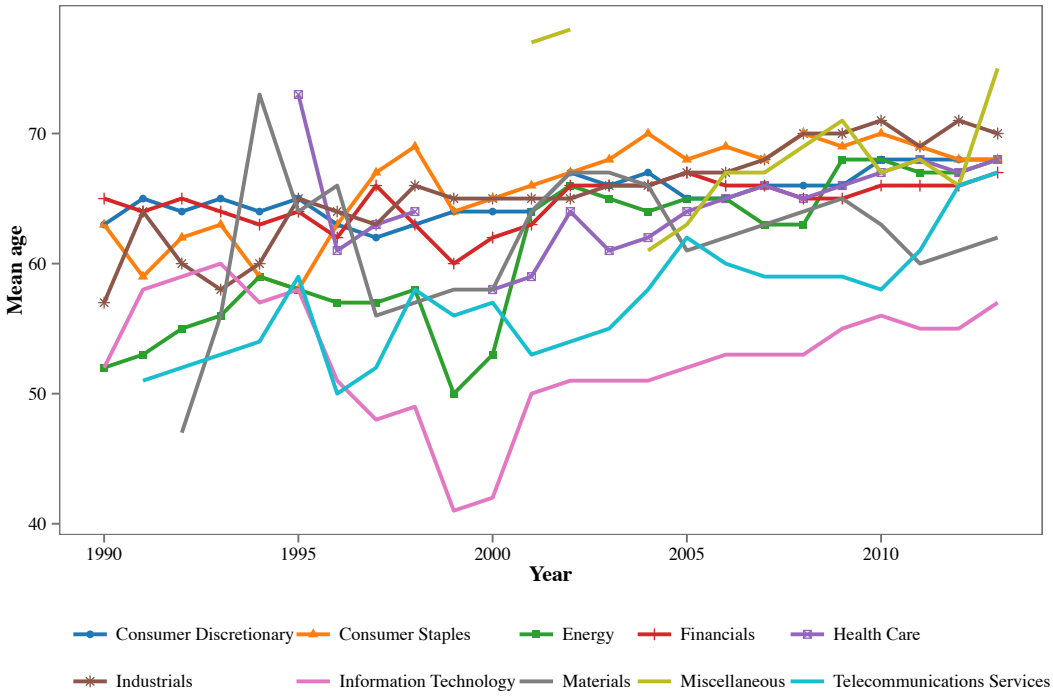


Figure 6.2 Mean age profile by industry in North America, 1990-2013

Source: Forbes (1990-2013), Author's compilation from various secondary sources

The large oscillations to an industry's mean age appears to be clustered in the late 1990s. IT, energy, telecommunications and financials all registered drops in the mean age throughout this period. The substantial drops in IT are particularly revealing. In 1994, the peak mean age was 60, before decreasing to the mid and low 40s between 1996 and 2001. The decrease in the average of age of the IT entrepreneur coincides with an influx of youthful individuals in Internet-related enterprises. However, since 2001 there has been a long steady increase to the mid-50s. Finance, too, registered a drop during this period, although by no means as dramatic. Throughout the sample, the mean age of billionaires in financial services is 65. Between 1999 and 2003 it remained below the long-term trend, due largely to the influx of new rich from the hedge funds industry.[23]

[23] A one-way between subjects ANOVA was conducted to compare the mean differences between the various industrial sectors by age, for every sample year. Table 6.1 presents the results of the one-way ANOVA analysis. It shows that throughout the 1990s there was very little variation either in the mean age or variances between the various industrial groupings. In 1992, for example there was a statistically insignificant effect of industry on age [$F(15, 62) = 1.640$, p = 0.0.089], became systematically less significant as the decade progressed with the F ratio tending to 1.0. In 1998, for example, the F ratio was 1.130, with a p value of 0.228. From 1999 to 2013, the results change with every year with a statistically significant effect of industry on the mean billionaires' ages being observed. A post-hoc Tukey honest significant difference (HSD) comparison was applied to determine in which industries the variance was largely being driven. The post-estimation procedure found that the IT, energy and materials were the industries driving the fluctuations in mean age.

In general, the changes in the mean age distribution across time and industry coincide with the large jumps in the overall trend of billionaire numbers. However, there are some industries that exhibiting robust growth in numbers, which is not necessarily due to recent entrepreneurial effort. Consumer discretionary is dominated by the retail and media industries – both of which have experienced a dramatic swelling in their ranks since 2000. Despite the growth in both, deep analysis reveals them to consist of mainly older individuals who have been in enterprise for many years. These issues are explored further in Section 6.2.1.

The infusion of younger individuals could be driven by inheritances (intergenerational wealth transfers), new industry, or growth in mature industries due to substantial technological advancement. In Section 4.3, it was shown that when compared to the rest of the globe, North America exhibited the lowest proportion of inheritances suggesting that one of the latter two is at work. The natural issue arises as to how widespread this trend has been across the North American industrial structure, or whether it is just a few key industries that have induced this trend. Figure 6.3 presents the proportion of inheritances in North America by industrial grouping since 1990. Most industries exhibit decreasing levels of inheritance, with only a few registering stability or slight increases. Of the former, industrials, financials, materials and telecommunications have demonstrated the largest falls. Consumer staples (μ=71%), energy (μ=63%) and

One Way ANOVA test of mean age by GICS sectors, 1990 to 2013, North America

	Between Group d.f.	Within groups d.f.	F	$p > F$	Bartlett Test
1990	19	367	3.500	0.000	0.701
1991	13	61	2.010	0.035	0.270
1992	15	62	1.640	0.089	0.620
1993	15	69	1.330	0.207	0.608
1994	15	85	1.130	0.344	0.775
1995	16	94	1.010	0.454	0.886
1996	19	128	1.370	0.155	0.912
1997	16	49	1.170	0.323	0.299
1998	16	60	1.300	0.228	0.537
1999	14	52	2.910	0.003	0.942
2000	15	59	3.420	0.000	0.785
2001	21	268	2.960	0.000	0.789
2002	20	227	2.560	0.000	0.970
2003	19	226	1.950	0.012	0.832
2004	21	281	2.770	0.000	0.338
2005	21	344	3.480	0.000	0.700
2006	21	380	3.570	0.000	0.623
2007	21	428	3.600	0.000	0.502
2008	21	481	4.920	0.000	0.681
2009	19	367	3.500	0.000	0.701
2010	21	404	4.120	0.000	0.877
2011	21	425	4.560	0.000	0.679
2012	22	434	4.460	0.000	0.932
2013	22	458	4.060	0.000	0.975

materials (μ =62%) have generally exhibited, on average over the sample period, majority patrimony. In contrast, financials (μ =28%), health care (μ =22%) and IT (μ =3%) all exhibit the lowest levels of inheritance.

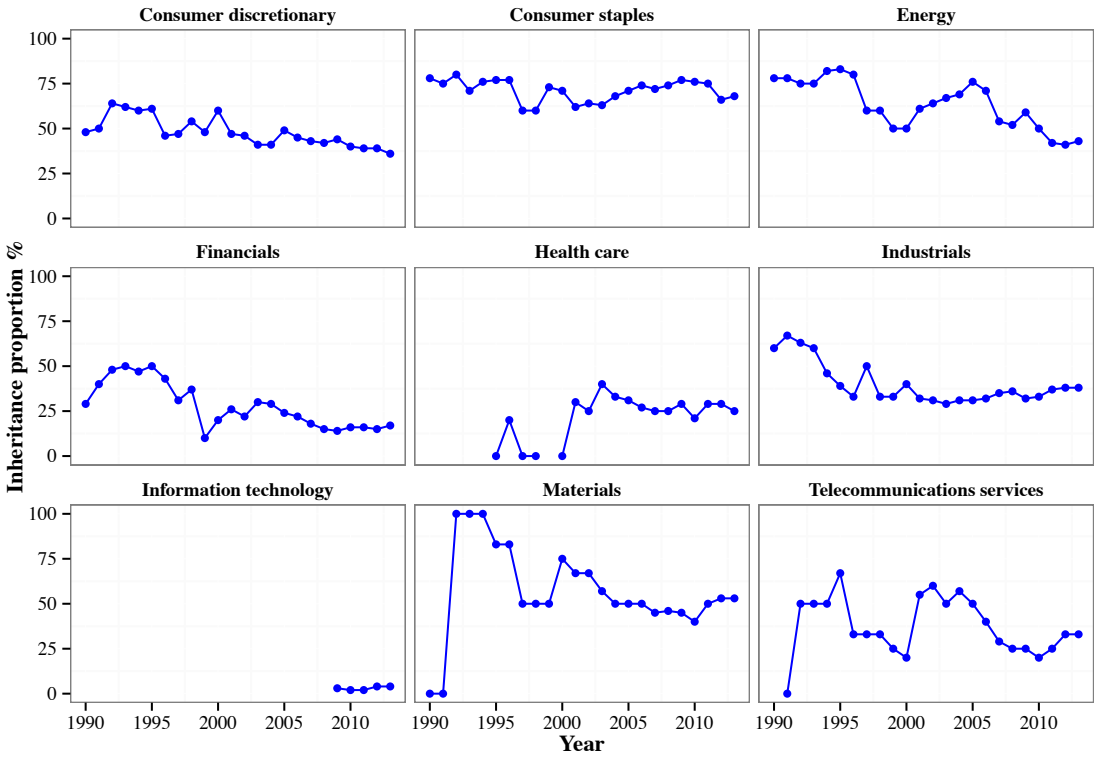


Figure 6.3 Proportion of inheritances by industry in North America, 1990-2013

Source: Forbes (1990-2013), Author's compilation from various secondary sources

Of the three largest growth industries, (financials, IT and consumer discretionary), consumer discretionary has generally demonstrated a close to even split between inheritance and self-made individuals (μ=48%). How and why these three industries should demonstrate the most growth in the past two decades and why inheritance proportions can vary between industries are explored in further detail below.

6.2.1 Consumer Discretionary

The realm of the consumer discretionary spending has been a consistent producer of billionaires, albeit at a slower rate relative to other North American industries. Figure 6.4 presents the sample trend since 1990 in each of the consumer discretionary industrial subgroups. Since 1990, the number of billionaires finding a fortune in consumer discretionary spending has grown annually by 12%. The largest representative is media, averaging 40% of the number of billionaires in the consumer discretionary sector throughout the sample period, followed by retail (32%), consumer services (19%), consumer durables and apparel (8%) and automobiles and components (1%).

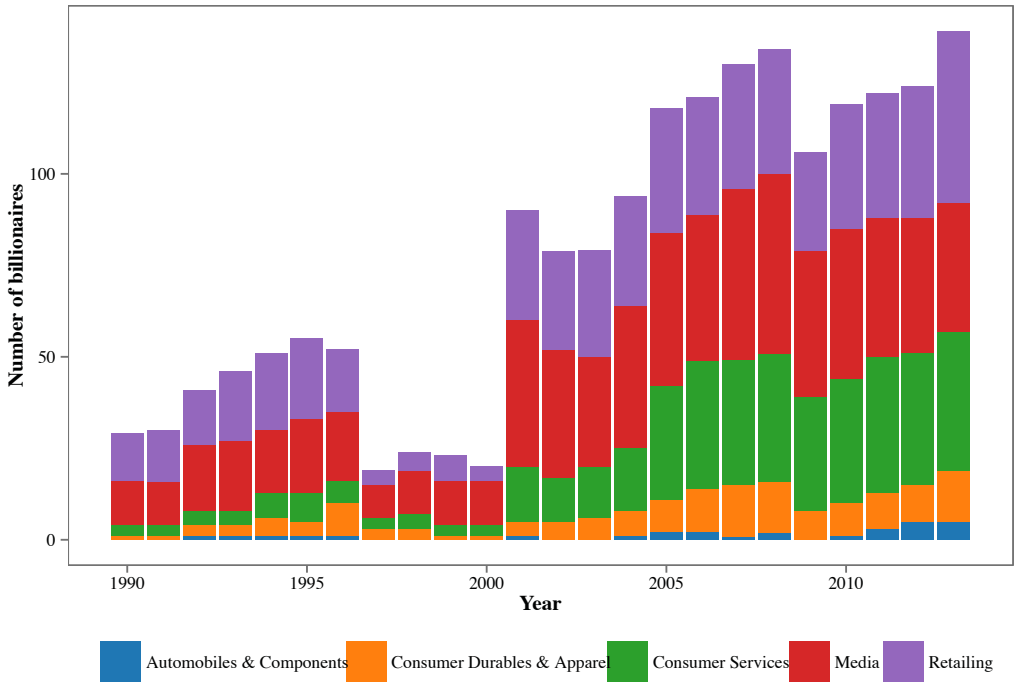


Figure 6.4 Consumer discretionary sector trends in North America, 1990-2013

Source: Forbes (1990-2013), Author's compilation from various secondary sources

In total, 35 individuals found their fortune in media as of 2013, having fallen from a high of 49 in 2008. Some portion of the decrease can be explained by death, where the subsequent inheritance was divided up into individual portions falling below the one billion dollar *Forbes* threshold. Examples include the co-founder of The Weather Channel and head of Landmark Communications, Frank Batten, who died in 2009 (Hevesi, 2011), and John Kluge, who was once rated the wealthiest man in the world in the late 1980s after making his fortune by buying and selling broadcast and cellular properties, (Berger, 2010). After Kluge died in 2010, his wealth was shared among his three children, despite some media outlets stating that the fortune had disappeared (Martel, 2014). In 2009, Leonore Annanberg passed away with an estimated net worth of $1.7 billion, and the estate was divided up between numerous beneficiaries (McFadden, 2009).

Overall, however, except for personal risks or death, media appears to have been a robust source of wealth in North America in the recent past. A major reason for this appears to have been a large increase in mergers and acquisitions between various media companies, generating enormous returns to owners. Bagdikian (2000) shows that the process of concentration in media is greater in the past 20 years compared to any prior period:

> In 1983, fifty corporations dominated most of every mass medium and the biggest media merger in history was a $340 million deal …. [I]n 1987, the fifty companies had shrunk to twenty-nine.… [I]n 1990, the twenty-nine had shrunk to twenty three…. [I]n 1997, the biggest firms numbered ten and involved the $19 billion Disney-ABC deal, at the time the biggest media merger ever …. [In 2000] AOL Time Warner's $350 billion merged corporation [was] more than 1,000 times larger [than the biggest deal of 1983]. (pp. xx-xxi)

From 2000, the number of media moguls increased from 8 to 35, suggesting that the scope for wealth creation in media is still there, though it tends to be associated with older individuals who have long been in the media game or those via intra-generational inheritance. Of course, the rise of the Internet must constitute one of the determinants that have caused an immense increase in the number of media moguls, with their content now being able to reach a global audience rather than just the US. Rosen's (1981) argument that advanced technological communication platforms increases returns to scale becomes easily attainable. Given the association between scale and technology the Internet provides an ever-greater pool from which new individuals will make large fortunes. Moreover, the scale attainable suggests that accumulation through mergers and acquisitions is not likely to let up anytime soon with newer content providers and delivery systems vying for both the North American and global markets.

Closely mirroring the growth in media has been the growth in representation of the consumer services. Over 1996 to 2003, the number of billionaires averaged 15; however, over the 2005 to 2013 period the mean number of billionaires ballooned to 48. The increase has been dominated by the hospitality sector owing to both demand and supply factors. On the demand side, tourism in the US has undergone a growth, with tourist numbers far outstripping those of Europe and Asia throughout the 2000s (Hobbs & Toscano, 2014). Perhaps signifying still existent arbitrage opportunities, the growth in demand has not witnessed a commensurate rise in the supply of hotel rooms, leading to increased pricing and, therefore, substantially increased revenue for incumbents. Still on the supply side, an added force that may assist in creating greater wealth accumulation in the sector is a substantial increase in the casualisation of the US hospitality workforce. The process towards casual work was evident in 2013, with hoteliers and restaurateurs recruiting a greater proportion of part-timers than full-time employees (Hobbs & Toscano,

2014). Given the relative recent growth in hospitality, the majority of wealth is associated with self-made wealth.

The high incidence of inheritance in the consumer discretionary sector is largely driven by the retail sector. Examining the raw data, the number of retail moguls increased from just four in 2000 to 31 in 2001, an increase of 675%. Though it plateaued throughout the 2000s, it peaked at 46 in 2013. Of these, an average 46% inherited their wealth, with the Walton family the most famous and wealthiest. Christy, Jim, Alice and Samuel Walton all had an individual net worth in excess of $20 billion in 2013. Other inheritors litter the list with many demonstrating a propensity to diversifying the business interests through either vertical supply chain purchases or straight-out acquisitions. Charles Butt made billions by diversifying into Latin American neighbourhoods and Mexico after inheriting the family owned H. E. Butt Grocery chain. The Waltons also commandeered an aggressive position over the value chain by often negotiating at below cost for products to appear on the retail giant's shelves. In retail, at least, a winner-takes-all dynamic has arisen, either through mergers or acquisitions.

Of the self-made individuals, the majority built the foundations for their success in the 1950s or 1960s, reflecting the opportunities afforded to entrepreneurs during an era of high growth and commensurate high returns, as discussed in Chapter 3. Bernard Marcus, James Moran and Jean Coutu all successfully exploited the growing consumerism of North American society through the application of innovative retailing strategies. The strategies ensured the attainment of rapid scale across the North American landscape during the golden years of post-war capitalism.

Overall, the billionaire number increases in the consumer discretionary sector seem to be much more aligned with the randomness hypothesis of Thurow (1975) for the self-made entrepreneur. When it comes to inheritances, there is a marked tendency for growing one's wealth through acquisitions or diversification of business holdings.

6.2.2 Financials

Eclipsing the number and growth of billionaires in the consumer discretionary sector is the financial services industry, which is here taken to represent banking, diversified financials (including hedge funds) insurance, and property investments. Financial services continue to provide fertile ground for extraordinary riches to be made, despite

being the sector at the core of the Great Recession of 2008. A similar dynamic is observed during the Gilded Age when the depression of 1893 did little to dent the accumulation of wealth among the financial and propertied groups (Rockoff, 2012). Referring to Figure 6.5, only diversified financials and property have shown high growth over the entirety of the sample and since the Great Recession. Given that the US has a market-based financial system, it is not surprising to observe that insurance and banking have only small representation on the wealth tables. In 2013, there were 107 billionaires in diversified financials, representing a significant increase from the 84 observed in 2008. Similarly, for real estate, a high of 38 was reached in 2008, before decreasing to 27 in 2009, but then recovering to reach 41 in 2012 and 33 in 2013. The number of billionaires increased from nine in 2000 to 58 in 2001, a dramatic increase of 544%, though the majority was due to diversified financials.

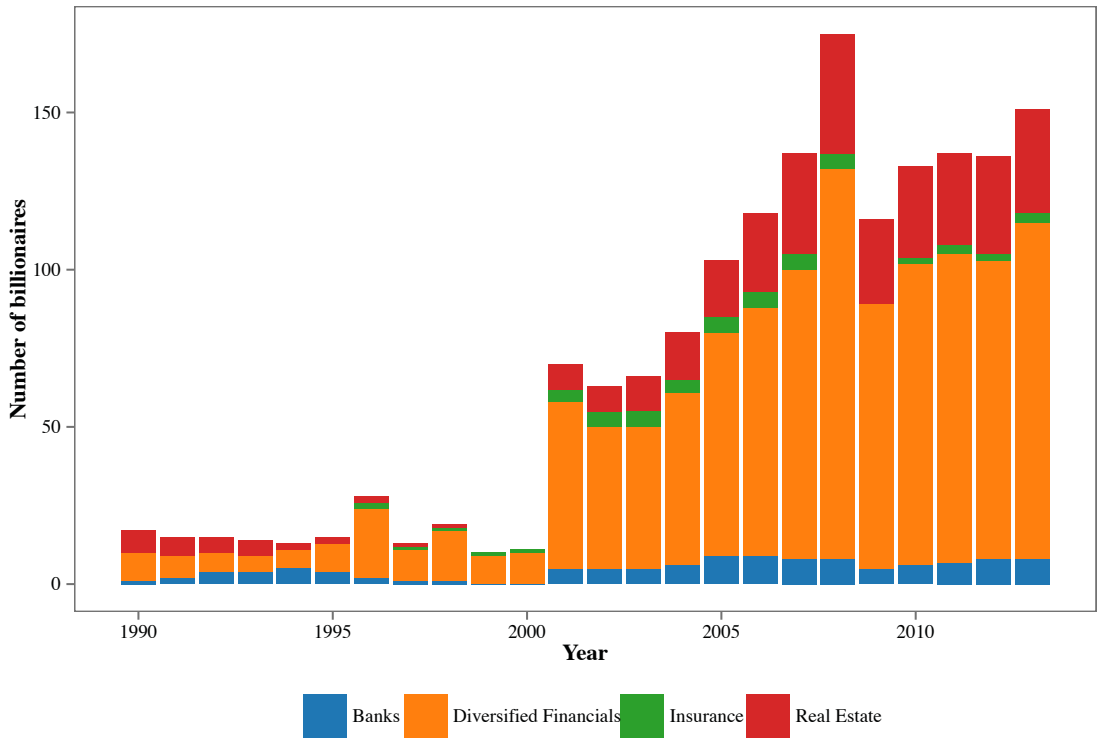


Figure 6.5 Financials sector decomposition and trends in North America, 1990-2013

Source: Forbes (1990-2013), Author's compilation from various secondary sources

A booming stock market during the late 1990s presents itself as an obvious explanation as to why the financial sector in North America is the dominant industry in producing vast fortunes. However, significant regulatory changes throughout the past 30 to 40 years present just as compelling an explanation in creating the necessary opportunities for such growth in the finance sector. For example, the Tax Reform Act of 1986 eliminated the attractiveness of real estate tax shelters, causing the real estate

boom to go bust in the 1980s. Consequently, individuals such as Andrew Beal purchased distressed real estate loans throughout Texas, securing his meteoric rise in the wealth ranks.

A problem with dealing with the diversified financial community is that it incorporates largely disparate groupings. This study focuses on the two sub-sectors that have brought the most growth, investments (incorporating managed fund owners) and hedge fund owners. Figure 6.6 displays both the average age and number of those engaged in the investment sector. Three items are of note. Firstly, as in other sectors of the US economy, the number of individuals who generated their wealth from investing demonstrated a dramatic increase from 2000 to 2001. In 2000, there were five billionaires and by 2001 there were 38, representing an increase of 660%. The US stock market downturn of 2002 only had marginal effects on the number of billionaires who remained in the rich lists. Since 2001, there has been substantial growth, with the GFC proving to be only a momentary hurdle for growth. Since 1990, the average growth rate has swollen the number of super rich by 10.9% overall (geometric mean). Taking the more extreme period, 2000 to 2013, the growth rate is an astonishing 24.5% per annum. By 2013, there were 87 billionaires, of which 77 were self-made and 10 inherited their wealth. Since 2002, the relative proportion of self-made individuals has increased from 68.4% to 88.5% in 2013.

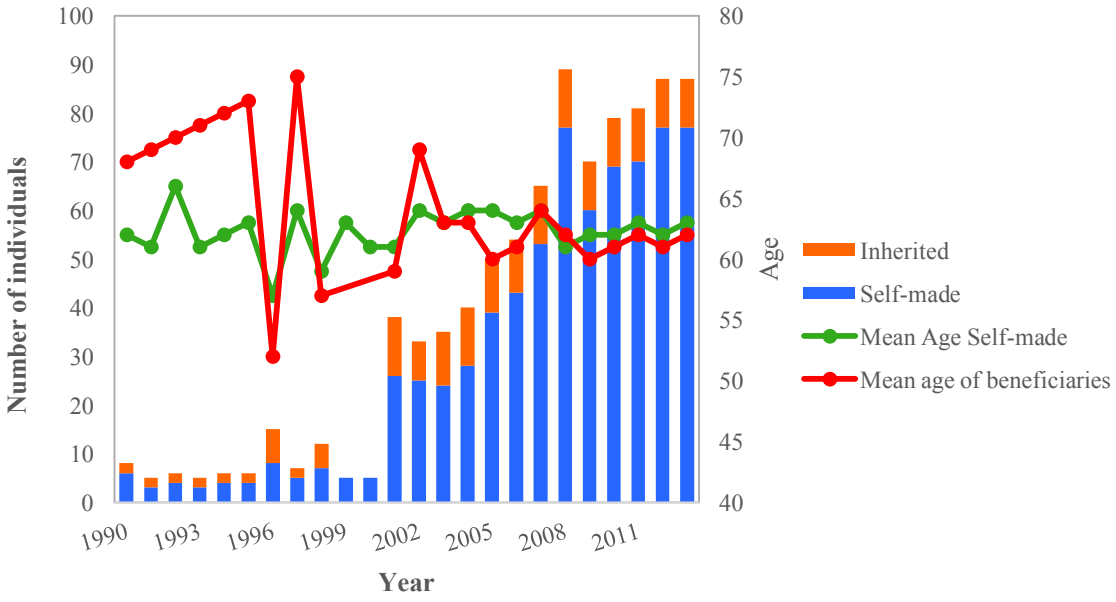


Figure 6.6 Number and mean age of billionaires in North America: Investments

Source: Forbes (1990-2013), Author's compilation from various secondary sources.

Among the investment community the older cohorts mainly began their roads to wealth during the 1970s and 1980s. The timing of their entry into the industry positioned them to effectively benefit from the changing nature of the financial landscape, largely due to regulation. For example, under Regulation Q of the Banking Act of 1933, a 5.25% ceiling on savings accounts was imposed. According to Sherman (2009), this had a deleterious impact upon the ability of banks to attract capital but benefitted a new emerging class of financiers:

> In the late 1970s, inflation caused market interest rates to rise above the limits mandated by Regulation Q…. Brokerage firms and other financial institutions began to create money market mutual funds … They quickly became popular among small investors who shifted their money out of the regulated accounts in depository institutions, which paid considerably lower interest rates. (p. 6)

The impact can be viewed clearly in Figure 6.7, where the managed funds industry saw dramatic growth in the 1980s. More recently still, the Financial Modernization Act of 1999 allows financial services companies to achieve unprecedented scale.

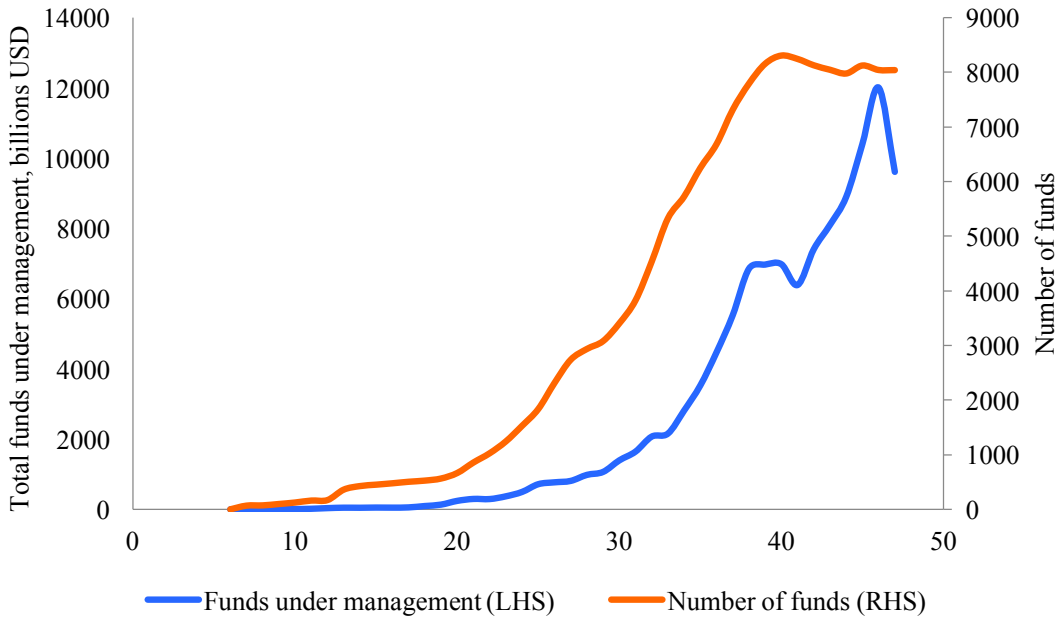


Figure 6.7 Net assets under management in North America, 1940-2013

Source: Investment Company Institute (2015)

Although the proportion of inherited wealth has remained relatively stable, there appears to be differences between the two groups in terms of how their wealth and associated enterprise interests are handled. A sizeable proportion of self-made individuals in investments made their fortunes by targeting specific investments rather than diversifying. Previous scholarship has often identified the ability of investments to be rapidly capitalised in a Fisherian manner (Hirsch, 1911; see Thurow, 1975). Examples of such individuals abound in the US data with many making their fortunes in private equity particularly. In contrast, the inherited group generally appear to adopt much more diversified approaches to their investments.

Given the impact of hedge funds on the industry some attention is focused on the pioneers of this sector. Generally, the overwhelming majority can be described as self-made entrepreneurs from the baby boomer generation compared to the older cohorts observed in the investments community. Table 6.1 shows that since 2001, the average age of hedge fund billionaires has decreased from the mid-60s during the 1990s to approximately the mid-fifties since 2002. The large, almost, generational shift is mostly attributable to a large influx over the past decade. During the 1990s, the number of hedge fund billionaires was small, just one, George Soros, born in 1931. In 2001, there were four hedge fund billionaires; by 2012 the number of billionaires had swelled to 31, an increase of 675% and representing 35.6% of the diversified financials community. With the increase, there has been a large concomitant decrease in the average age of the hedge fund billionaires, decreasing from 60 in 2001, to the mid-50s throughout the 2000s.

Table 6.1 Number, mean age, and date of birth of hedge fund owners in North America

Year	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Number	1	1	1	1	1	1	-	4	3	3
Average Age	63	64	65	66	67	68	-	60	58	59
Average Birth Year	1931	1931	1931	1931	1931	1931	-	1941	1944	1944
Year	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Number	5	7	10	13	28	24	25	26	31	31
Average Age	54	56	54	56	53	55	55	56	56	57
Average Birth Year	1950	1949	1953	1951	1955	1954	1955	1955	1956	1956

Source: Forbes (1990-2013), Author's compilation from various secondary sources.

The growth in the hedge fund industry and the antecedent wealth it generated for its captains can be traced to two main factors. Firstly, the source and size of fund flows

has dramatically changed since the 1990s. In previous decades, wealthy individuals were, typically, the main investors in hedge funds. However, the sheer scale of fund flows has now largely emanated from mutual and pension funds brimming with large pools of funds (Stulz, 2007). An important issue is why hedge funds should be attracting such significant investment flows from institutional investors and wealthy individuals. As noted in Chapter 3, that real returns have been significantly decreasing since the Second World War across both North America and Western Europe. Could the search for higher returns be driving a flight to hedge funds? According to Preqin (2014), more than 80% of fund flows into hedge funds come from Europe and North America. The Preqin (2014) industry survey lists three major reasons why institutional investors favour hedge funds, including: the ability to reduce volatility; diversifying risk *premia*; and producing absolute returns.[24]

Secondly, hedge fund fee structures ensure a robust channel for wealth accumulation. Compensation contracts that are extremely favourable to the hedge fund managers ensure significant pecuniary advantages:

> ...almost all hedge fund managers have an asymmetric compensation contract that specifies that they receive a substantial fraction of the profits they generate …. Typically, hedge fund managers receive a fixed compensation corresponding to 1-2 percent of the net asset value of the fund ... and 15-25 percent of the return of the fund above a hurdle rate (which can be the risk-free rate). (Stulz, 2007, p. 184)

Given *a*) the massive influx of cash flow into hedge funds, and *b*) the generous compensation packages of hedge fund managers, it is not surprising to observe the swelling of wealth being generated in this sector.

The other great producer of wealth for North America's financial sector has been property – although close inspection of the data suggests that the scope for new wealth is limited. Figure 6.8 presents the overall number and average ages of realty billionaires in North America between 1990 and 2013. The number of billionaires languished in single digits during the 1990s, with the maximum numbering a meagre 6

[24] Absolute returns taken to mean the search for investment strategies generating only positive returns.

in 1990. Throughout the 1990s, there was, in fact, a secular downward trend and by 1999 not one real estate billionaire appeared in the *Forbes* list. However, by 2001, there were 8 billionaires and by 2008 there were 38, an increase of 375%. Significantly, the majority of growth is due largely to self-made individuals and not inheritance. However, this should not be tied to recent entrepreneurial effort. The average number of inheritances over the entire sample has remained low at 3 with the highest recorded in 2012 and 2013 at 6. Turning to the billionaires' ages, more variation and a higher mean age overall are observed compared to the other investment related sectors.

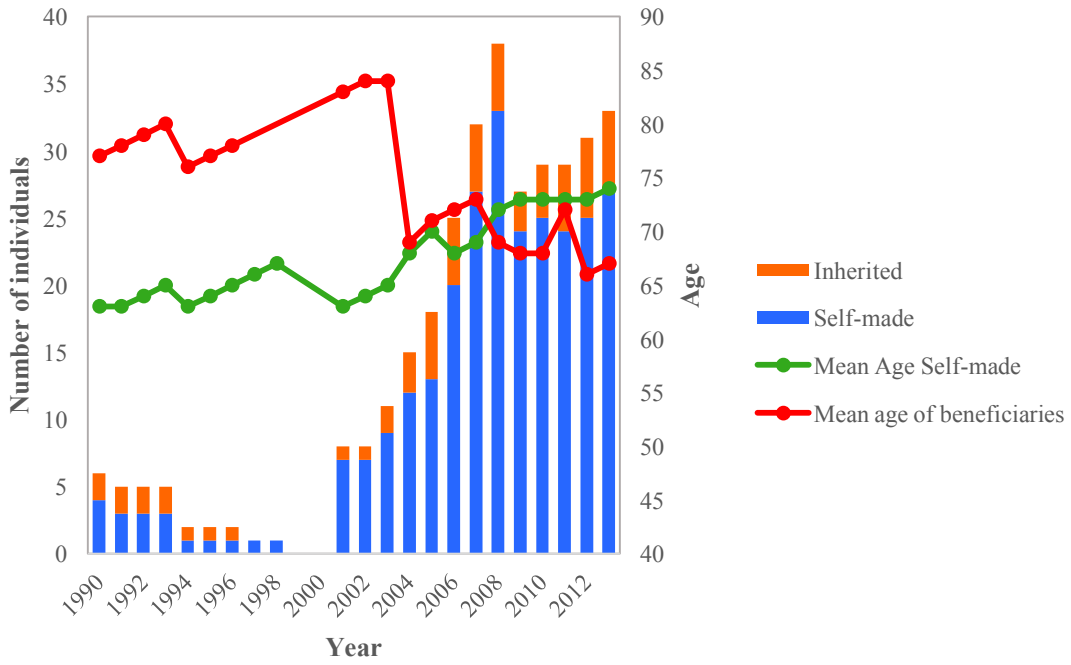


Figure 6.8 Number and mean age of billionaires in North America: Real estate

Source: Forbes (1990-2013), Author's compilation from various secondary sources.

Both the stalwarts and relative new entrants into the billionaire ranks have a long history in the property game, and represent fortuitous timing in the grand socio-demographic changes experienced by North America after the Second World War. The original propertied billionaires, individuals such as DeBartolo Sr., Taubman and Bren, all appear to have recognised the significant demographic changes of the 1960s towards suburban living. The experience of the more recent rich inductees reflects the paths of the older cohorts during the 1960s and 1970s.

A confluence of economic and policy forces throughout the 1930s to 1970s ensured that the economic structure was there for any keen entrepreneur to exploit. The creation of the Federal National Mortgage Association (Fannie Mae) in 1938 provided mortgage finance to millions of prospective and aspiring homeowners in subsequent decades. The G.I. Bill of Rights provided the backbone for a massive home development market. By 1952, the government backed approximately 2.4 million homes. The *Federal-Aid Highway Act* of 1956, which provided funding for 41,000 miles of interstate highways, ensured that viable suburban communities to develop could be connected to large regional metropolitan centres. The freeway initiative having benefits for individuals involved in the mass development of master planned communities such as Donald Bren (Forsyth, 2005). Similarly, the urban sprawl providing fertile ground in which shopping malls would become part of the wealth generating businesses for individuals like DeBartolo and Taubman.

To summarise, several salient themes become apparent among the propertied elite. Much of the wealth is generated via construction of retail centres or supplying residential housing. Ultimately, both were largely spurred on by the substantial post-war wave of urbanisation across both the US and Canada. For property, at least, the means to extreme wealth appears to be very much restricted to having identified opportunities in the post-war era and accumulated significant property holdings in the 1950s to 1970s. The surprising lack of 'youthful' wealth suggests a substantial cohort effect during the post-war era. The rise itself in the number of billionaires during the 2000s is obviously associated with the boom in property prices – however, a substantial element in their success is fortuitous timing since their investments during the 1950s and 1960s placed them in a position to ride the property boom of the 1990s and beyond.

6.2.3 Information Technology

In popular media, whenever billionaires are brought up, reference is typically made to those who made a vast fortune in IT. Indeed, given that Bill Gates is usually considered the wealthiest man alive, this is not surprising. Even in economic debates on the merits of vast wealth, advocates of the rich will often highlight names from this industry. The name of the late Steve Jobs is often evoked (see e.g. Mankiw, 2013). Further, a cursory glance across industry news would often suggest that many of those who made their fortunes are still very young, a trend that has continued since the

1960s with the pioneers of the microchip architecture. More recently, individuals such as Jeff Bezos (Amazon) and Mark Zuckerberg of Facebook fame have continued the trend of relatively young individuals making rapid wealth gains in IT. In many respects, these individuals are often accorded a similar status to the individuals who spurred on the industrial revolution in the UK in the early nineteenth century. A significant difference, however, is that the industrialists of that era were never at the pinnacle of the wealth tree compared to what is observed with the wizards of the digital revolution.[25]

Figure 6.9 presents a breakdown of the IT sector by time along the dimensions of average age and the number of billionaires. The sample is not divided by inherited and self-made wealth only two names had inherited wealth: Henry Ross Perot Jr., the son of the former US presidential candidate, Henry Perot, and Laurene Jobs, the widow of the Apple cofounder Steve Jobs. Overall, the average digital billionaire is aged 53, though the average age did demonstrate a marked downward trend throughout the 1990s to 2000. Only with the influx of new entrepreneurs from Internet-related enterprises is the average age suppressed. By 2001, with the dot com crash largely sorting the winners and losers in the Internet game, the average age once again started to slowly rise and continued to do so particularly between 2004 and 2013, suggesting more maturity in the industry. The increase in the average age has not, however, appeared to diminish for the computer or IT industry's capacity to generate significant wealth. By 1999, there were 12 billionaires in this industry, by 2001 it had jumped to 32, by 2010 it was 48 and by 2013 it had reached 53. Annually, the number of individuals added to the ranking has averaged 15% on the previous year.

[25] As Rubinstein shows, the financial and propertied classes dwarfed the wealth of the British industrialists in the 1800s.

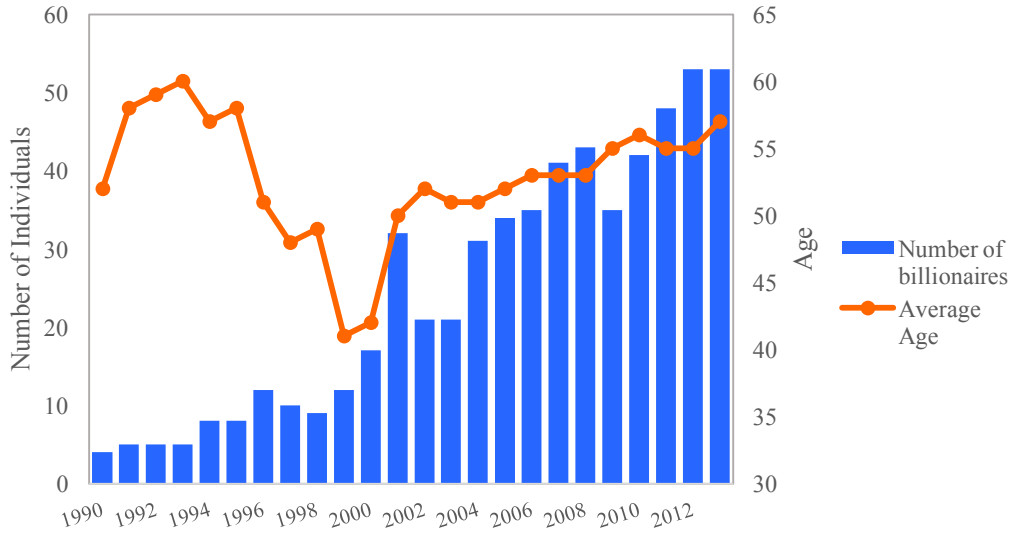


Figure 6.9 Number and mean age of billionaires in North America: Information technology

Source: Forbes (1990-2013), Author's compilation from various secondary sources.

Before proceeding, it is necessary to further breakdown the sample according to sub-categories. As it stands, by applying the GICS overlay the industry detail is lost. This is an important issue since the IT industry is substantially heterogeneous with many making fortunes in software development, hardware development, computer consultancy or the Internet (with the last often incorporating elements of the other three), each possessing a degree of heterogeneity in the path to great wealth.

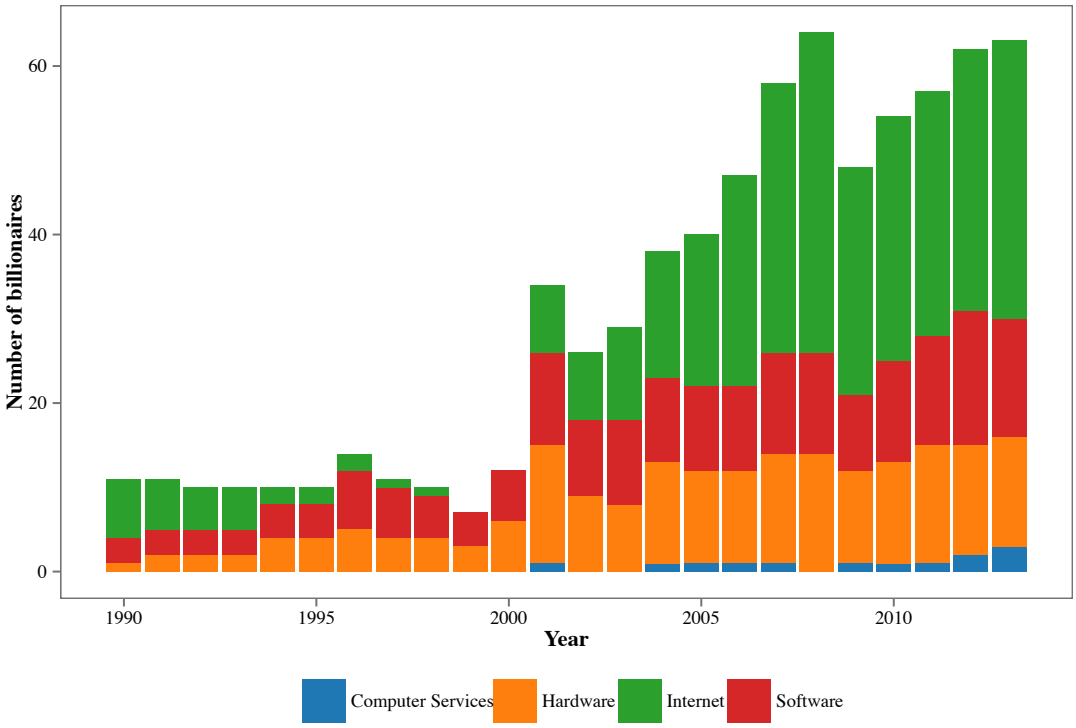


Figure 6.10 Information technology sector decomposition and trends in North America, 1990-2013

Source: Forbes (1990-2013), Author's compilation from various secondary sources.

Figure 6.10 disaggregates the sector by the four subcomponents. The chart suggests that software and hardware only experienced rapid growth in the late 1990s. The number of hardware vendor entrepreneurs averaged 3.1 in the 1990s, increasing to 8.7 between 2001 and 2013. Software demonstrates similar numbers, with an average of 4.4 individuals amassing great fortunes in the 1990s, increasing to 11.4 between 2001 and 2013. Overall, particularly when compared to the IT industry as a whole, the slow growth rates can either be explained by appeals to notions of maturing markets, as well as substantially more competition from East Asia, particularly in the hardware sector through such manufacturers as Acer, Asus, Sony and Samsung, and software development from India. Growth rates have been much more robust among Internet-connected entrepreneurs, with an average growth rate of 20% since the first billionaires made their fortunes in 1990s. From 2001, the number of Internet-related billionaires was five, increasing to 23 by 2013. This compares favourably against hardware (11.6%) and software developers (10.4%).

Among the hardware and software entrepreneurs, numerous household names abound. William Hewlett and David Packard names have become synonymous with the personal computer and printer hardware. In software, Henry Ross Perot, born in 1931, now best remembered as a US independent presidential candidate in the 1990 and 1996 elections, also saw opportunity in major sales to the US government. The one-time International Business Machines (IBM) salesperson, Perot created Electronic Data Systems (EDS) in 1962. EDS' principal revenue came from the computerisation of the government's Medicare and Medicaid records in relation to the Great Society programs (Swedin & Ferro, 2005). The rise of computer equipment as a channel of wealth accumulation during these formative years can be readily observed in aggregate sales for the US. Table 6.2 shows the continued growth of computer equipment sales as a significant contributor to overall US gross domestic product (GDP) from the 1960s, demonstrating the significant possibilities for wealth accumulation.

Table 6.2 US computer equipment sales, 1990-1995

Year	*GDP (billions)*	*Sales of Computing equipment (billions)*	*Computer Equipment as % of GDP*
1960	513	1.5	0.3
1970	1,010	10.5	1
1980	2,708	55.1	2
1990	5,546	154.8	2.8
1995	7,117	204.8	2.9

Source: Committee on Innovations in Computing and Communications: Lessons from History (1999)

As in many of the other industries, much of the innovation of these early innovators and entrepreneurs arose during an era of high-income growth and taxation. One of the main reasons for this, is that much of the evolution in computing appears to have followed a process of knowledge diffusion across numerous parties rather than being tied to individual genius. Knowledge diffusion, for example, being identified by Rockoff (2012) as of paramount importance to the success of the early pioneers of assembly manufacturing. Perhaps the prime example of this is Gordon Moore and the subsequent technological spinoffs. Moore, co-founded Intel in 1968 with Robert Noyce, and was part of the infamous Silicon Valley story of the 'Traitorous Eight'. Previous to Intel, a bespoke approach to integrated circuitry was required that swelled the costs of the technology limiting market scale. Intel developed a paradigm that still exists today - develop a single integrated circuit with general capabilities, and then use software to tailor the tasks to be undertaken by the computer (Ceruzzi, 2003). Not only did Moore's brainchild ensure future success for himself personally, but it also provided the platform upon which others in the 1970s and 1980s, such as Bill Gates or Steve Jobs, would be able to grow their own business and fortunes – a process in line with the pattern of knowledge evolution in industries first observed by Jones (1831).

It must be emphasised that much of the early innovation was attributable to substantial funding of the US government. For example, 'federal contracts supported more than half of the R&D and about 35 per cent of R&D as late as 1963' (Committee on Innovations, 1999, p. 88). Direct funding was not always a necessary precursor, indeed often the research slowly disseminated through several years before a commercial application could be found. Indeed, as has often been pointed out,

entrepreneurs such as Steve Jobs at Apple and Bill Gates at Microsoft 'built upon ideas developed previously, many of them with government funding' (Committee on Innovations, 1999, p. 108). Rather, the dissemination of knowledge and collaboration ensured technological progress wherein viable commercial applications were found.

Among the more recent billionaires, there is a preponderance of those making their fortunes with Internet-related businesses. What is, however, perhaps most compelling is the extent to which these individuals have amassed vast fortunes in a short span of time and the rapidity with which they have tended to diversify their business interests, as exemplified by Google's Larry Page and Sergey Brin. Mark Zuckerberg of Facebook fame is by far the most famous, debuting on the billionaire rich list in 2008 with an estimated net worth of $1.5 billion in 2008. His net worth rose substantially prior to the initial public offering (IPO) for Facebook in 2012, reaching $13.5 billion in 2011. By 2012 when the IPO was made, Zuckerberg's wealth rose by $6 billion to $17.5 billion. The ability to displace an old industry and quickly scale to a vast market is seen in the case of Jeffery Bezos and his Amazon empire. Although Bezos's wealth could be tied with the retail sector, there are sufficient business interests that firmly centre his company into the IT sphere. Amazon gained substantial market share firstly in online book and movie sales but has since moved into product categories usually sold by bricks and mortar department stores. Further, Amazon has diversified into cloud infrastructure and tablet and phone devices. PayPal is an example of an enterprise that has radically transformed the payments system and elevated one of its founders, Peter Thiel, to billionaire status, as is eBay.

6.3 Western Europe: Old and New Money

In shifting focus from North America to Western Europe one is immediately struck by the central role played by old or inherited wealth compared to North America. In Chapter 4, Table 4.3 was used to compare the relative numbers of inherited and self-made fortunes between regions. Throughout the 1990s, the proportion of individuals that had inherited their wealth was approximately 73.4% for Western Europe compared to 51.4% for North America. As one shifts into the latter years of the sample, the trend in Western Europe reverses, with the self-made individual increasingly dominating the enumerated rich lists. Since 2010, there have been consecutive points in time where the self-made rich represent the majority of billionaires in Western Europe, although there

is a small reversal towards inherited wealth. For example, in 2012, 43.9% of Western European billionaires had inherited their wealth; by 2013 this had increased to 46.8%. Contrasted to this are the North American observations, where only 29.4% and 29.9% had inherited their wealth in 2012 and 2013, respectively. What is influencing the dramatic and contrasting wealth structure between Western Europe and North America? To explore this question, the Western European data is discussed with reference to both the country breakdown and the main sectors of wealth generation in each.

To acquire a better understanding, the inherited and self-made groups are further disaggregated by country. The results are presented in Figure 6.11. A cursory glance immediately reveals that there is an intra-European gulf in the proportion of old and new wealth that is masked by the aggregate data in chapter 4. The gulf is particularly between continental Europe on the one hand and the UK on the other. For France and Germany, 71.1% and 70.8% on average inherited their wealth, respectively over the sample period. In contrast, the British billionaire composition shows a dramatic shift from 2002 to 2004, where there was a precipitous increase in the number of self-made billionaires. Here, there is a major reversal in the composition of wealth. Throughout the first half of the sample, 1990 to 2001, the mean proportion of inheritances was 73.62%. For the second half of the sample, 2002 to 2013, dramatically reverses, with the mean drastically decreasing to 25.87%.

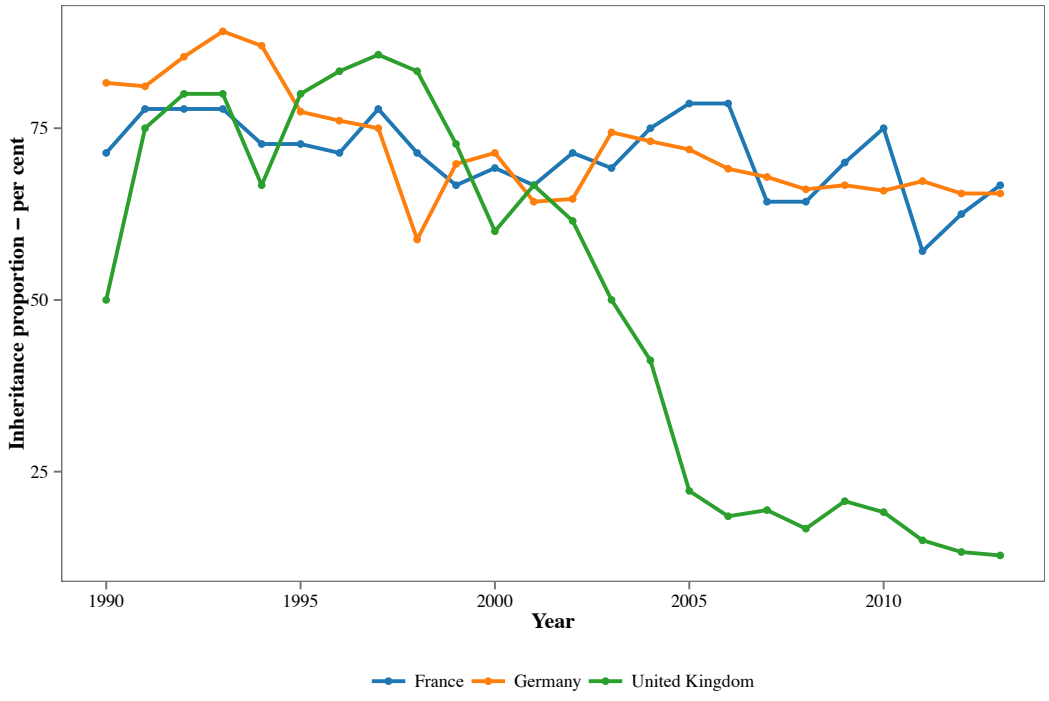
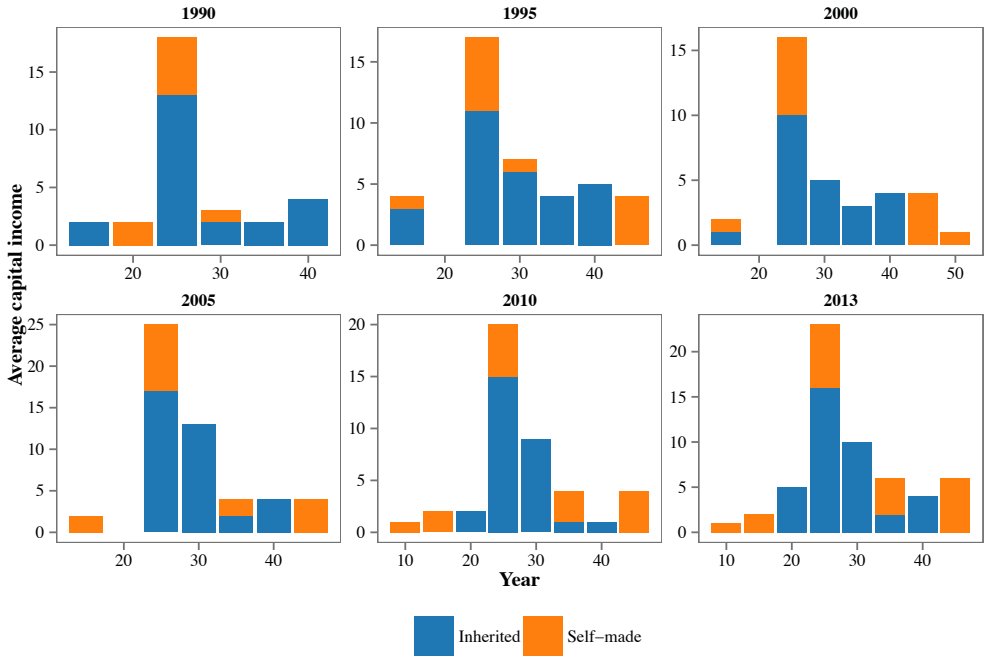


Figure 6.11 Proportion of inheritances across Western Europe, 1990-2013

Source: Forbes (1990-2013), Author's compilation from various secondary sources.

6.3.1 Germany: Dominance of Patronage

The gulf in inherited and self-made fortunes is particularly acute between Germany on one hand and the UK and the US on the other. Given the importance of inherited wealth for the composition and structure of Germany's largest wealth holdings, the discussion first focuses on those industries in which a few key families dominate. This includes families who made their wealth either from the pre- or post-war eras. As Figure 6.11 establishes, the majority of Germany's elite inherited their wealth. Throughout the 1990s, this averaged in the high 70s, by the latter half of the sample the proportion of wealthy has stabilised between 63% to 65%. The industrial distribution is presented in Figure 6.12. Of immediate interest is that inherited wealth is certainly not uniformly distributed across German industries, rather it is clustered in a few key industries. These industries are consumer discretionary (25) and food, beverages and tobacco (30). For the remaining industries where inherited wealth is present, the number of individuals is considerably low at one or two. Although this should not necessarily be taken as signifying a lack of commercial significance.



Note: The chart provides a visual summary of the distribution of billionaires across German industries using the two-code GICS. The data is presented on a 5-year interval basis. The number and associated sectors are: **10:** Energy, **15:** Materials, **20:** Industrials, **25:** Consumer Discretionary, **30:** Consumer Staples, **35:** Health care, **40:** Financials, **45:** Information Technology, **50:** Telecommunication Services, **55:** Utilities.

Figure 6.12 Distribution of industries in Germany: Inheritances

Source: Forbes (1990-2013), Author's compilation from various secondary sources.

Industrials have traditionally been viewed as a mainstay of Germanic economic expertise. A cursory glance at the wealth ranks reveals a plethora of dynasties that have dominated the German industrial landscape for well over a century now. Among the producers of capital goods are names such as Bosch, Haniel, Diehl, Rochling, and von Siemens – family dynasties mostly founded prior to the twentieth century. Despite the immense wealth of these family dynasties, many have fallen outside of the rich list due to the diffusion of wealth across successive generations. Those who have maintained a presence, such as the Loh or Happel families, have carried on the family name through diversification into construction or engineering.

The consumer discretionary sector possesses both the bulk of billionaires and the great number of inheritance beneficiaries. There is not much variation in the degree to which inheritance dominates across German industry. Among the inherited media wealthy, the means of maintaining wealth is through acquisitions and geographical diversification. Some of the more recent listed names are Reinhard Mohn (born in 1922) and Anneliese Brost (born in 1921). Brost inherited her stake from her deceased husband, Erich Brost, who was one of the cofounders of *Westdeutsche Allgemeine Zeitung*, one of Germany's largest newspapers. Yvonne Bauer's plan for the family business falls in line with the established pattern observed among other inherited wealth holders, of growth through acquisitions globally. For example:

> [a] flurry of recent activity suggests that Yvonne Bauer has ambitions to expand this global empire, which already extends to 15 countries.… Last month, she splashed out A$500m (£320m) to buy the Australian magazine group ACP [Australian Consolidated Press], including top-sellers such as *Woman's Day* and *Harper's Bazaar*. (Spanier, 2012, para. 9-10)

Despite Germany possessing a bank dominated financial system, finance only has a miniscule representation. Despite the size of Germany's financial system, only 4 billionaires in 2013 have been found from the ranks of financiers. The number has largely remained stable since 1990. The lowest points being reached in 2010 (one), and 1998 (one). The list of finance self-made men is short, at just one. Here Karl Ehlerding, born in 1945 made his fortunes in corporate raiding, though suffered a substantial

setback in 2002 when his equity investments fell by up to 80% and subsequently disappeared from Germany's wealth ranks. Of the 13 names to amass a fortune of $1 billion since 1990, only two have managed to appear for the majority of the sample period, August von Flick, Jr. and Rolf Gerling. Both individuals coming from inherited wealth. Rolf Gerling (born 1954) inherited from his father Hans Gerling the family's insurance business. The family insurance business, Gerling Konzern Versicherungs Beteiligungs Aktiengesellschaft, did not cultivate close ties with the Nationalsozialistische Deutsche Arbeiterpartei (NSDAP), though it did do brisk business with it. The lack of close ties with the NSDAP allowed it to escape de-nazification processes by the Allied powers. Unlike many German families where interest in the family business continues, Gerling, just like von Flick, has diversified away from the traditional family business into diversified investments and consulting work. Compared to the US, the UK, France and Australia it is noticeable that there is a distinct lack of property billionaires.

The key to much of the recent strength of Germany's inherited elite seems to be tied to the extent to which many of the families have been able to diversify away from the traditional family business or diversify internationally through acquisitions. Numerous elements to Germany's modern day legal and tax frameworks may have facilitated this process too. Firstly, strong anti-trust laws ensured the longevity and protection of German firms during the post-war era, allowing older families to maintain their commercial bases intact from competition. The German Act against Restraints on Competition prevented mergers and acquisitions allowing many of the family owned corporations to survive in the midst of much larger American corporations. However, perhaps more importantly has been the role played by estate tax in permitting the flourishing of German dynasties and ultimately their longevity. Figure 6.13 compares the progressive tax rates across the US, Germany and France. Since the 1930s, both Germany and France have shown a lower estate tax burden on their citizens compared to the US and also demonstrate substantial inheritance representation among the ultra-rich. It is particularly telling that during the mid-1950s to mid-1970s, Germany's top inheritance tax rate was 15%, far below the 80% and 78% enforced in UK and the US, respectively.[26]

[26] Chapter 4, section 4.2.6.1 has discussed in more general terms the impact of inheritance taxes on estates and gifts in general.

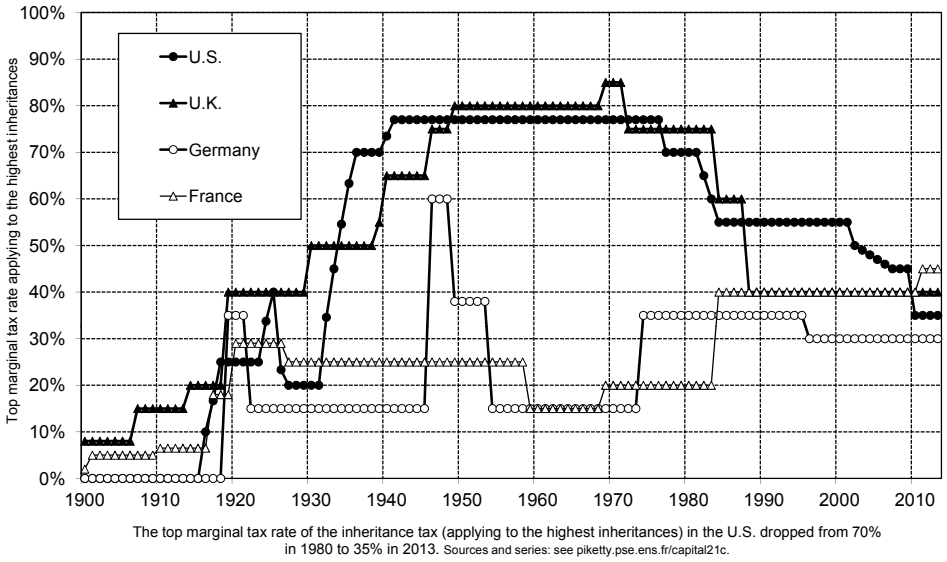


Figure 6.13 Top inheritance tax rates, 1900-2013

Source: Piketty (2014, p. 503)

An alternative argument could be mounted that cultural differences between Germanic and Anglo capitalisms are at the core of the differences between the dominance of inherited and self-made wealth. Goldsmith's (1969) seminal work on cultural and institutional differences between Anglo-American capitalism and Germanic capitalism focused on the roles played by varying financial institutions. As outlined in Chapter 2, previous scholars have typically argued that the emergence of extreme wealth has in the past, been intrinsically tied to the design of the financial system and its associated institutions. Watkins (1907), for example, argued that what differentiated the Gilded Age from the previous feudal era was the emergence of abstract ownership forms made possible by the development of a financial system. Under a financial market based financial system, 'securities markets share centre stage with banks in terms of getting society's savings to firms, exerting corporate control, and easing risk management' (Demirgruc-Kunt & Levine, 1999, p. 2). In contrast, a bank-based financial system is characterised by 'banks play[ing] a leading role in mobilising savings, allocating capital, overseeing the investment decisions of corporate managers, and in providing risk management vehicles' (Demirgruc-Kunt & Levine, 1999, p. 2).

These definitions themselves do not signal any obvious reason why inheritance should play such a dominating role in Germany's economic elite. The ability to link the creation of vast, intergenerational family fortunes to close banking relationships is a difficult endeavour, since such direct evidence is difficult to come by, particularly given the opaque nature of Germany's banking systems. Historically, German banks have

projected an influence over industrial Germany via substantial interlocking directorates. Jeidels (1905) once argued that in Germany 'the power of the Great Banks is exercised via the legal institution of the supervisory board, rather than through direct influence of financial strength' (p. 145). Gerschenkron (1998) argues that this proximity of corporate and banking relations ensured that bank control 'extended far beyond the sphere of financial control into that of entrepreneurial and managerial decisions' (p. 225).

Recent evidence suggests that the historical case for significant German bank influence is overstated. Fohlin (2005) argues that evidence from the industrial era through to contemporary times does not support the notion that banking firms have ever actually had a substantial influence upon entrepreneurial or managerial decision making among these firms. Furthermore, bank influence is being systematically scaled back by the largest firms (Fohlin, 2005). This study posits instead that close government cooperation in the past in protecting and sustaining wealth is mostly likely to have been a major component in developing the composition of German wealth observed today.

In part, the longevity of some of Germany's ultra-rich family dynasties is due to favourable political environments. Germany's economic elite has been able to maintain economic pre-eminence, despite their country having succumbed to the systematic destruction of physical capital during the Second World War by the Allied powers. During the Second World War, for example, there is evidence that the German industrial elite received substantial assistance and guidance during the National Socialist regime. During the war itself, for example, much effort was expended by both the Nazi regime and the industrialists to ensure that capital was protected. A report penned by the Allied 'Economic Warfare Division' highlights a number of mechanisms through which families such as Krupp and Rochling could maintain their economic dynasties. Their capital swelled by war profits, the Nazi regime recommended that the industrialists export their capital, as '[t]he German industrialists are not only buying agricultural property in Germany but are placing their funds abroad, particularly in neutral countries' (Schwinn, 1944, p. 3). For German industrialists this policy represented a major Nazi policy reversal that had, until this time, enacted and enforced strict controls against the export of capital – now they would receive considerable government assistance towards this end. The post-war era's denazification process did not remove these elites from German industry. Many of the heirs of this elite still maintain substantial control over Germany's industrial base in the present era.

At least for Germany's 'old wealth' there appear to be parallels between the post-Soviet Union states and China and their governments' roles in cultivating and ensuring the continued success of an economic elite during a period of transition, as outlined in Chapter 4, Section 4.5. In both instances, declining political elite, vested with the control and ownership of a country's resources begin to relinquish control to capitalists. There is an important difference, however. In the case of Germany, for example, pre-existing economic elites, although under tight control under the Nazi regime, still maintained substantial control over their own wealth and commercial interests. By contrast, in the former Soviet states and China, economic power was transferred to individuals who previously held positions of political power and then managed to rapidly establish their vast wealth through commercial enterprise, often on a global scale.

6.3.2 France: Moving Towards an Anglo-Saxon Model of Wealth

Turning to France, the ascendency of patrimonial capitalism is once again observed. The geographical propinquity between France and Germany at the surface suggests similar economic and social forces may be at work. Daumard (1980) argues that the primacy of inheritance in French economic life is largely rooted in a social and economic condition where inheritance represented the only reasonable way towards greater fortune. At the billionaire level, the French data depicts similar propensity for inheritance to still dominate in contemporary times. From Figure 6.11, it is observed that the proportion of inherited wealth has ranged between a high of 78.6% in 2004 to a low of 57.1% in 2010. In absolute terms, the number of inherited billionaires, as reported in Table 6.3, has ranged between 5 (1990, 1997) to 16 (2013). In contrast, the number of self-made has never attained double-digit representation.

Table 6.3 French industrial distribution of billionaires, 1990-2013

	Self-made							*Inherited*							
Year	**20**	**25**	**30**	**35**	**40**	**45**	**All**	**10**	**20**	**25**	**30**	**35**	**40**	**All**	**Total**
1990		2					2		2	2	1			5	7
1991		2					2		2	3	1		1	7	9
1992		2					2		2	3	1		1	7	9
1993		2					2		2	3	1		1	7	9
1994		3					3		2	4	1		1	8	11
1995		3					3		2	4	1		1	8	11
1996		3		1			4		3	4	1		2	10	14
1997		2					2		1	3	1		2	7	9
1998		2					2			3			2	5	7
1999	2	3					5		3	4	1		2	10	15
2000	2	2					4		3	3	1		2	9	13
2001	1	3		1			5	1	2	4	2		1	10	15
2002	1	3					4	1	2	4	2		1	10	14
2003	1	3					4	2	2	3	2			9	13
2004	1	2					3	2	2	3	2			9	12
2005	1	2					3	2	2	3	2	1	1	11	14
2006	1	2					3	2	2	3	2	1	1	11	14
2007	1	2			2		5	2	1	2	2	1	1	9	14
2008	1	2			2		5	1	2	2	2	1	1	9	14
2009	1	2					3		2	2	2	1		7	10
2010		2			1		3		3	2	2	1	1	9	12
2011	1	2	1		1	1	6		2	2	2	1	1	8	14
2012	1	2			2	1	6		3	3	2	1	1	10	16
2013	1	2	1		3	1	8		2	5	6	1	2	16	24

Note: The table provides a summary of the distribution of billionaires across French industries using the two-code Global Industry Classification System (GICS). The data is presented on a 5-year interval basis. The number and associated sectors are: **10:** Energy, **15:** Materials, **20:** Industrials, **25:** Consumer Discretionary, **30:** Consumer Staples, **35:** Health Care, **40:** Financials, **45:** Information Technology, **50:** Telecommunication Services, **55:** Utilities.
Source: Forbes (1990-2013), Author's compilation from various secondary sources.

Table 6.3 shows that the overall number of billionaires has steadily increased over the sample period. During the 1990s, the mean number of individuals was 12. Much like the observations from the US, the late 1990s saw an increase in the overall ranks of the French economic elite, increasing from 7 in 1998 to 15 in 1999. Between 1999 and 2012, the number of billionaires has remained relatively stable, hitting a low of 10 in 2009 due to the economic crisis. However, by 2013, the ranks of French wealthy had increased to 24, its highest point throughout the sample.

Perhaps reflecting the comparative advantage of the French economy, the main industry sources for wealth appear in consumer discretionary (25) and consumer staples (30). In Germany and the US, retail and media moguls tend to dominate. In contrast, for the French, the largest fortunes tend to be found as purveyors of fashion or luxury goods or food producers tend to dominate. Examining the list of fashion and cosmetic moguls,

there is perhaps little need to explore their backgrounds. A veritable list of fashion names and houses emerges. The wealthiest of them all is Liliane Bettencourt, born in 1922, who is the majority owner of L'Oreal. Bettencourt inherited her late husband's stake in the company. The Bettencourt story, one of patrimony is endemic in the French fashion and cosmetics industries. The siblings, Alain and Gerard Wertheimer perfectly exemplify this predisposition. In more recent times, the Wertheimer brothers have expanded the scale and scope of their portfolio holdings by acquiring numerous fashion houses and even a prestigious British gun maker in the form of Holland & Holland.

The pattern of inherited wealth dominating the wealthiest echelons in French society continues across less glamorous industries. Many of these names are relatively well known globally, whilst others are much more centred on France. Dassault Aviation originally founded by Marcel Dassault, is represented today by Serge Dassault who took over the reins of the family business in 1986. Reflecting a pattern observed across both Germany and the US, the younger Dassault diversified across various sectors and in 1995, created a new company, Dassault Group, to reflect the more diversified nature of the firm. Similarly, Martin Bouygues grew into the Chairman and chief executive officer (CEO) of his father's business, Bouygues. Francis Bougues originally founded Bouygues as an industrial works and construction firm. Martin Bourgyes grew the firm into a highly diversified conglomerate with interests in real estate, media, water treatment and telecommunications.

The self-made billionaire is not wholly missing from the French economic elite. Typically, they are found in the finance sector of France and is overall the most representative sector for France's billionaires. This is in stark contrast to Germany, where tight regulations appear to have reined in the potential for the amassment of great fortunes. In finance and banking, self-made billionaires actually outnumber inheritances, albeit the difference is insignificant. Although their absolute numbers are small, there are some interesting phenomena at play. Table 6.2 shows that in finance (40), the first self-made billionaires appeared in 2007, a number of whose successes can be attributed to observing the potential to exploit the opportunities arising from deregulation of France's finance industry. Individuals such as Romain Zaleski and Marc Ladreit de Lacharriere managed to accumulate fortunes during the era of French financial deregulation. Melitz (1990) emphasises the dramatic scope of the reforms by arguing that the reforms in truth represented a significant reversal of the trend towards bank nationalisation and increased regulation. Instead, the reforms of the 1980s in

particular gave a rapid rise to a liberal system with 'the only administered interest rates that remain concern bank deposits, a host of financial products has emerged, and there is no "*encadrement*"' (Melitz, 1990, p. 394). Perhaps most tellingly, Melitz (1990) views the shift as a move towards a financial system more modelled along the lines of the Anglo-Saxon world, as exemplified by the movement to financing of the business sector which was 'once exceptionally reliant on banking for finance… [to one that] now depends to a more conventional extent on internal finance and the capital market' (p. 398).

6.3.3 The UK: Europe's Odd One Out

On the surface, there is no *a priori* reason to suppose that the defining characteristic of continental economic elites, the ascendency of patrimony, should not apply to the UK, too. The UK shares much with both Germany and France in terms of social stratification, the existence of landed aristocracy, early industrialisation, and significant human and capital losses in two world wars and being a former colonial power. If one were to turn to history, and to describe the defining characteristic of western European civilisation one of the major ideas would be the importance of imperial expansion. Britain and France expanded their colonial holdings throughout Africa, the Americas and Asia during the 1700s and 1800s. The rise of colonialism is considered by some to be a defining characteristic of 1800s capitalism. German colonialism, very much the latecomer in European affairs largely grew as a response to the British and French expansionism. For Marxists, colonialism, no matter where it took hold represented a common valve through which capitalism could flourish in these lands. On writing about the links between capitalism and slavery, Eric Williams (1944) famously stated, 'The colonial system was the spinal cord of the commercial capitalism of the mercantile epoch' (p. 142). In some regards, the spinal cord somewhat still manifests itself among the family dynasties observed in Germany. Families such as Krupp, Rochling, Merck and so forth laid the foundations for their descendants' success between 1870s and 1945, for example.

Does the evolution of the economic elite of Great Britain, with all its colonial history, and still existent landed aristocracy reflect the experience of Europe? Or does Anglo Britain more closely resemble the Anglo US and Canada in the composition and evolution of their economic elites? Much work has already been produced examining the upper echelons of British society in economic history. Rubinstein (1980) notes that

historically (at least when examining the historical record of the mid to late 1800s), although inherited wealth has always existed in British society, the degree of new wealth represented is surprising.

Table 6.4 British industrial distribution of billionaires, 1990-2013

	Self-made							*Inherited*				
Year	10	15	20	25	30	40	50	15	20	25	30	40
1990				3				1		1		1
1991				1				1		1		1
1992			1							2	1	1
1993			1							2	1	1
1994			1							2		1
1995			1							2	1	2
1996			1							2	1	2
1997			1						2	2	1	1
1998			1						1	1	1	2
1999			1	1		1			1	3	1	3
2000			1	1		1	1		2	3	1	3
2001			2	1				1	2	2		3
2002			1	1		1	1		2	3		3
2003			1	2		1	1		1	3		3
2004			1	3		1	2		1	3		3
2005		3	3	4		7	2			3		3
2006		4	3	5		7	1			2		3
2007		6	3	5		9	1			3		4
2008		6	3	5		11	4			3		4
2009		3	2	5		4	2			2		4
2010	3	6	4	4		12	2	2		2	1	3
2011	1	4	1	5	4	10	2			3		3
2012	1	5	2	4	4	13	3		1	1		4
2013	1	6	3	4	4	12	3		2	1		3

Note: The table provides a summary of the distribution of billionaires across the UK industries using the two-code GICS. The data is presented on a 5-year interval basis. The number and associated sectors are: **10:** Energy, **15:** Materials, **20:** Industrials, **25:** Consumer Discretionary, **30:** Consumer Staple, **35:** Health Care, **40:** Financials, **45:** Information Technology, **50:** Telecommunication Services, **55:** Utilities.
Source: Forbes (1990-2013), Author's compilation from various secondary sources.

Today, a similar phenomenon can be observed. Turning once again back to Figure 6.11, a striking trend is revealed. Between 1990 and 1999, the proportion of inherited wealth averaged 76% compared to 24% for self-made wealth among the wealthiest of Britons. For the period 2000 to 2013, the values reverse with approximately 31% of elites having inherited their fortunes, compared to 69% who made their wealth through their own means. The factors for the reversal tend to be many and varied within the industries of the British economy. A deep examination of the sectoral distribution, presented in Table 6.4, reveals that the growth in self-made fortunes tends to be concentrated in the finance and consumer discretionary sectors of the economy and more recently in materials. In the finance sector, the bulk of wealth has been generated in real estate, but there has been a robust representation from diversified financials too. The first financial

billionaire appeared in 2000 and had by 2013 increased to 12. These 12 billionaires represent the bulk of the British ultra-rich.

Much like the US, the fortunes of these individuals is tightly bound to sweeping economic changes particularly brought upon by policy and regulatory change. For example, of the propertied rich, there were six individuals in 2013. The majority of the individuals first appeared relatively late in the sample, at approximately 2007. In fact, in 2006, there was only one individual with a fortune in excess of $1 billion, that being Joseph Lewis. The lack of property moguls in France and Germany compared to Britain can be explained by a comparison of house prices in those countries. Figure 6.14 compares real house price changes across the three countries since 1980. The UK has shown an increase of 218% during this period, compared to 73.8% in France and -11.8% in Germany. Although many factors could be cited for the rapid rise in house prices in the UK, one primary candidate must reside in the effective 'privatisation' of home ownership. In 1981, the Thatcher Government introduced the Right-to-Buy scheme where tenants of local authority housing were provided with a 60% discount to purchase the dwelling outright. According to King (2012), the effect of the Right-to-Buy was to shift 2.5 million dwellings in the less regulated private sector. The scheme along with liberalisation of the mortgage market effectively increased demand from the working-classes for owner-occupied housing. The massive increase in the debt-to-income ratio of the UK described in Chapter 3 further provides an element of causality to this. The beginnings of the property boom in the 1980s, was also when individuals such as John Whittaker, and the Reuben brothers already possessed significant wealth holdings in property to benefit from the inevitable property price increases.

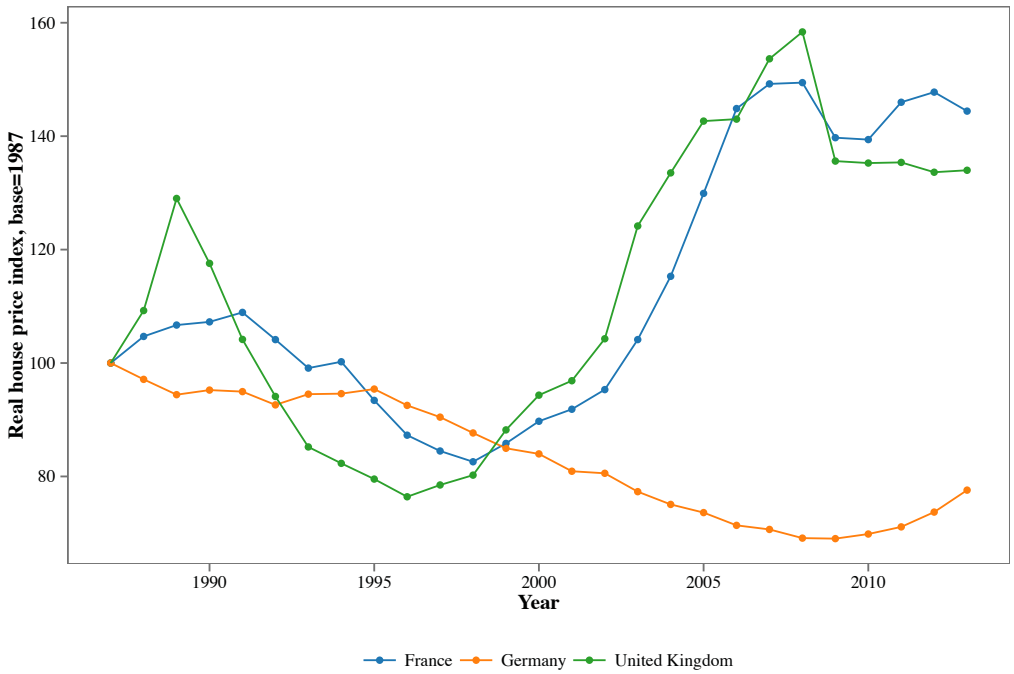


Figure 6.14 Real house prices in the United Kingdom, Germany, and France

Source: The Economist (2015)

Despite a history of landed aristocracy, inherited wealth remains of relatively less import at least at the extreme end of the wealth distribution tail. Only two individuals appear in the list who are of British peerage ancestry. The wealthiest is Gerald Grosvenor with an estimated net worth of $11 billion. Beneficiary of the UK's peerage system, Gerald Grosvenor, Duke of Westminster, comes from a lineage that can be traced back to Sir Richard Grosvenor, 1st Baronet (born 1585). Peerage has been kind also to Charles Cadogan, the only other member of the British peerage system to be represented in the rich lists. With an estimated net worth in 2013 of $5.5 billion pounds, much of Cadogan's wealth is tied up in extensive holdings in the exclusive and prestigious London suburbs of Chelsea and Knightsbridge.

Given the pre-eminence of London as a global financial centre, or would be expected to find numerous individuals involved heavily in banking and finance related activities. There is, however, a tendency for the success to have been attributable to the ballooning of asset prices in the 2000s. As with real estate, the majority of these individuals can be classified as self-made, the majority of these emerging during the 1990s and 2000s – with many employing a variety of strategies. A common element, between all, however, appears to be the rapid capitalisation of opportunities brought upon by the sudden financial deregulations, the 'Big Bang' during 1986 and 1987. A clear and direct

instance of an individual capitalising on the deregulation was Peter Cruddas who made a fortune from financial spread-betting by founding CMC Markets in 1989. Spread-betting, the method of wagering on price movements, began in the 1960s and was regulated under the *Betting and Gaming Act 1960.* In 1986, the financial deregulations transformed futures contracts from a wager into an investment product enforceable under the *Financial Services Act*. This reform significantly increased the amount of participants in the futures market (Loussouarn, 2013). Almost immediately, the spread-betting industry also managed to get the courts to rule that spread-betting, like futures contracts, were qualified as financial investments under the *Financial Services Act* 1986, thus opening CMC Market to a much wider market.

6.4 The Economic Elite in the Former Centrally Planned Economies

Thus far, the discussion has largely focused on the advanced capitalist economies of the western hemisphere. In this section, an exploration of the development and evolution of the economic elite amongst the three largest economies outside of the western bloc is discussed. Specifically, Russia, China, and India are focussed upon. The focus is on determining to what extent they share characteristics with the western elite, and how they can be differentiated.

Table 6.5 provides a sectoral breakdown across the three countries. Overall, both China and Russia exhibit very high growth rates in billionaire numbers, particularly after 2005. In Russia, the annual average growth rate is 44% since the first billionaire appeared in the list in 1997. In China, the average annual growth is higher at 77% although the first Chinese billionaire appears in 2001, a few years after the first Russians make an appearance.

Sector wise, there are certain differences worth noting. Russian billionaires are largely clustered three industries: materials (GICS 10); industrials (GICS 20); and financials (GICS 40). In 2013, these three industries accounted for 77% of Russian billionaires. In monetary terms, the combined wealth of this 77% is at an estimated $321USD billion in 2013. Or approximately 10% of Russia's gross national income $3.1USD trillion in 2013.

By contrast, the sectoral breakdown of China's economic elite exhibits far more diversity in the number of individuals across industries. The largest represented industry is financials with 28 individuals appearing on the rich list in 2013. This is closely followed by industrials with 25 individuals, consumer discretionary with 21 billionaires, and materials and health care with 15 and 13 individuals, respectively. Jointly, these individuals constitute the bulk of China's billionaires as at 2013, contributing approximately 94% to China's elites. In monetary terms, the combined wealth of the individuals in these industries is at an estimated USD198 billion.

In the case of both China and Russia, there is a total absence of inheritance. Given the relatively recent transition to market based economies this is to be expected.

India's billionaire numbers in contrast demonstrate rather anaemic levels and growth, when juxtaposed against those of China and Russia. Despite possessing the second largest population in the world, India had by 2013 only 55 billionaires. The largest movement in billionaire numbers is apparent in the 2005-2006 period when the number doubled from 12 to 23 individuals. A similar and approximate doubling is observed from 2009 and 2010 when the number increased from 24 to 47, although this is largely attributable to the reappearance of billionaires who had fallen from the wealth lists due to the global financial crisis as was documented in Chapter 3. Table 6.5 presents a sectoral decomposition of India's economic elites. Similar to China, India's sectoral allocation of billionaires appears to be largely concentrated across 5 of the 9 represented sectors, with the other four have 5 or less individuals. The industries with the greatest representation include consumer discretionary with 11, followed by financials and health care at 10.

Differentials in the sectoral composition across the three former centrally planned economies naturally lends itself to the question of what political processes were in play that caused such an outcome. For example, why are Russia's oligarchs concentrated in a few key industries whilst China and India appear to exhibit much more diversity in the composition of their sectoral billionaire allocation. Is it part of a natural market process or a conscious effort on the part of their respective governments?

Table 6.5 Billionaire industrial distribution across Russia, China and India

Russia

	10	15	20	25	30	35	40	45	50	Total
1997	3			1						4
1998		1								1
2001	6	1	1							8
2002	4	1	1							6
2003	10	3	1				2		1	17
2004	12	5	3				4		1	25
2005	6	10	4				6		1	27
2006	5	14	6				8		1	34
2007	8	19	11	2	1		11		1	53
2008	9	22	17	5	4	1	29		1	88
2009	6	12	6	1			7		1	33
2010	7	22	14	1	1		13		1	59
2011	9	32	26	6	4	1	22	1	1	102
2012	9	29	27	2	3		25	1	1	97
2013	11	33	28	5	6	1	24	2	1	111

China

	10	15	20	25	30	35	40	45	50	55	Total
2001			1								1
2002					1						1
2004			1								1
2005			1	1							2
2006			2	1	2		2	1			8
2007		1	4	2	4	1	4	1			17
2008	3	4	9	4	5	1	12	4			42
2009	1	2	10	3	4		6	2			28
2010	1	9	13	12	9	2	20	6			72
2011	2	15	24	21	9	15	21	7	1		115
2012	2	11	21	20	0	8	18	6			86
2013	2	15	25	21	11	13	28	5		1	120

India

	10	15	20	25	30	35	40	45	50	Total
1990			1							1
1991			1							1
1992			1							1
1993			1							1
1994			2							2
1995			2							2
1996	1	1	1							3
1997	1	1	2							4
1998	1	1								2
1999	1	1	3					2		7
2000	1	1	3	1				3		9
2001	1		1					2		4
2002	1	1	1					2		5
2003	1	1	1		1		1	2		7
2004	1	2	1		1		1	2	1	9
2005	1	3	2		1	1	1	2	1	12
2006	2	2	5	3	2	2	3	3	1	23
2007	2	3	8	6	2	3	6	5	1	36
2008	6	3	11	7	2	5	12	6	1	53
2009	1	3	3	5	1	3	5	2	1	24
2010	1	2	13	4	2	8	11	5	1	47
2011	2	6	10	7	2	8	11	7	2	55
2012	2	6	5	7	4	8	8	6	2	48
2013	2	6	6	11	4	10	10	5	1	55

Note: The tables provides a summary of the distribution of billionaires across French industries using the two-code Global Industry Classification System (GICS). The data is presented on a 5-year interval basis. The number and associated sectors are: **10:** Energy, **15:** Materials, **20:** Industrials, **25:** Consumer Discretionary, **30:** Consumer Staples, **35:** Health Care, **40:** Financials, **45:** Information Technology, **50:** Telecommunication Services, **55:** Utilities.
Source: Forbes (1990-2013), Author's compilation from various secondary sources.

Nefariously, the evolution of vast private wealth holdings in the former centrally planned economies have typically been closely tied to either public servant favour or to the former or current political elite rather than through the natural outcome of competition. In India, for example, the repeal of the Licence Raj, a system of elaborate licensing arrangements, reduced enterprise to just a few select large conglomerates. Indeed, the Licence Raj would entail acquiring up to 80 approvals from various governmental agencies, placing an effective stranglehold on fostering new enterprise, while protecting the commercial interests of the large conglomerates, where such family names such as Birla and Hinduja came to dominate. Once the Indian economy was liberalised with the dismantling of the Licence Raj system in 1991, the Indian industrial conglomerates were in the best position to attain scale and diversify into new business opportunities. (Hendrick-Wong, 2007). Economic reform, of course, did provide scope for new entrepreneurs. IT was largely ignored by India's central planners, enabling enterprising individuals to exploit a clear opportunity during the era of the Licence Raj. Even during this era, IT entrepreneurs not tied to conglomerates still faced potentially debilitating hurdles. For example:

> in the 1980s Narayana Murthy, the legendary founder of Infosys, one of India's leading IT companies and the first Indian firm to list on the US stock market, had to make 50 trips over a period of two years, traveling from Bangalore, … to Delhi to meet with … bureaucrats in order to get a permit to import a computer worth $1,500. (Hendrick-Wong, 2007, p. 67)

In China, the grip of the Communist Party since its takeover in 1949 meant that property rights were negligible until 1988. Indeed, during this era, there were no individual land rights and no private land ownership, but by 2013 25 Chinese billionaires had made their fortunes in property investments, excluding those from Hong Kong. A wave of reforms in the 1990s ensured that the road to rapid capitalisation would be open to Chinese entrepreneurs. Such laws included, for example, a 1997 constitutional amendment in which incomes from interest and dividends were sanctioned and, in 2006, it became possible for a private citizen to become the sole founding member of a limited liability entity (Clarke, Murrell & Whiting, 2008). Perhaps coincidently, during the same period, the number of Chinese billionaires increased from two in 2005 to eight in 2006, before doubling to 17 by 2007. By 2013, there were 121 billionaires, second only to the US in terms of absolute numbers.

Has the transformation of the Chinese economy from a centrally planned regime to a market-based regime been wholly free from the past regime? That is, is China's new economic elite divorced of ties to the Communist Party (past and present), or is the economic and political elite effectively the same? A full analysis of this issue is beyond the scope of this chapter, but a number of basic facts provide a clue as to the composition and dynamics of China's economic elite. One journalistic wealth list, the *Hurun Report*, found that in 2011, for the 1,000 richest people in China, 90% were either officials or founding members of the Chinese Communist Party. New officials often seek membership in the Communist Party to protect their wealth. For example:

> The top three richest members of the CPPCC [Chinese People's Political Consultative Conference] are all sons of Hong Kong tycoons, with Victor Li, the son of Asia's richest man Li Ka-shing, coming in first with an estimated family fortune of $32bn.
>
> Hong Kong's relatively smooth transition from a former British colony back to Chinese territory over the last 15 years has been helped by support from the territory's richest citizens, who were mostly co-opted by the Communist party in exchange for business opportunities on the mainland. (Anderlini, 2013, para. 11-12)

Numerous mechanisms are available to party insiders to protect their wealth, or to confer substantial competitive advantage *vis-à-vis* privately owned businesses. The close relationship between state and business affords numerous benefits to insiders. For example:

> The most important and lucrative sectors of the economy have been reserved for state-owned-enterprises (SOEs) through preferential policies and support that leaves private domestic firms at a heavy disadvantage. For example, during much of the past decade, around two-thirds of the country's formal finance (mainly bank loans) was reserved for SOEs at discounted rates, rising to an astounding 90% from 2008 to 2010 before settling back to its current 80%. (Lee, 2011, para. 3)

The family of China's former premier, Wen Jiabao, is believed to control assets worth approximately $2.7 billion. How the family achieved such prominence demonstrates the close nexus between political power and the generation and protection of vast wealth:

> Unlike most new businesses in China, the family's ventures sometimes received financial backing from state-owned companies, including China Mobile, one of the country's biggest phone operators….
>
> The holdings include a villa development project in Beijing; a tire factory in northern China; a company that helped build some of Beijing's Olympic stadiums, including the well-known 'Bird's Nest'; and Ping An Insurance, one of the world's biggest financial services companies. (Barboza, 2012, para. 6-7)

The apparent monopoly of economic advantage by Communist Party insiders echoes Figueroa's (2008) view that the rise of an economic elite first erects barriers to entry and Bodley's (1999) claim that any major growth policies are aimed to benefit the growth in the incumbent elite's wealth or economic power.

In the case of Eastern Europe, similar factors are at play, but there is some debate over the true reason for the number of billionaires. Corruption is the most often cited explanation for the size of the fortunes of some of Russia's billionaires, or the 'Russian oligarchs' as they are often labelled. Torgler and Piatti (2013) persuasively argue that much of the extraordinary wealth observed in former Communist states is generated from collusion between former Communist Party members of the Soviet Union, and the incumbent regime.

Alternatively, Kryshtanovskaya and White (2005) examine the evolution of Russia's oligarchy and find that there is increasing state interference and control over the oligarchs, resulting in fewer individuals presiding over vast conglomerates. Further, they document the increasing representation of wealthy individuals in many of Russia's decision-making institutions at both a federal and regional level. The interlocking relationships do not necessarily imply corruption. They conclude that Russia's oligarchy is most likely to follow the pattern of South Korea's *chaebols,* where a few wealthy families with close ties to government possess substantial control and ownership over the country's resources (Kryshtanovskaya & White, 2005).

How has Russia's wealth evolved under President Putin? Rutland (2009) argues that there has been a spreading of wealth from oil and gas to various other industries. The bulk emanates from banking, largely due to the recycling of the petrodollar earned during the 1990s. However, Rutland (2009) agrees with Kryshtanovskaya and White (2005) that the impact of Putin's policies has been to concentrate wealth into fewer hands, even if it is spread across more industries – this process, however, has been part of a conscious effort by the Russian government.

6.5 South Korea and Japan: Dominance of Family Dynasties?

Shifting focus to the East Asian region, specifically Japan and South Korea, there is substantial and readily available evidence that government policies constituted the key element in the growth of many of the fortunes. *A priori*, one could assume that the two countries would share many similarities that would filter through to the characteristics and composition of their wealthy. Both countries are viewed as the original Asian tigers and are often viewed as sharing a common ideological and cultural trajectory. After the Second World War, both countries embarked on a programme of orientating their respective economies to exporting, with Japan the pioneer throughout the 1950s and 1960s and Korea following suit throughout the 1970s.

From the perspective of the observer of the ultra-rich, the similarities stop there. An examination of the wealth sources, presented in Figure 6.15, presents striking differences. Firstly, there is a divergence in the overall trends. As of 2013, the number of Korean billionaires has peaked at 25, whilst in Japan it fell to 22, one of the lowest recorded points. For Japan, the decrease is secular since the early 1990s when Japanese dominated the world rich lists. The main breaking point for Japan appears in 2001, when the number of billionaires fell from a high of 43 in 2000 to 29 in 2001 with further declines in subsequent years. Conversely, in South Korea it can be observed that the number of billionaires has historically remained low. On average, there were approximately 3 to 4 billionaires in Korea during the 1990s and first half of the 2000s. However, from 2007 there has been a clear increase in the number of known extreme wealthy. In 2007, the number of billionaires increased to 7, and by 2013 it had increased to 25, representing an increase of 300% since 2007.

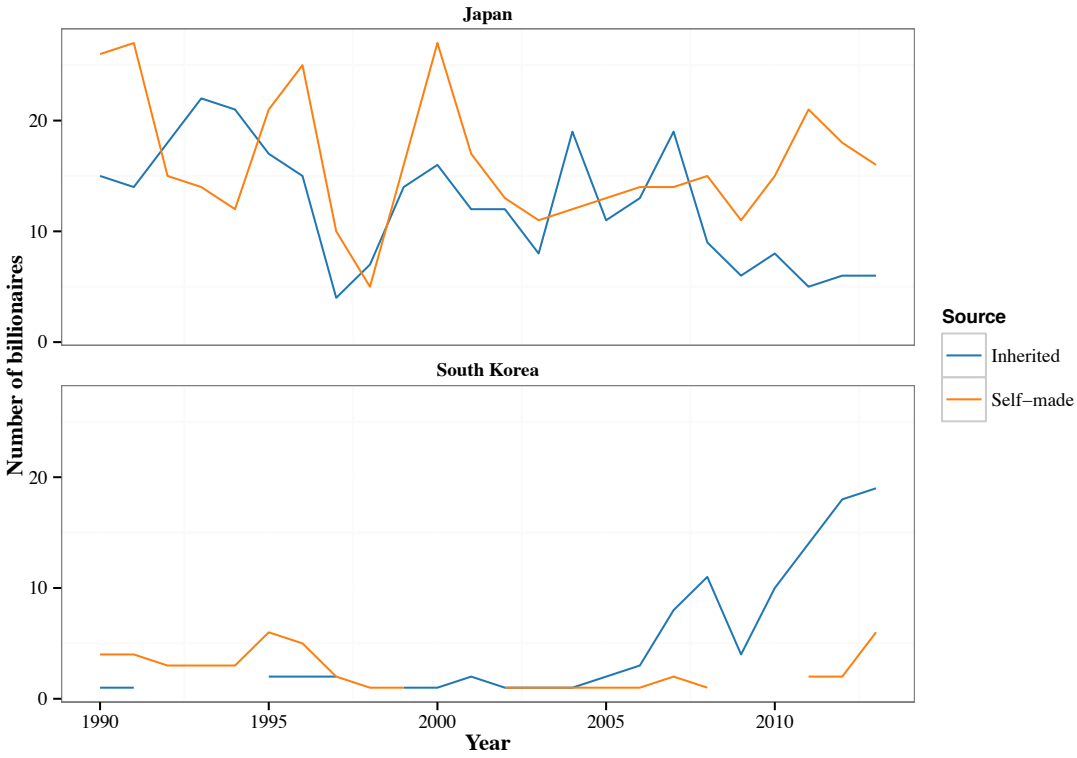


Figure 6.15 Number of Japanese and South Korean billionaires, 1990-2013

Source: Forbes (1990-2013), Author's compilation from various secondary sources.

Secondly, the trends in the two countries are being principally driven by divergent patterns in the dynamics of inherited wealth and the infusion of new wealth. Indeed, examining South Korea, the number of individuals with inherited wealth increased from 8 in 2007 to 19 by 2013, compared to 2 and 6 for those of self-made wealth. In Japan, the reverse is observed. Since a high of 22 in 1993, the number of Japanese inheritance beneficiaries has decreased to single digits hitting a low of 5 in 2011 before settling at 6 in 2012 and 2013. Instead, the bulk of Japanese wealth now comes from entrepreneurial initiatives.

Table 6.6 disaggregates the South Korean wealth ranks by sector, industry and inheritance. By far the majority of movement has been in the capital goods (20) and consumer discretionary (25) industries. In both, the number of self-made has remained exceptionally low, and are often tied to the names of some of Korea's oldest entrepreneurs, such as the founder of Samsung, Lee Byung-chul. With the death of many of these individuals in the 1990s, there is a dramatic swelling of the ranks of Korea's inheritance billionaires to family members. For example, the Lee family accounts for five names at least, while the Koo family of Lucky Goldstar (LG) also show a similar dominance.

Table 6.6 South Korean industrial distribution of billionaires, 1990-2013

	Self-made						*Inherited*			
Year	**15**	**20**	**25**	**35**	**40**	**45**	**20**	**25**	**30**	**40**
1990		2	2				1			
1991		2	2				1			
1992		1	2							
1993		1	2				1			
1994		1	2							
1995		3	3				1	1		
1996		2	3				1	1		
1997		1	1				1	1		
1998			1							
1999			1				1			
2000							1			
2001							2			
2002			1				1			
2003			1				1			
2004			1				1			
2005			1				1	1		
2006			1				2	1		
2007	1		1				2	5	1	
2008	1						3	7	1	
2009							1	3		
2010							3	6		1
2011			1			1	3	9	1	1
2012			1			1	7	9	1	1
2013		3	1	1	1		6	10	1	2

Note: The table provides a summary of the distribution of billionaires across South Korean industries using the two-code GICS. The data is presented on a 5-year interval basis. The number and associated sectors are: **10:** Energy, **15:** Materials, **20:** Industrials, **25:** Consumer Discretionary, **30:** Consumer Staples, **35:** Health Care, **40:** Financials, **45:** Information Technology, **50:** Telecommunication Services, **55:** Utilities.
Source: Forbes (1990-2013), Author's compilation from various secondary sources.

The families that dominate South Korea's industrial and commercial landscape have done so since the 1950s. Their transition to billionaire status in the 2000s followed the success of their respective commercial interests across the globe. The manner in which Korean families came to dominate Korea's economic life echoes that found in India, where the primary unit of Korea's industrial organisation, the conglomerates known as *chaebol* were central. The *chaebol* became the favoured vehicles for Korea's rapid industrialisation in the 1960s by the Park regime. For example, under Lee Byung-Chul's leadership, Samsung managed to develop a close and substantial commercial relationship with the Park military dictatorship during the 1960s.

Although state privilege and patrimony explains the initial success of the *chaebol* and their dynastic owners, the narrative of how they have maintained such commercial

control shifts in the recent past. Kwon and O'Donnell (2001) argue that much of this narrative changes in examining the decades after the 1980s when state privilege largely disappeared. The response of the *chaebol* was to consolidate their economic power through rapid diversification and control throughout the Korean economy. By the 1990s, Samsung had diversified into electronics, engineering and construction. Today, such is the dominance of Samsung (and by extension the Lee family) in Korean society and economy that it has been estimated that Samsung's revenue equates to approximately 17% of South Korea's economic output. The Koo family, whose name is synonymous with LG, followed a very similar evolution. The process of diversification, however, does not necessarily involve majority ownership stakes in newly acquired firms. A distinct mechanism used is that of tunnelling. Johnson, La Porta, Lopez-de-Silanes and Shleifer (2000) define tunnelling as 'the transfer of resources out of a company to its controlling shareholder (who is typically also a top manager)' (p. 3). These tactics allow a controlling shareholder to extend vast control over a network of enterprises often involving a degree of wealth transfer from smaller shareholders to the family dynasty (Baek, Kang & Lee, 2006). As Moskalev and Park (2010) observe, despite the *chaebol* only claiming 10.96% of the cash flow generated by their firms, they paradoxically maintain full control over these firms – with most of the funds funnelled to the family dynasties. Baek et al. (2006) find that at least with private security offerings there is very strong evidence that the controlling interests of the *chaebol* typically accrue substantial and material private benefits at the expense of minority ownership.

If for Korean wealth the rise and dominance of *chaebol* then for Japan it is the fall of many of the dominant families and the rise of an entrepreneurial *nouveau riche*. The experience of Japan's wealthy is perhaps somewhat at odds with the story of stagnation that has beset Japan's economy since the early 1990s. As presented in Table 6.7, the degree of old or inherited wealth has shown a systematic decrease since the mid-1990s. In 1990, 22 individuals or families had inherited their wealth, by 2013 the number had fallen to just six. In contrast, the self-made billionaires, though initially decreasing from a high of 27 in 2007, have been in the mid-teens throughout the 2000s and in fact have slightly grown since 2011. Across both the self-made and inherited groups, financials fell from 14 (10 self-made, 4 inherited) individuals in 1990 to 3 in 2013. The fall is in line with the significant fall in Japan's wealth-income ratio during the early 1990s,

where the fall in the value of property prices played a central role, as discussed in Chapter 3.

Table 6.7 Japanese industrial distribution of billionaires, 1990-2013

	Self-made								*Inherited*							
Year	**15**	**20**	**25**	**30**	**35**	**40**	**45**	**50**	**0**	**10**	**15**	**20**	**30**	**35**	**40**	**45**
1990	4	2	11		1	10	1					4	2	1	4	1
1991	4	2	12		1	10	1					4	2	1	3	1
1992	1	2	5			9	1					6	3	1	4	1
1993	1	1	6			9	1					8	3	1	5	2
1994	1		7			9	1					6	1	1	6	1
1995	1	2	10		1	10	2				1	4	1	1	4	1
1996		3	12		1	8	3				2	4	1		5	1
1997		1	5			3	2					0	0		2	1
1998			3			3	1					0	1		4	
1999		2	10		1	5	1	1			2	1	1		5	1
2000		3	11	1	2	5	6	1	2		2	3	1		4	2
2001		2	10		2	3	2				1	3	1		4	1
2002		1	9		1	3	1			1	1	2	1		4	1
2003			8			3	1					1	1		4	1
2004		1	9			3	1				1	1	1		4	1
2005		1	9			4	1	1			1	1	1		4	1
2006		1	9			4	2	1			1	1	1		6	1
2007		1	10			3	2	1			1	1	1		3	1
2008		1	9			3	3	1			1	1	1		3	1
2009		1	8			2	2					0	1		2	1
2010		1	11	1		2	3					1	1		2	1
2011		1	16			2	4					0	0		2	1
2012		1	13	1		2	4					0	0		2	1
2013		1	10	1		2	3	1	1			0	1		1	1

Note: The table provides a summary of the distribution of billionaires across Japanese industries using the two-code GICS. The data is presented on a 5-year interval basis. The number and associated sectors are: **10:** Energy, **15:** Materials, **20:** Industrials, **25:** Consumer Discretionary, **30:** Consumer Staples, **35:** Health Care, **40:** Financials, **45:** Information Technology, **50:** Telecommunication Services, **55:** Utilities.

Source: Forbes (1990-2013), Author's compilation from various secondary sources.

Much of Japan's ultra-rich arose in the post-war era. Unlike Germany, the continuity from an earlier Japanese economic elite is absent. Even among the 'older' wealth in Japan, wealth generated in the vicinity of the Second World War, the linkages to the old *zaibatsu* are either non-existent, or they are of sufficiently different nature to not permit a historical lineage found in, for example, Germany. Compared to post-war Germany, many of the Japanese industrialists did not successfully navigate allied occupation. Rather, smaller, newer entrepreneurs arose in their place. In the early post-war period, the Allied General Command instituted policies to dissolve the *zaibatsu*, based on the rationale that they regarded the *zaibatsu* as an important mechanism in the creation of and maintenance of Japan's militaristic and imperialistic tendencies. Delving into the detail provided by the rich lists, the Allied policy generally appears to have succeeded

in its endeavour of severing Japan's economic links to its imperialistic past. Among the inherited wealth group, the Matsushita family is the only one that can directly be associated with the older economic order. The Matsushita family name had, however, vanished from the *Forbes* list by 1996. Only for the Toyodas, founders and major shareholders in Toyota Motor Corporation (TMC), has allied occupation and the Korean War proved to be a boon. Unlike other *zaibatsu* and the associated controlling families, the Toyoda family emerged relatively unscathed from the war and the subsequent Allied occupation and have managed to maintain a presence (Bernstein, 1997).

In the absence of the *zaibatsu*, and with very little to tie them to Japan's imperial adventures, the small nascent enterprises being established in Japan were largely ignored by Allied occupying forces. The absence of the large *zaibatsu* provided a vacuum into which many entrepreneurs poured in. These entrepreneurs found wealth and fortune in industries that rode to prominence in the consumerism wave of the post-War globe which export orientated Japan could exploit. As Table 6.5 shows, the majority are concentrated in consumer discretionary sector, with most emanating from retail, electronics and gaming (be it casino or video game entertainment). Perhaps the most well-known Japanese electronics conglomerate is Sony. The founding of Sony in the immediate aftermath war exemplifies the success of the Japanese entrepreneur in developing new opportunities. Sony was founded in the immediate post-war period by Akio Morita and Masaru Ibuka. Early on both agreed to a corporate style that would be free of any *zaibatsu* influence. This freedom ensured that 'the founders were able to exercise real management in the establishment of Sony' (Lambert, 2001, p. 33). Approximately 67 years after the founding of Sony, many of Morita's relatives and offspring have morphed Sony into a conglomerate with businesses groups spanning home electronics, gaming, consumable entertainment and financial services. Once again, in a model seemingly replicated across time and space, when the original founder is no longer heavily involved or has passed away, there is a clear movement towards the diversification of business interests, often significantly expanding beyond original business lines. The associated concomitant increase in wealth perhaps attests to the success of such a strategy.

In gaming, names synonymous with businesses that have captured both the Japanese thirst for entertainment and gambling abound. Much of their initial success had almost wholly to do with pent up consumer demand but requiring circumventing government

policies on gambling and gaming. The *pachinko* industry grew out of a means of negating the prohibition on gambling (Criminal Code, Chapter 23) - the *pachinko* slot machines involve getting a ball into a slot. Successfully doing so entails the user to a prize that often involves an avenue to exchanging the prize for a monetary reward (Kinder, 2014). The potential for arbitrage was not lost on Han Chang-Woo Han who became the biggest and wealthiest supplier of the slot machines (Whan-woo, 2014).

The obvious question is whether self-made wealth will continue to dominate in Japan. Given the low growth rates and high savings rates in Japan and slow population growth, one could argue that inheritance will invariably come to play a significant role in Japan. As Japan has the highest observed wealth-income ratios among the countries considered here (see Chapter 3), the possibility does certainly exist that inheritance will come to play a strong role.

6.6 Latin America

Traditionally, Latin America's distribution of wealth has been viewed through the prism of its natural resources and European settlement. For example, Torche and Spilerman (2008) argue that the high Gini indexes observed across Latin America have been associated with the conquest of the continent's arable land and resources and the subsequent political dominance of European settlers over indigenous populations. Williamson (2009) has challenged this view. Williamson notes that when compared to other regions, Latin America's experience was not significantly different than other regions of the world following the post-colonial and industrial period. What factors are relevant when exploring the rise of contemporary economic elites in Latin America?

To begin, Table 6.8 presents the geographical distribution of Latin American billionaires. Three interesting facts emerge from the above table. Firstly, since 2006, Brazil dominates the enumerated list of billionaires in Latin America. In 2005, there were five Brazilian billionaires, the following year it had tripled to 16. By 2011, it had nearly doubled again to 29 and had further increased to 46 by 2013. As of 2013, 56% of all Latin American billionaires emerged from Brazil. Only two other countries have demonstrated dramatic increases in their representation on the rich lists. Chile experienced a dramatic increase between 2012 and 2013, increasing from 5 to 14 individuals. Similarly, Peru also demonstrated a strikingly similar increase. Through the

1990s, only one Peruvian billionaire appeared on the rich list in 1996. Throughout the 2000s, there were no recorded billionaires; only in 2012 is there a reappearance with 2 billionaires. By 2013, Peru saw an immense increase from two to ten billionaires. In comparison, Argentina has never tended to exhibit much growth in billionaire numbers despite possessing the second largest economy in Latin America[27].

Table 6.8 Distribution of billionaires across Latin America

	Argentina	Belize	Brazil	Chile	Colombia	Ecuador	Peru	Venezuela
1990			3					1
1991			3					1
1992	2		5	3	1			1
1993	3		7	3	1			2
1994	4		7	3	3			2
1995	4		10	3	3			2
1996	3		9	5	3	1	1	2
1997	3		3	3	3	1		2
1998	2		3	1	3			
1999	3		8	4	3	1		
2000	4		9	3	1			
2001	4		6	2	1			
2002	1		6	2	1			
2003	1		4	3	1			
2004	1		6	3	2			
2005	1		8	3	2			
2006	1		16	2	2			
2007	1		20	3	2			
2008	1	1	18	4	2			
2009	1		13	3	2			
2010	1		16	4	2			
2011	2	1	29	4	2			
2012	4	1	36	5	3		2	
2013	5	1	46	14	5		10	

Source: Forbes (1990-2013), Author's compilation from various secondary sources

As with other regions, the growth of the ultra-rich is not necessarily synonymous with new entrepreneurial activity. Often some of the growth emanates from an influx of inheritance money. Are similar forces at work in Latin America? Table 6.9 divides the Latin American sample by inheritance and self-made. Given the small population size,

[27] Excluding Mexico.

particularly across Argentina, Chile, and Peru, any inferences made would have to be tentative. However, some interesting facts present themselves. Across all four countries, inheritance has played an important role as a source of great riches. For Chile and Peru, the large increase in billionaires from 2012 to 2013 seems to have been significantly driven by large inheritances. The Chilean inheritance figure increased from 3 in 2012 (60% of billionaires) to 11 in 2013 (78.6% of billionaires). These inheritances do not appear to be associated with prior dynasties in the ultra-rich lists at least as produced by Forbes. Peru's rise in the rich lists is recent emerging most strongly in 2013. The increase is associated both with new wealth (5 self-made) while the number of inheritances increased from 2 in 2012 to 5 in 2013.

Brazil is the most abundant producer of billionaires in South America. The large growth in overall billionaire numbers from 2006 onward appears to be largely driven by both increase in self-made wealth and inheritances. On average, inherited wealth represented 51% of Brazil's economic elite until 2006. From 2006, the dynamic change of wealth creation shifts to self-made wealth. On average, inherited wealth accounted for 40% of Brazil's economic elite.

Table 6.9 Sources of Latin American wealth, self-made and inherited

	Argentina	
	Self-made	*Inherited*
1992	2	
1993	2	1
1994	2	2
1995	2	2
1996	2	1
1997	2	1
1998	2	
1999	2	1
2000	2	2
2001	2	2
2002	1	
2003	1	
2004	1	
2005	1	
2006	1	
2007	1	
2008	1	
2009	1	
2010	1	
2011	1	1
2012	2	2
2013	2	3

	Brazil	
	Self-made	*Inherited*
1990	3	
1991	2	1
1992	3	2
1993	5	2
1994	5	2
1995	6	4
1996	3	6
1997	1	2
1998	1	2
1999	3	5
2000	3	6
2001	1	5
2002	1	5
2003	1	3
2004	2	4
2005	4	4
2006	9	7
2007	13	7
2008	12	6
2009	9	4
2010	10	6
2011	14	15
2012	20	16
2013	27	19

	Chile	
	Self-made	*Inherited*
1992	2	1
1993	2	1
1994	2	1
1995	2	1
1996	2	3
1997	2	1
1998	1	
1999	2	2
2000	2	1
2001	1	1
2002	1	1
2003	2	1
2004	2	1
2005	2	1
2006	1	1
2007	2	1
2008	1	3
2009	1	2
2010	2	2
2011	2	2
2012	2	3
2013	3	11

	Peru	
	Self-made	*Inherited*
1996		1
2012		2
2013	5	5

Source: Forbes (1990-2013), Author's compilation from various secondary sources.

The sectoral decomposition reveals substantial variation between the countries as presented in Table 6.10. Although finance dominates in numerous areas of the globe, only in Brazil does finance present a dominant influence. On average, 40% of Brazil's billionaires made their wealth in finance. Contrary to the observations in North America and Europe, the majority of these came from banking as opposed to "investments". Further, inheritance plays a major role amongst financial elites – in 2013, 6 of the 13 billionaires came from inherited wealth. Further, despite possessing an abundance of natural wealth, none of the industries that could be associated with these natural resources, such as energy or materials, barely register on Brazil's wealth ranks. In 2013, the two industries just produced 6 billionaires. Instead, consumer staples and discretionary sectors both generated more billionaires at 9 and 10 individuals respectively.

Both Chile and Peru from a sectoral context, do not appear to follow any continental wide pattern. At most, materials (GICS sector 15) dominate in both. As of 2013, there were 6 Chilean billionaires and 5 Peruvian billionaires from this sector. For both, consumer discretionary and staples closely follow.

Situating the rise of the relatively nascent South American elite (relative to global terms) in an analytical framework is difficult. In the one instance, entrepreneurial nor inherited wealth dominate. In North America and Western Europe, clear trends are apparent behind the two groupings. Further, much like Russia or China, the appearance of South American billionaires is a relatively recent phenomenon. These observations and both their dissimilarities and similarities to other regions of the world have manifested itself in economic analyses previously. As with continental Europe *vis-à-vis* the UK and US, a useful starting point is to consider the main differentiators of South American capitalism.

Table 6.10 Latin America, industrial distribution of billionaires

	Brazil										Argentina							Chile							Peru		
	0	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**		**0**	**10**	**20**	**25**	**30**	**35**		**0**	**10**	**15**	**20**	**25**	**40**		**15**	**30**	**40**
1990				2	1					**1992**			1		1		**1992**		1	2				1996	1		
1991				2	1					**1993**			2		1		**1993**		1	2				2012	1		1
1992				4	1					**1994**			2		2		**1994**		1	2				2013	5	4	1
1993			1	5	1					**1995**			2		2		**1995**		1	2							
1994			1	3	1	1		1		**1996**		1	1		1		**1996**	2	1	2							
1995			1	4	1	1		3		**1997**		1	2				**1997**		1	2							
1996	1			4	2			2		**1998**		1	1				**1998**		1								
1997				1	1			1		**1999**		1	2				**1999**	1	1	2							
1998				1	1			1		**2000**		1	2	1			**2000**		1	2							
1999	1			2	2	1		2		**2001**		1	2	1			**2001**			2							
2000	1			2	2	1		3		**2002**		1					**2002**			2							
2001				1	2			3		**2003**					1		**2003**		1	2							
2002	1			1	1			3		**2004**					1		**2004**		1	2							
2003	1							3		**2005**					1		**2005**		1	2							
2004	1				1	1		3		**2006**					1		**2006**		1	1							
2005				1	1	3		3		**2007**					1		**2007**		1	1			1				
2006			1	5	1	5		4		**2008**					1		**2008**			2	1		1				
2007		1	3	5	1	5		5		**2009**					1		**2009**			2			1				
2008		1	4	1	1	5		6		**2010**					1		**2010**			2		1	1				
2009			2	1	1	5		4		**2011**		1			1		**2011**			2		1	1				
2010		1	2	1	1	5		6		**2012**	1	1		1	1		**2012**			3		1	1				
2011		1	3	1	1	6	2	15		**2013**	1	1		1	1	1	**2013**			6	1	5	2				
2012		2	3	1	3	7	2	18																			
2013		3	3	5	10	9	2	13	1																		

Note: The table provides a summary of the distribution of billionaires across South Korean industries using the two-code GICS. The data is presented on a 5-year interval basis. The number and associated sectors are: **10:** Energy, **15:** Materials, **20:** Industrials, **25:** Consumer Discretionary, **30:** Consumer Staples, **35:** Health Care, **40:** Financials, **45:** Information Technology, **50:** Telecommunication Services, **55:** Utilities.

Source: Forbes (1990-2013), Author's compilation from various secondary sources.

Historically, Latin America's political economy has undergone substantial changes and movements – often flowing from regime change. Overall, Latin America's political economy can be divided into three eras. Firstly, there was the nineteenth century that saw the rise of the oligarchical states. Secondly, this gave way to "populist developmentalism" between the 1930s to the 1960s. A primary characteristic of this period was the development of import-substituting strategies. Thirdly, economic crises in the 1970s and 1980s paved the way for the rise of neo-liberal policies. Lewis (2009) writes that 'a questioning of state-directed development was giving way to neo-orthodoxy …. The pro-active state was being displaced by the 'dismantler' state charged with 'privatising' economic activity – returning the economy to the market' (p. 159). The emergence of the Washington consensus in Latin American political economy certainly had tremendous impact upon the economy. Whether the change provided represented a net benefit for the states of Latin America is one that is highly debatable (for contrasting perspectives see Williamson 2006; Moreno-Brid, Caldentey, and Nápoles 2004).

Of greater interest, is to what extent was the evolution of Latin America's political economy commensurate with observed increases in the number of ultra-wealthy. Petras (2008) directly attributes the Washington consensus as the catalyst for the increased frequency of billionaires. 'If blood and guns were the instruments for the rise of the Russian billionaire oligarchs, in other regions the market, or better still, the US-IMF-World Bank-orchestrated Washington Consensus was the driving force behind the rise of the Latin American billionaires' (Petras 2008, p. 321). Further positing that the 'principal cause of poverty in Latin America is [sic] the very conditions that facilitate the growth of billionaires… The so-called "self-made" billionaires benefited from the privatization of the lucrative financial sector… and the iron and steel complexes.' (Patras 2008, p. 322).

An alternative viewpoint is provided by Schneider (2009) who explores Latin American capitalism as one of many "capitalisms". According to Schneider (2009), Latin American capitalism is characterised by four features. Firstly, diversified business groups dominate. These groups incorporate widely disparate business entities that are often not related by market or technological relations. In addition, these business groups are dominated and controlled by family dynasties. Schneider (2009) argues that

‘[c]ontrary to expectations of convergence, diversified business groups survived and prospered through the liberalization and globalisation of the 1990s and 2000s’ (p. 559). Secondly, multinational corporations constitute a significant element of commerce in Latin America. The other two main features of Latin American capitalism are atomistic employee and labour relations and low levels of education and vocational skills. Here, the potential nexus between the first two characteristics is of most interest for its impact on economic elites.

In Brazil, much of the wealth associated with finance and banking is inherited and predates the Washington consensus, but did handsomely profit policy shifts. One of the world’s richest bankers, Joseph Safra, is descendant from a family tracing their commercial lineage back to Aleppo in Syria, once one of the great trading cities of the Ottoman Empire. With holdings in Brazil, the US, and Switzerland’s private banking system, the Safra Group has always maintained tight control over significant geographically diverse assets. However, from the 1990s the Safra Group became highly engaged in many large investments and purchases originating from the privatization program of Brazil in the 1990s. For example, in 1992 Banco Safra was part of a multinational group purchasing Acesita, a former government owned steel works, for USD465 million. In 1997, it was involved in a buyout of Band B services in conjunction with BellSouth for an estimated USD2.47 billion.

Mass media appears to have maintained high levels of ownership concentration largely through policy of the military dictatorship in 1964-1984. According to Amaral and Guimaraes (1994), during this period the military aimed for a monopolistic competition in Brazil. ‘As a result of monopolistic capitalism without regulation, the military’s *politica de redes* … concentrated about 400 channels into a few corporations, resulting in a sistema de redes…’ (Amaral and Guimaraes, 1994, p. 26). During this period, the current Brazilian moguls cemented their dominance. The Maronho family (combined wealth of USD26 billion in 2013), Silvio Santos and Roberto Civita all found a role during the period of dictatorship. The Marinho family, particularly appeared to have maintained tight relations to mutual benefit during the dictatorship (Coelho, 2013).

Other individuals demonstrated, including the self-made, a closer relationship to wealth from privatisations. Julio Bozano was involved in a purchase and makeover of the government owned steelworks, CS Tubarao in 1992 for an estimated $837 million. By

1996, Bozano had sold his stake and had generated a $327 million capital return and an unknown amount of dividends (Katz, 1996). In 1994, Bozano was involved in a similar deal to buy and overhaul aircraft manufacturer Embraer. In banking, he was involved in the overhaul of state owned bank Banerj and received a consulting fee of USD36 million and a 5% cut of the auction price.

Other self-made billionaires follow a more traditional path to wealth – exploiting the opportunities that arose from deregulation. The Constantino family conglomerate, involved in transportation catapulted to great wealth by creating a new airline carrier, Gol Airlines. During the 1990s, the Constantino family reasoned that Brazil's tight regulation over air fare prices would lessen. The family established in secret the plans for a low fare carrier during this period. Regulation came, and so did the massive profits (Wheatley, 2005). Although regulation was an element in the family's success, ultimately tight hierarchical control by the family, in the vein identified by Schneider (2009) has played a major role.

The Chilean experience with the Pinochet dictatorship similarly had a pervasive influence on today's wealthy Chileans. The Angelini family (represented by Roberto Angelini Rossi and Patrical Angelini Rossi in 2013) represented a prime example. The family patriarch Anacleto Angelini, founded a fisheries enterprise in the 1950s. But it was during the Pinochet regime that Angelini attained rapid wealth:

> … Mr. Angelini benefited from the military government's privatization scheme. One of Mr. Angelini's top executives, Felipe Lamarca, was a Pinochet campaign adviser.
>
> In the mid-1980s, Mr. Angelini acquired a large minority share in Copec, a conglomerate with holdings in gas stations, mining interests, shipyards, forestry products and insurance. Through Copec, he also maintained a significant stake in Chile's largest thermal electric generation company (Bernstein, 2007).

The Angelini's fortunes largely remained secured in the post-Pinochet Chile, through continued close relationships with legislators. A far older dynasty, the Mattes have had a profound role in Chile's economic growth. The primary family business, La Papelera, is in paper. However, the family controls more than 30 companies in sectors as varied as finance to health, mining to manufacturing (Benedikter and Siepmann, 2013). The family has always maintained close connection to government. Patricia Matte was an

architect of social policy in the Pinochet regime and has maintained close ties to elements of the old regime (Benedikter and Siepmann, 2013).

6.7 Australia and New Zealand

Writing on the wealth of the Gilded Age, Rubinstein (1980) argued that the size of the observed riches in the US to Great Britain was very much a product of the large land mass of the US relative to Great Britain. Given the size of Australia, and the relative small population density, one would expect Australia to have also produced substantial wealth. In the context of Australia, a similar set of forces seems to apply to the observed composition of ultra-rich.

Table 6.11 presents the combined sectorial distribution of wealthy individuals for Australia and New Zealand. A perusal of Australia's popular media would often suggest that the majority of Australia's economic elite come from the ranks of miners and media moguls. However, as Table 6.6 shows, most of the great fortunes come from finance in the form of diversified financials. The majority who appear in the list are relatively new entrants, with the number from financial services increasing from five in 2006 to 13 by 2013. Among the property magnates, there is a small increase from three in 2004 to 6 by 2013. In financial terms, aggregate wealth among this group increased from USD4.800 billion to USD17.6 billion over the course of the same period. In the diversified financials sector, the rise over the 2006 to 2013 period is just as impressive. In 2005, there were no Australian or New Zealand investors that could claim a net worth in excess of $1 billion. In 2006, there were two, both from New Zealand, and by 2013 there were six from both Australia and New Zealand. Just like the property tycoons, their associated aggregate wealth holdings substantially increased over this period. In 2006, the New Zealanders Richard Chandler and Graeme Hart had a combined net worth of $3.7 billion. By 2013, a small increase in the Australian representative contingent had bolstered aggregate holdings to $20.2 billion. Among the Australians are Michael Hintze, Kerr Neilson and Ivan Glasenberg.

Table 6.11 Australian and New Zealand industrial distribution of billionaires, 1990-2013

Year	10	15	20	25	30	35	40
1990				1			
1991				1			
1992				1			
1993				1			
1994				1			
1995				1			
1996				1			
1997				1			
1998				1			
1999		1		1			
2000		1		1			
2001	1	1		1			
2002				1	1		
2003		1		1			
2004		1		1			
2005		1		2			
2006	1	1		2			5
2007	1	3		4			7
2008	1	3	2	3			9
2009		3		2			7
2010		2		4			7
2011		3	2	4		1	10
2012		4	2	3		1	11
2013		2	2	6	1	1	13

Note: The table provides a summary of the distribution of billionaires across Australian and New Zealand industries using the two-code GICS. The data is presented on a 5-year interval basis. The number and associated sectors are: **10:** Energy, **15:** Materials, **20:** Industrials, **25:** Consumer Discretionary, **30:** Consumer Staples, **35:** Health Care, **40:** Financials, **45:** Information Technology, **50:** Telecommunication Services, **55:** Utilities.

Source: Forbes (1990-2013), Author's compilation from various secondary sources.

Much of the wealth generated by property investments are associated with property development rather than pure speculation, and very much follows the patterns of the US, whose government policies in the post-war era fuelled massive demographical changes and coincidently provided ample opportunity for expansion. Individuals such as Frank Lowy, John Gandel, Harry Trigbuff and Langley Walker all benefited from these changes. For Frank Lowy, the longest-serving Australian billionaire, the path to great wealth resided in entrepreneurial alertness to the massive urbanisation across Australia's metropolitan cities. Mass immigration, growth in public housing and increasing industrial production provided the necessary catalyst to spur population increases from which Lowy was able to significantly capitalise. Similarly, John Gandel managed to exploit rising population and incomes in Melbourne's south-eastern suburbs to create one of the largest shopping centres. Gandel's road to riches started with the

inheritance of his parents' successful Australian clothing business, Sussan, in the 1970s. A latecomer to property development, Gandel purchased Chadstone Shopping Centre in 1983 and has since expanded to other Australian cities.

The miners perhaps represent most accurately the Australian economic story over the past decade. The boom in the mining business has generated enormous levels of national income for Australia throughout the 1990s and 2000s. It is, therefore, startling that among Australia's wealthiest individuals, only two from mining are recorded by *Forbes*. Nevertheless, the combined wealth of those two, Gina Rinehart and Andrew Forrest, in 2013 was an estimated $22.7 billion compared to, for example, the $17.6 billion estimated for the property sector. Although a booming China represents the obvious reason for the wealth of the miners, the actual genesis often lies much earlier as is often the case. The genesis of the Rinehart fortune is largely found in a fierce political battle, in which Rinehart's father, Lang Hancock, managed to gain a virtual monopoly over the Pilbara region's iron ore deposits through a fierce campaign against the Western Australian government (Jamieson, 2011). Gina Rinehart has carried on her father's legacy in terms of both business ambition and political influence. The other titan of Australian mining, Andrew Forrest, founder of the mining company Fortescue Mining Ltd., demonstrated a keen sense of entrepreneurial awareness in extending the fortunes he has generated throughout the Pilbara region in Western Australia. A significant element of both individuals has been the propensity to enlarge the scope of their holdings, with both entering agriculture on an enormous scale, mainly in response to slowing demand from Asia for iron ore.

Media and entertainment, often considered the other great pillar of Australia's wealthy, has generally remained a small affair, with only a few making the list. When one considers the small size of the Australian market, this may not be surprising. Although the Murdoch family once resided in Australia, since Rupert Murdoch took up US citizenship, they no longer appear in Australian wealth lists. Instead, Kerry Packer (deceased) and his son James Packer, and the part-time media mogul, Kerry Stokes, dominate the list. Kerry Packer's rise to wealth resides in the media empire first established by his grandfather, Sir Frank Packer. Kerry Packer significantly altered the family's business interests by shifting into gaming and film production. Given the exit of James Packer from Australia's media industry, in reality the only other wealthy individual now associated with media is Kerry Stokes. Stokes very much represents the

romanticised rags-to riches-story that stands in stark contrast to the story of the Packers and other Australian wealth dynasties. Often forgotten, Stokes' diversified interests are such that, along with his holdings in WesTrac, he now largely controls the lucrative machinery hire sector in Australia.

6.8 Summary

This Chapter analyses the major social and policy sources of great fortunes amongst many of the world's largest economies. The analysis at the national levels reveals striking differences in the source of wealth and how it is managed. The most significant finding pertains to the degree of differentiation between the relative proportions of inheritance and self-made wealth. North America (dominated by the US), the UK and Australia all exhibit a trend towards more self-made individuals appearing in the ranks of the economic elite. The rise of the self-made billionaire is only evident in Japan. The finding in Japan is somewhat counterintuitive given the significant element of state patrimony in the business affairs of Japan's corporations. By contrast, France, Germany and South Korea all exhibit greater representation of inherited wealth amongst their wealthiest.

For the self-made wealthy, particular amongst the Anglo-Saxon countries, in countries where self-made wealth dominates, much of the evidence suggests that fortuitous social and political developments played a substantial role. This is particularly prevalent amongst those industries which benefitted greatly by the changes in political landscape in the post-World War II era. In Australia and the US, property interests benefited greatly from the great urbanisation and immigration developments of the era. Even amongst industries where direct state aid may have been absent, there still appear to be substantial government influence. Both the finance and information technology sectors benefitted substantially from deregulation in the case of finance, to public aid in research and development in the instance of information technology moguls.

The role of the state in great fortunes is far more evident in countries where inheritance dominates the wealth ranks. In Germany and South Korea, various government and regimes throughout history have supported the rise of family dynasties. In Germany, the immediate post war period saw many dynasties manage to maintain their control over

vast swathes of Germany's industrial base despite close ties to the Nazi regime. In South Korea, certain dynasties were favoured to ensure rapid national growth.

The many in which the individuals managed their vast fortunes suggests that diversification plays an important role. Across most family dynasties, inheritance beneficiaries tend to form major conglomerates with commercial interests across various industries or through diversified financial holdings. Similarly, this strategy is reflected amongst the oldest self-made cohorts. Many individuals are observed to have either divested their holdings in their original founding enterprises and moved into financial investments or property holdings. The consequent decline of overall entrepreneurial effort in some countries and the move into more rentier-based activities, particularly by inheritance beneficiaries, may be a response to the observation of declining real rates of return.

Finally, a significant finding is the extent to which finance dominates of self-made wealth across the UK, the US, France and Australia compared to the other countries examined. Here, either financial deregulation or agreeable property-related dynamics have given rise to vast fortunes. This echoes one of the defining characteristics of the first Gilded Age, which was the prevalence of the financiers among the extremely wealthy (Rockoff, 2012).

Chapter 7 Conclusion

7.1 Introduction

The global economic system has generated substantial upsurges in prosperity since the conclusion of the Second World War. An outcome of this process has been a concomitant increase in high wealth accumulation. Globally, the extremely wealthy have attained levels of wealth that closely resemble those of the Gilded Age of the late nineteenth and early twentieth centuries in the US. This New Gilded Age represents not only a global historical phenomenon but potentially has enormous implications with regard to economic growth policy and policies that seek to lift individuals out of poverty through redistributive mechanisms. The purpose of this thesis was to document and analyse the rise of this new economic elite as a section of society worthy of study in itself, and to explore how its wealth has been generated and sustained across the globe since the 1990s. By utilising a comprehensive database on the globe's wealthiest individuals, this thesis has sought to shed light on the degree to which entrepreneurial effort and inherited wealth have played their part across various advanced economies. Given the importance of financial holdings in the dynamics of modern wealth, attention was also paid to the degree to which the level of wealth acts as a function of risk aversion.

This chapter is structured as follows. Section 7.2 summarises the main findings of this study. Section 7.3 explores the possible policy implications of the findings, with particular attention to calls for wealth taxes and the potential impact on economic growth. Lastly, Section 7.4 suggests possibilities for future research.

7.2 Summary of Findings

Although wealth accumulation, particularly as represented by the ultra-rich, often receives substantial attention from popular media, as well as from policy makers in the context of taxation, economists on the whole have shied away from exploring the ultra-rich. This lack of research output can be contrasted against the vast literature in relation to the poverty. The reasons for this are a confluence of factors. Firstly, there has been a relative dearth of easily accessible data on the ultra-rich, and the data that is available is often criticised for its potential inaccuracies. Secondly, the bifurcation of the definitions of wealth and capital has resulted in discussions of vast wealth accumulation being jettisoned in favour of notions of human capital, for example.

Although lacking in quantity, the extent to which economists have explored patterns of extreme wealth accumulation in the modern era can be divided into three approaches. The first approach focused on the associated industrial structure in which wealthy individuals found success. Generally, the wealthiest are found in industries in which intense competition is the norm, but this is to be expected given the stochastic nature of free enterprise success. Secondly, the ability of skills and education, under the umbrella of human capital, has been espoused to support the existence of the extreme wealthy, such as computer scientists who became billionaires owing to the return to their human capital. Thirdly, institutional approaches have sought to place the rise of extreme wealth accumulation in the context of significant technological, legal or financial changes. However, the problem of these approaches is that they do not necessarily take account of the broader macroeconomic trends that have led to the overall wealth distribution observed across the advanced economies.

Chapter 3 examined the nexus between wealth accumulation, inequality and the various macroeconomic forces governing them. It adopted the general frameworks of Piketty (2014a), Piketty and Zucman (2014a) and Saez and Zucman (2014), considering the relations underpinning the aggregate wealth-income ratio across seven advanced economies and how they have evolved over the past 40 years. A significant element in the rise of wealth-income ratios has been the high rates of return relative to national income growth, which were observed to be associated with progressively lower real returns since at least the 1960s. The reasons for the inverse relationship between rates of return and the wealth-income ratio were explored in Chapter 6. Initial entrepreneurial

effort in the 1960s and before were viewed as a potential catalyst for this phenomenon, while subsequent decades have witnessed a decrease in entrepreneurial effort and a concomitant increase of more rentier-based approaches to wealth accumulation.

While wealth accumulation has substantially increased since the 1960s, as evidenced by increasing wealth-income ratios, the nature of the accumulation has been highly inequitable. The process of inequality appears to be tied to the processes of consumerism and financialisation. Both processes have ensured little upward mobility for the low to middle classes, while maintaining the upward trajectory of the wealthiest individuals and households. In Chapter 3, various economic forces were shown to have given rise to the aforementioned social changes. Consumption is undertaken by poorer households in greater proportion to their wealth or income compared to wealthy households. In addition, given the low rates of income growth among poorer households, the manner in which they have sought to maintain their consumption has had a further deleterious impact on their potential for wealth accumulation and upward mobility. The increasing financialisation of households results in greater debt levels, and supresses the potential for upward mobility. In contrast, rather than assume greater levels of liability, wealthier households have typically increased their holdings of savings and investment, with the latter becoming more significant as one moves up the wealth ladder, as these households derive a greater proportion of their income from capital investments.

The extent to which modern wealth has accrued to an extraordinary degree to the highest echelons of society was explored in Chapter 4. The global nature of the New Gilded Age is clearly delineated, with much of the growth in billionaires arising due to the influx of individuals from the developing world and the re-emergence of new entrepreneurs in North America, particularly in finance and IT. Since 1990, the number of billionaires has increased from approximately 200 to nearly 1,500 in 2013. The growth in the number of ultra-rich is also reflected in the growth of the number of countries represented in the sample. The growth in billionaires has seen a commensurate stabilisation of the average wealth of billionaires across the globe at approximately USD4 billion throughout the 2000s. Much has been made of the impact of crises on the wealth of the ultra-rich. The GFC only had a transitory impact on the extremely wealthy, as many of those who fell out of the wealth lists eventually reappeared a year or two afterwards. A global sectoral decomposition of the data reveals that wealth is

predominantly concentrated in the finance and consumer discretionary industries, reflecting the increasing consumerism and financialisation of the global economy. Although all industries have exhibited growth in billionaire numbers, IT has demonstrated the greatest increases, closely followed by financial services. Old established industries such as energy, despite being popularly perceived as the means to riches, have not had dramatic representation in the wealth rankings since the 1990s.

The influx of new billionaires has emanated from across both the developed and developing world. In the latter, China, India and Russia have demonstrated significant growth, which can be tied just as much to political favouritism as to economic growth by itself. Indeed, many of the billionaires from Russia and China had, or have, meaningful or material ties to the governing powers of their country. In India, where private enterprise has maintained a degree of freedom, the stringent controls or regulations imposed by the government largely ensured the rise of large conglomerates and the families that dominate them. The relation between former (or current) authoritarian regimes and an economic elite is observed in South Korea and Germany, too.

Perhaps the most striking differences across the globe are the patterns of old wealth versus new wealth. Here, old wealth refers to family dynasties or the incidence of inheritance, whereas new wealth refers to wealth generated from entrepreneurial effort. The proportion of old wealth is much lower in the developing world than in the developed world, although this is mainly driven by the influx of billionaires from Russia, Eastern Europe and China. In the developed world, there are substantially different inheritance patterns. North America demonstrates the lowest propensity towards inheritance, and this has consistently decreased over the sample period. In contrast, Western Europe has consistently shown a propensity for majority inheritance.

An important element in the process of wealth accumulation is the ability to derive income and grow wealth from sources other than labour and simple savings. In this regard, the ability to leverage the availability of financial investments to increase or sustain one's position in the wealth stakes would seem obvious. Despite this, financial economics has tended to view the propensity to assume risk in financial matters, or the degree of risk aversion, as being divorced from the level of wealth one holds. Chapter 5 tested the proposition that one's risk aversion is not a function of wealth (or CRRA) on

a panel of Australian households. The level of risk aversion was found to be substantially high for lower percentile households and systematically decreased as wealth increased. The competing hypotheses of CRRA and DRRA as a function of wealth were formally tested in a first differences panel regression framework. In the presence of a range of socioeconomic variables, the negative relationship between risk aversion and wealth held, that is, RRA is a decreasing function of wealth. In addition, financial advice was found to have an impact on the risk aversion of households across the entire wealth spectrum. The wealthier still assumed greater risk tolerance, but even among poorer households there appears to be an impact on the propensity to assume greater risk in one's financial portfolio.

Although the reappearance of the ultra-rich is a global phenomenon, the possibility of heterogeneity in the patterns of ultra-rich development across countries was explored in Chapter 6. Overall, there are substantial similarities in the degree to which certain sectors generate vast fortunes across the seven developed countries. In Chapter 3, it was suggested that financialisation and consumerism are two of the major forces that have shaped the distribution of wealth in advanced economies. Consequently, it is not surprising perhaps to find that industries at the cutting edge of these phenomena tend to dominate wealth lists. This was evident in the US and the UK, where the financial services and consumer discretionary sectors have represented a robust source of growth particularly over the past 10 years. However, continental Europe shows significant divergence from such patterns, as inherited wealth plays a far more dominant role. In both France and Germany, the majority of extreme wealth is held by inheritors, and, although the proportion has decreased, inheritance is still highly represented in the wealth stakes. Given the destruction that both nations experienced in the Second World War, this is surprising. Particularly in Germany, many of the individuals on the wealth lists are associated with families whose heritage stretches back to periods before the war. Whereas entrepreneurial success was the key in the Anglo world, the Germanic model very much followed a pattern of solidifying and tying business interests with political interests.

The Far East also shows contrasting patterns of development. Japan and South Korea demonstrated dramatic variations in the degree to which old wealth dominates. The immediate post-war era saw a dramatic reduction in the role of Imperial Japan's economic elite due to the occupying forces' economic policies. This created a vacuum

in which new entrepreneurs emerged and propelled Japan to the forefront of, for example, the electronics industry. In contrast, South Korea adopted an approach in which political and business interests largely intersected, particularly in the 1960s, allowing five or so key families to dominate the economy. Since the 1990s, the Korean families at the head of *chaebol* have come to extend their corporate holdings and wealth without direct state preference through the exploitation of the corporate governance structures, such as by tunnelling.

A further finding of Chapter 6 was the substantial role played by diversification in the business affairs of extremely wealthy individuals across all countries and sectors. Here diversification refers to the expanding sphere of business holdings and activities beyond the individual's or family's originating point. This phenomenon cuts across the old and new rich and industries. The conglomeration of business interests among the ultra-rich originating in advanced economies suggests a tendency to seek out new business opportunities. Theoretically, in periods of low returns, one may expect a degree of diversification to emerge as individuals try their hand at different business opportunities. At a macro level, real rates of returns demonstrate secular decreases across all economies since the 1960s and 1970s, which appears to have increased the degree of diversification by billionaires. Although inherited wealth tends to exhibit this trend more strongly, similar behaviour is observed among self-made entrepreneurs, even among the new breed of Internet entrepreneurs.

7.3 Policy Implications

The extent of extreme wealth accumulation in the contemporary era is clearly being grappled by policy makers, as outlined in Chapter 1. Broadly speaking, policy discourse has centred on creating tax regimes to reduce tax avoidance or evasion or to implement a progressive taxation regime. The most visible manifestation of the former arose from the G20 summit of April 2009, where G20 countries sought treaties with tax havens under the threat of sanctions. Between the G20 summit in April 2009 to December 2009, more than 300 treaties had been signed by the world's tax havens (Johannesen & Zucman, 2014).

On implementing progressive wealth tax regimes, a strong argument can be mounted that it would not have a deleterious impact on entrepreneurialism and economic growth.

The evidence accumulated in Chapter 6 suggests that much of the extreme wealth today emerged in the post-war era when wealth-income ratios were at their lowest point. Indeed, many of today's billionaires made their initial fortunes in the midst of high taxation and high government spending. The majority of North America's property tycoons, for example, required the massive highway infrastructure being developed in the 1960s. In South Korea, government contracts and a penchant for rapid development policies help to explain the emergence of that country's economic elite. Entrepreneurial effort is unlikely to be blunted by greater incidence of wealth taxation. Of all the industries considered, only IT has shown a degree of natural competitive evolution, although its beginnings too were associated with large government spending in research and development. The individuals at the forefront of the central processing unit (CPU) revolution managed their initial seismic innovations in this climate. Even among the fashion houses of France, entrepreneurialism was not dented by higher taxes.

Although a global wealth taxation system would provide a rapid mechanism through which wealth inequality might be reduced, the political realities are likely to make this an ineffective approach. Even tentative steps to reduce the incidence of tax avoidance through 'treasure island' tax havens have not been effective. Johannesen and Zucman (2014) provide a convincing account of how the wealthy simply reorganise their financial affairs, negating the impact of bilateral or multilateral policies aimed at increasing tax revenues. Shaxson and Christensen (2011) argue that the moves by policy makers, particularly at the G20 level, were shambolic and not likely to result in any significant reversal of the conjoint issues of tax evasion and avoidance, and financial secrecy. The political realities between nation-states are also likely to sound a death knell for a global wealth tax, despite evidence of the effectiveness of wealth taxes in the past (Piketty, 2014a).

An alternative approach to reducing the inequality of wealth accumulation is to view it within the context of how households deal with their financial holdings. The increasing household financialisation has so far appeared to have an asymmetric impact on households, depending on which side of the wealth distribution one examines. The extent to which household risk-taking in financial matters is a function of wealth was analysed in this study. The results suggest that wealth is the largest element driving the propensity to save and invest. A policy implication that naturally emerges from this is to consider the adoption of policies that incentivise savings and investment by all. The

potential of utilising finance to increase the probability of upward mobility regardless of classes was well recognised by Watkins (1907) and more recently by Saez and Zucman (2014).

In addition, the extent of the representation of inheritance in the wealth lists requires some attention. Setting aside the moral issue of whether such vast inheritances should be under the examination of policy makers and society for the moment, the issue of how one should lessen the effectiveness of family dynasties needs to be considered. Wealth taxes in themselves are not likely to have a dramatic impact given the formidable international issues that would emerge. Instead, large wealth accumulation by these dynasties may perhaps be blunted by restricting the span and sphere of business interests in which these families engage.

7.4 Avenues for Future Research

Any study that seeks to investigate issues associated with wealth accumulation utilising micro data is invariably confronted with problems of the accessibility and quality of data, particularly when focusing on the ultra-rich. Despite the limitations of the data used in this thesis, a number of fruitful research avenues have been identified.

The existence of substantial heterogeneity in the proportion of inherited versus self-made wealth across countries warrants further research. The acute differences observed even among countries in relatively close geographical and cultural proximity, as in the cases of Germany, France and the UK or Japan and South Korea, suggests that minor legal or historical developments can have a profound impact on the degree to which patrimony dominates a society. An underexplored element in this thesis (Chapter 6) is the extent to which differing patterns of inheritance across countries is a function of alternative corporate governance institutions. In South Korea, for example, legal forms of tunnelling have ensured that the wealthiest families are easily able to extend their sphere of control through their country's business landscape. Similarly, for Germany, the prevalence of dynastic wealth may in part be explained by the realm of corporate governance, where stakeholders have a rational interest in maintaining the *status quo*. In the future, a natural experiment may be found in comparing China and Russia as their first billionaires make way for new entrepreneurs or their families assume the dynastic dynamic observed in some advanced economies over the past 60 years.

A further potential research avenue revolves around the issue of wealth diversification by the ultra-rich, which can be explored along two lines. Firstly, Chapter 6 noted the propensity of the ultra-rich, be they inherited or self-made groups, to expand the sphere of their business holdings. This is particularly the case in Anglo economies where the general pattern appears to be one of entrepreneurial activity followed by the proliferation of holdings across a range of business activities and investments. In contrast, less-developed economies appear to forgo this pattern and typically rapidly establish large conglomerates and holding companies from the outset. In Germany, the pattern appears to be one of acquiring companies within the same or similar sectors. The issue is why this should arise in the first place. A potential key element in this regard is the empirical regularity of the existence of lower rates of return since the 1960s. Could the secular decline in rates of return potentially explain the rise of highly diversified business interests? Watkins (1907) once argued that during periods of low interest rates, speculative activity becomes an attractive option for the ultra-rich. Alternatively, with the lower cost of capital in recent years, the ultra-rich may just be seeking to diversify their holdings, rationally responding to changed market conditions. Secondly, diversification can be explored from the perspective of how it is attained. In the developing world, for example, much of the industrial diversification arises within the confines of large conglomerates. In the West, this does not appear to universally hold, with the ultra-rich's business interests not being necessarily tied under the umbrella of a single holding company.

In addition, the issue of how the wealth of the ultra-rich is secured during economic or financial crises warrants further consideration. Chapter 4 touched upon this and found that the impact of the GFC was not as pronounced as one may have previously thought. Many billionaires were able to rapidly reassert their wealth in subsequent years, with those from the financial sector demonstrating a particularly robust survival rate. A systematic analysis should be undertaken of the determinants of dramatic reversals in fortune during these periods and of those factors that ensure the security of wealth.

Finally, one consequence of both the rise of an ultra-rich, greater returns to capital and depressed wage growth of workers has not been considered. That is, the possibility of an upper bound to the accumulation and concentration of wealth being achieved. 'Trickle down economics' has in contemporary times not been as effective as hoped.

Conversely, the ultra-rich can only maintain their position of through a trickle up, but the invariably this process can only plateau or even decline in the future. Taxation and transfer policies can all assist in reducing further accumulation but, in the very long term wealth accumulation will plateau. So how much of a concern is this for the wealthy?

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