Norwegian School of Economics

20. DESEMBER 2023

AGGREGATE ASSET PRICE INFLATION IN THE GLOBAL ECONOMY

A GENERAL REVIEW OF TRENDS IN NOMINAL WEALTH GROWTH BETWEEN 1900 AND 2020

GJERMUND KNAG MATRE
A MASTER'S THESIS AT THE NORWEGIAN SCHOOL OF ECONOMICS
BERGEN | NORWAY

Contents

Introduction

Motivation

With the arrival of a new era of high consumer price inflation and rising interest rates in the wake of the covid-19 pandemic and the invasion of Ukraine, a unique opportunity to review the era we have left behind reveals itself. As developments reach their climax and weaknesses are exposed, some of the uncertainties about the state of the global economy are cleared up, and the fog caused by low interest rates and bulging reserves is lifted as unsustainable practices are unable to be maintained.

We leave behind a long period of strikingly low consumer inflation and near-zero interest rates. One of the first questions to ask is what have been the main processes that have helped to keep such a situation going for so long. Events that are usually pointed at as explanations for these developments, like the Great Recession of 2008 and the Dot-Com-Crash of 2000, cannot be conclusively said to be the predominant causers of general developments as a lot point to them largely being themselves side effects of other more underlying factors.

Studies into the causes and explanations of macroeconomic phenomena are often reduced to ideological crusades, and easily become infected by confirmation bias and general oversimplification. It is difficult to judge others for ending up in such traps as anyone who has studied a diverse set of cases know how bare the ground on which you are standing when

building your arguments, sometimes can be. Not only is it often quite bare, but it is also frequently shifting underneath you. As digging deeper can lead to your earlier assumptions suddenly crumble into dust as they do not hold in the real world. This paper attempts to circle in on an understanding of events by trying to look at many rather than a few potential explanations. It is not possible to place the world economy in a sterile lab and conduct controlled experiments on it. We can only observe its past and present behaviour. It is therefore difficult to say where the effect of one factor stops and that of another one begins. It is however possible to say with some degree of certainty whether a factor has any effect or not, and in which direction it is pushing or pulling.

This paper is partially inspired by the report published by the McKinsey Global Institute in November 2021 titled "The rise and rise of the global balance sheet" (McKinsey, 2021). It lays out facts and data documenting the general global trend of rising wealth relative to income. The report is mostly concerned with documenting this phenomenon, and less focused on the explanations for this development. It describes a very unique feature of our globalised world economy and inspires retrospection in a time when this trend can seem to be shifting.

This paper uses data from the World Inequality Database, which provides a wide range of economic data that is freely accessible on its website. The main portion of this paper is structured around a special focus on a certain metric in particular, which is the aggregate wealth/income ratio.

Summary

The wealth/income ratio gives an indication of the size of an economy's asset holdings relative to income, it can also be seen as a broad definition of the capital stock. It has its limitations however, as it is difficult to say if asset prices at any given point in time actually give correct indications on an assets real economic value. This is where the phenomenon of asset price inflation comes into play. Just as for consumer goods, asset inflation generally refers to nominal price increases without corresponding real changes in value. It is however far more difficult to measure, as an asset can yield profits, or non, over long periods of time, its value is dependent on future developments, it is thereby always uncertain to some degree. This can cause bubbles to inflate in asset markets as perceived value is largely dependent on the risk willingness and general optimism or pessimism of investors.

Before the actual reviewing of data and historical events, this paper lays out some general perspectives on economic relationships and economic theory. This is done in order for the

reader to more easily understand chains of reasoning and argumentation in later parts. The introductory part is in large part inspired by the writings of Hyman P. Minsky, especially his book titled “Stabilizing an Unstable Economy” (Minsky, 1986). In this book he conducts a general review of modern macroeconomic theory and policy. Among other things he deconstructs Neoclassical concepts and expands on the work and theories of John Maynard Keynes, which he sees as generally misinterpreted.

The review of historical trends begins in whit a look at the pre–Great-War global economic system. Followed by a review of the inflationary events both during and after the war. In this section the central role of the government in modern inflationary processes is demonstrated. Afterwards there is a quick look at the events before and after the Great Depression, and then the Second World War. In this early section there is an almost exclusive focus on West Europe and North America. This comes from the fact that they were the most developed regions of the world in this period, and therefore kept more records. There are simply not very many data available for other economies, something which partly stems from many economies not being fully market focused and capitalistic in this period.

After having reviewed the pre-WWII events, there is a brief look at the post-war international order, followed by a discussion of its breakdown in the 1970s. In the 1970s there is the stagflation and oil crises that are looked at. There is also a special focus on the UK and Japan, who both had more dramatic developments in their economies in this period than most other developed countries. In the 1980s there is the restraining of inflation and financial liberalization that is in interesting. Also in this decade the UK and Japan deviated from the rest.

When the mid-1990s arrive the special developments that have been defining recent decades start to set in. This paper focuses on the role of deflationary pressures stemming from the rapid trade expansion of developing economies, aswell as the cheapening of IT-technology as processing power grows exponentially, as some of the main drivers of low consumer inflation and low interest rates. There is also a look at how this deflationary pressure also drives growth in asset prices, and especially housing wealth, as spending is increasingly directed at relatively inelastic goods, such as housing, while for example merchandise goods become relatively cheaper. When interest rates are low the demand for housing increases further as buyers can service more debt.

There is also a look at how the building up of foreign exchange and bond reserves by Asian governments, as their currencies are rarely revalued, affect financial markets and government budget deficits, and their consequences, in other countries.

The paper is wrapped up with a brief look into the future as the thorough deconstructions of resent events are still fresh in mind. When looking into the future with new perspectives in mind it is important to remember that these insights are gained retrospectively and thereby have most value when applied retrospectively. The uncertainties about where things are moving into the future are still to a large degree as great as they have usually been before, as we learn about the past slower than present circumstances are changing.

Aggregate Asset Price Inflation

Money and Prices

The concept of value is central to economic thinking and analysis. Yet, it has never been successfully defined by a universal and infallible definition. This is one of the many reasons economics cannot be treated as a natural science. It is unquestionably a social science. However, like a wolf wrapped in sheep's clothing it has wrapped itself in the pure language and elegant mathematics that you find in theoretical maths and physics. As a consequence, the theoretical world of economics has developed an alternate universe of perfect laws and relationships that has little in common with the real world. Out of this world econometric models applied to real data have produced the measures of value that are used by economists today, and the unit in which these values are measured is largely without exception money.

For most of post-neolithic old-world history the concept of money was attached to precious metals like gold and silver, physical matter that excited in relatively fixed supply. This fixed supply was the main reason for its suitability. However, already in ancient times mighty rulers who had the coercive power to define what people were allowed to call money, and how value was to be measured, used this power to create money and thereby "value" themselves. With the arrival of the modern age and the chaos of the first world war it became clear that the intensive use of this money creating power had become central to the running of large, industrialized states. However, it was also becoming clear that its use was causing problems for the functioning of the world economy. Consequently, through the middle of the 20th century the wielding of this power was not stopped, but attempts were made to make it

partially rule based. As a result, the previously occasional and universally undesirable phenomenon of inflation became a constant presence in the post war world economy.

Since inflation is one of the most obvious obstacles in the search for a pure definition of economic value, the prospect of judging to what degree the nominal value given to assets in the world economy is reflecting its true value relative to other assets is often in essence reduced to a pure gamble. This fact makes asset ownership an attractive activity for gamblers, or so-called speculators, something which helps to exacerbate the fluctuations between nominal and real value.

It is not only governments and central banks that can create money, normal banks also have this power as long as the actors in the economy see them as legitimate. This means that money in the modern world economy is being crated, destroyed and exchanged at an enormous scale and by numerous independent actors. To find and trace the original sources and paths of inflation in the world economy is therefore a seemingly impossible task, and a feat no one claims to be able to perform. The behaviour of money is therefore analysed and studied in much the same way that rain is by a meteorologist. The meteorologist knows that clouds are formed by the evaporation of water from seas and lakes and that the same clouds are responsible for the rain that falls on land. However, no meteorologist claims to know from where in the sea or from which body of water the rain that lands on a given piece of land originated. Neither would a meteorologist claim to know exactly where newly formed clouds will travel or where they will release rain. Therefore, much like the weather, the prices in the economy can only be forecasted for a short period into the future, and even in that case, not without a generous dose of uncertainty.

This does not mean that it is impossible to say something about the main causes and drivers of inflation. Rather, it says that this type of analysis will be built on approximations and uncertain claims. A good analysis should be built on an understanding of the complex nature of the money creating process. Concepts like the quantity theory and the multiplier effect are rarely easily applicable to the real world. They may describe some abstract relationships. However, the simple constant parameters they rely on do not exist for the real economy. There is no fixed velocity of money and there is no fixed multiplier that says how much banks will lend based on the size of their reserves.

Measures of Inflation

When someone analogously uses the word inflation in public discussions it is usually in reference to the specific phenomenon of consumer price inflation. Consumer price inflation is most often measured by determining the inter period change in a country's consumer price index. To decide which prices are to be included in the consumer price index, statisticians and economists attempt to determine the average consumers basket of consumer goods in a specified period. The change in the total cost of this basket of goods is then calculated as a representative measure of the inflation that occurred during the relevant period. Of course, there are usually steps taken to control for the changes in this consumer basket, but the general methodology is as described. The most important thing to note about this measure of inflation is the fact that it specifically relates to consumer goods, and therefore not to all goods and prices in the economy. What is left out are assets and the entire financial sector. In other words, the places where most of newly created money either originates or flows.

The exclusive focus on the consumer goods market in the common measure of inflation means that the phenomenon of asset price inflation, which focuses on the asset market, is its own separate issue. Other than being separate, it is also has quite dissimilar characteristics. For example, by comparing consumer price growth to nominal GDP growth it is possible to filter out a measure of so-called real GDP growth. A similar measure is not possible to reliably calculate for asset value growth. Like for GDP, when nominal asset values grow over a period of time it can have one of two causes. Either the assets real value has increased, and money has been created in order to reflect this relative increase in relation to the other goods in the economy, or there is just more money chasing the same assets without any change in their real value. Unlike GDP, the value of assets, which can be defined as the sum of their discounted net future cash-flows, is not possible to precisely measure for a certain period. This is because while GDP is a measure of current incomes, value is a measure of future, uncertain, incomes. To create a metric similar to "real" GDP for "real" assets is therefore not possible. This leads to the phenomenon of asset price inflation being one simply referring to the total nominal change in asset values, with no distinction between what is assumed to be the result of real value changes and what is net nominal changes.

The two phenomena of consumer price inflation and asset price inflation can evolve relatively independently. They do however influence each other in important ways that need to be

understood if one wants to build a complete picture of how the economy functions and specifically how money and prices behave.

Before we start analysing the behaviour of asset prices in the aggregate, we should first consider the balance sheet dynamics of asset ownership. If we look away from hybrid instruments and seniority specifications that have little significance in the aggregate, we can say that assets are balanced by either debt or equity. Since someone's debt always corresponds to someone else's asset, all debt is cancelled out in the aggregate. Therefore, to find the underlying yielding assets that are the actual sources of perceived value, we subtract total debt from total assets to find the net worth of the economy.

Now that we have an aggregate metric for nominal assets that can be used for our analysis, we can move on to addressing the more central issue that we already touched upon. Since there is no reliable way to measure "real" assets for an economy we are in need of some other metric that can be used to compare and analyse the development and behaviour of asset values across regions and time. One solution could be to find ratios that show net worth relative to other metrics. The most obvious metric to use as a reference would be nominal net income, as this would show nominal wealth relative to nominal income at any given time. It is therefore this ratio that is chosen as the central metric in our further analysis.

Theoretical Perspectives

Neoclassical Ideas about Wealth

Net worth corresponds to the broadest definition of the infamous "capital stock" of an economy. If one is familiar with neoclassical macroeconomic thinking, one would know that this tradition puts a special emphasis on the size of precisely the capital stock. The most widely known neoclassical models that tackle this feature are the Solow model and the Ramsey model. These two models seek to derive a so called "steady state" size of the capital stock, or capital stock per capita, as determined by either an exogenous savings rate, as in the Solow model, or endogenously by intertemporal household utility maximization, as in the Ramsey model. The reason why there are two separate cardinal models is most likely related to the fact that the more sophisticated model of the two, the Ramsey model, only generates a stable solution in certain exogenously given conditions. The required conditions mainly involve the initial size of the capital stock. The Ramsey model is also more cumbersome and complicated to deal with than its counterpart. In contrast, the Solow model provides a

relatively simple and intuitive illustration of the steady state concept by simply setting out to maximize steady state consumption without regard to utility dynamics.

The core of both neoclassical models is structured around what is called marginal productivity theory. This theory attempts to formulate the prosses that determines the factor prices in the economy. The term "factor price" refers to the prices of inputs in production, which in the aggregate consists of labour and capital. The factor price for labour is the average wage rate, and the factor price for capital is the average rent rate, which is equivalent to the rate of return on capital, which again in essence equates to the average return on productive assets in the form of interest, dividends and retained earnings. The theory is relatively straight forward and essentially states that the factor price of an input, in a competitive market environment, will be set equal to its marginal productivity. The intuition behind this result, which should be quite familiar to anyone who has been exposed to classical economics, goes as follows. A factor price higher than the input's marginal productivity will incentivise producers to substitute away from the input, thereby decreasing its demand and presumably also its factor price. A factor price lower than the input's marginal productivity will incentivise producers to substitute in favour of the input, thereby increasing its demand and presumably also its factor price. This reasoning gives way to the already stated conclusion that in the long run, or the steady state, factor prices will equal marginal productivity.

If we go further with this, we then have that the wage share of GDP, the portion of income that is received in the form of wages, should equal the wage rate times the size of the working population. While the profit share of GDP, the portion of income that is received in the form of interest, dividends and retained earnings, should equal the rent rate times the size of the capital stock. In neoclassical models it is usually assumed that there are constant returns to scale. Which means that a simultaneous and equal increase in both factor inputs will lead to a corresponding proportional increase in output. This requires that the elasticity of substitution between capital and labour is equal to 1. Which further means that any quantitative changes in either factor input will be counterbalanced by an opposite change in their factor prices so that the ratio between the wage share and profit share remains the same. With this summary in mind, we can finally see that, within the aforementioned assumptions, a given steady state capital stock, or capital stock per capita, based on this reasoning will result in a corresponding steady state factor price for labour and capital. Finally, since there is a constant steady state capital stock, or capital stock per capita, investment must remain constant aswell. At a level that exactly balances out the effect of depreciation. This leads to the investment share being

equal to the profit share, as this keeps the capital stock stable. Thereby resulting in equal profit/wage and investment/consumption ratios.

In relation to analysis, the neoclassical models are not necessarily valuable because they reflect observed data, often quite the contrary. Rather, they are valuable as perfect mathematical representations of certain assumptions, and their theoretical consequences, that can be used as a measuring stick against the real world. They can thereby work as a tool to find where the assumptions do not hold. It is in these scenarios that we have to start looking at the real world for what it is, and that is not a perfect market economy, but rather a messy and unpredictable conglomeration of intervening states, companies with market power, and individuals with imperfect information.

One of the most obvious shortcomings of the neoclassical models is that they usually treat capital as a uniform good. They also do not necessarily specify which unit capital is measured in. This was famously pointed out by Joan Robinson, who was critical of the general disregard for these problems in economic circles. If one tries to integrate several different capital goods, with unequal marginal productivity, and several different economic sectors, with unequal capital intensity, into the neoclassical models, the direct relationship described by marginal productivity theory may no longer apply. It also creates extreme complexity. However, certain mathematical proofs show that as the number of different capital goods moves towards infinity the model resembles the simplified version with one good. This demonstrates how neoclassical models are not necessarily wrong if one is conscious of the idealized assumptions they rely upon.

Keynes and the Special Nature of Asset Markets

A central weakness of the neoclassical models is that they do not take into account the special dynamics of asset markets. This is something that John Maynard Keynes particularly addressed, and which Hyman P. Minsky elaborated on. They observed a world very different form the one found in the neoclassical models when they studied the fluctuations in output, inflation, and employment that occurred during the 20th century. This led to them formulating new theories that tried to reconcile the observed world with the one that existed in the minds of economists. Their theories were less focused on math and assumptions than the established ones. Instead, they took the form of careful contemplation around, and analysis of, the nature of modern economies. What they observed as significantly special about modern post-19th-

century economies was the large size and long horizon of investments, the established presence of labour power, and most importantly, the growing size of the state.

Firstly, large investments with long horizons come with financial commitments that do not go away if these investments end up underperforming as a result of internal or external factors. This creates inflexibility in the economy and instability in financial markets. If enough investments fail, a chain reaction can be set into motion which ultimately drags the whole economy down into a slump. This slump can be worsened by the slow functioning of the labour market, where sticky wages, low mobility, and limited adaptability, cause the wheels of the economy to slow down even further as people become unemployed and aggregate demand shrinks. Because of the nature of these mechanisms, the state is the primary actor that has the ability to effectively counter the negative spirals. This is something that has resulted in the state gaining a progressively more influential role. As the state, including the central bank, has gained more influence over the economy, both as a result of the growing instability, and as a result of higher standards of living and greater welfare demands, it has itself also contributed to making the functioning of the market economy more unpredictable and less similar to the neoclassical models.

One of the key observations Keynes and Minsky made was that it was the investment component of aggregate demand that fluctuated the most, and which, as a result, partially caused the unpredictable behaviour of modern economies. They saw this fluctuation as stemming from the special functioning of asset markets. Since asset markets are heavily influenced by financing conditions, a sudden change in these can result in significant changes in the demand for investment goods. Furthermore, investment goods production that is continuously financed by rolling over short-term debt can suddenly be hit by cost changes if financing conditions change. Investment good producers will also face an adjustment in projected earnings as the change in demand for investment goods affects the price their finished goods can be sold for. This demonstrates how modern economies are highly dependent on the proper functioning of financial markets for stability.

We have now come back to our main topic of asset prices. As a result of the amplifying nature of financial markets, asset prices can fluctuate in quite extreme ways. There can occur so called bubbles, where certain prices inflate without corresponding changes in real value, and these bubbles can suddenly implode, which can cause prices to deflate even more than necessary to correct imbalances.

The result consisting of equal profit/wage and investment/consumption ratios, that we found earlier in relation to neoclassical models, can also be derived from a model that is not neoclassical in nature. This other model was formulated by Nicolas Kaldor. In his model, which is proximately Keynesian as it focuses on aggregate demand dynamics, we divide the economy into two sectors. They are the consumption goods sector and the investment goods sector. The most simplified form of the model has the following assumptions. The consumption goods sector produces consumption goods through the use of labour and investment goods. While the investment goods sector produces investment goods through the use of labour alone. The consumption goods sector generates a revenue that is sufficient to pay the wages of its labourers as well as leaving a profit. While the investment goods sector only generates a revenue sufficient to pay wages. Since all wages in the economy are used for the purchase of consumption goods, the revenues in that sector are larger than the labour costs. This is how the profit is generated. The profits in the consumption goods sector are then used to purchase the investment goods that are used in consumption goods production. That means that the equation adds up and we see again that profit equals investment and wages equal consumption. This demonstration also illustrates Eugen von Böhm-Bawerk's intuition that investment goods or capital essentially represent deferred labour inputs, while profits are deferred wages for those labour inputs, and that essentially all income directly or indirectly finances wages. Of course, given that you look away from consumption out of profits, which is essentially a terminology issue, and something that requires monopoly profit, which should not exist in a perfect, competitive market economy.

Money Creation

Imperfect Relationships

The existence of two different types of inflation, one for consumer goods and one for assets, makes it clear that the inter-period change in the most common measure of inflation, the one for consumer prices, does not represent the money created in excess of economic growth in a given period. Even though this is quite an obvious observation, and one that is not up for question, it still seems less obvious when reading undergraduate economics textbooks or listening to discussions on monetary policy. In these theoretical spheres the creation of money is sometimes presented as a straightforward mechanism where a quantity is created at the central bank and is thereafter elegantly defused into the economy by temporarily affecting output. Only to eventually become evenly spread out across the economy, leaving relative

prices unaffected. For most central bank analysts this would be a dream scenario compared to the real world. In the real world however, central bank decision making takes the form of a continuous sequence of uncontrolled experiments that are analysed through ceteris-non-paribus comparisons. There is little clinical precision to find in this method, and the real isolated effect of any given central bank policy or decision is never even claimed to be satisfyingly understood.

It is therefore not strange that the preferred central bank strategy of old-school monetarists like Milton Freedman, stable money supply growth, is not the preferred method of many developed countries today. The infeasibility of this strategy stems from the simple fact that the central bank does not have the power to control the growth of the total money supply. They may be able to manipulate the size of the foundational, but relatively modest, M0 money supply, but as one progressively moves up through the broader definitions of the money supply, M1, M2 and M3, the ability to predictably manipulate moves towards insignificance.

The Traditional Sources of New Money

Money creation can happen through several different channels. The most obvious one is through printing at the central bank. This however, only accounts for a tiny fraction of the money supply. If we move a step up the ladder, we include the reserves member banks have at the central bank. These two categories together constitute the base money supply M0. This is the money supply the central bank directly controls. It can manipulate it in a few different ways. Firstly, the central bank can require banks to have a minimum quantity in their reserve accounts. Secondly, it can pay interest on these reserves, incentivizing banks to hold money in that manner. Thirdly, it can lend banks money they can place in their reserve account, and it can charge an interest on these loans. And finally, it can buy and sell financial assets from banks, thereby increasing or decreasing their reserves. The most common financial asset that is traded by the central bank is government securities, but after the 2008 financial crisis some central banks have also started to trade in other financial assets aswell in order to preform what they term “quantitative easing”. All these tools only directly manipulate the M0 money supply, it does however also influence the broader money supply categories.

The M1 money supply is another step up the ladder. It expands the definition of the money supply to include liquid supplies of money created by commercial banks. Liquidity is a measure of how easily tradeable a value-asset is. On-demand money reserves are usually defined as the most liquid stores of value, as they can be used for all traditional economic

transactions. It is not just the central bank that has the power to create this form of liquid money. Common demand deposits in commercial banks are also of this form. When these demand deposits and other easily accessible money holdings are included in the money supply, we get a quantity larger than M0. The excess of M0 consists of money created by commercial banks in the form of loans. When debt is created, as a bank issues a new loan, new money is also created, this money ends up in an account somewhere else in the form of a deposit. Where the money ends up depends on what the loan is used to pay for. This prosses goes in reverse as the borrower pays back the loan. When this happens, money is being destroyed. Through this simple process money is being created and destroyed continuously as banks issue loans and borrowers pay them back. The validity of the money created in this manner radiates from the credibility of the bank as an institution and requires that the actors in the economy accept the bank's checking certificates as valid means of payment.

There is always the risk that a loan is not repaid. This is not a problem as long as the quantity of defaults is small enough that it does not affect the banks credibility as an institution that is able to meet its commitments. This is because the bank has the ability to loan money itself as long as it is credible. Defaults first become a problem when the bank is no longer able to transact with other banks. This is where the role of the M0 money supply comes into play. When banks transact between each other, for example if a loan issued by one bank is used to pay into an account in another bank, these transactions happen through transfers between the banks' accounts at the central bank. If outflows from a bank's account are balanced by inflows, there is no problem, but when loans are not being repaid inflows will eventually become insufficient. If the bank is not able to loan money in order to temporarily balance its books it will at some point turn insolvent. This leads to a lot of money suddenly being destroyed unless a different bank takes on the insolvent banks commitments or the central bank intervenes. In most developed countries today, the central bank guarantees the safety of depositors. Thereby ensuring that commitments within certain quantitative limits will be meet. This is done in order to provide safety for bank customers and to avoid the negative chain reactions that come with deflation. It can however incentivize more risky behaviour by financial institutions as the downside risk of expansionary banking is collectivized. This means in essence that the whole of society takes on the negative consequences of the financial sector's most risky bets.

M2 is yet another expansion of the money supply definition. It usually includes M1 aswell as smaller time deposits and smaller money market accounts that have a high level of liquidity

without being completely on-demand. M3 expands even further to include large time deposits and large money market accounts, as well as short-term repos and relatively liquid institutional funds. The precision of the money supply definition is diminished at every expansion. This is because there is usually not preformed any weighting, with respect to liquidity, of the different types of money within each definition. The categories are made even more confusing by the fact that different countries often have dissimilar definitions for each level yet call them the same. The only definition that is relatively constant across countries is the one for M0.

The Abstract Nature of Money Creation and the Role of Risk

The determination of the quantity of created money can also go on to include market valuations of certain financial assets, as is partly the case for M3. Since most financial assets have some level of liquidity, they can have value as means of payment, or at least can be rapidly exchanged for universal means of payment. Further, they can also be used as collateral for the creation of more money through different financial instruments, like for example repos. This demonstrates the insight of Minsky that the creation of money only stops at the ingenuity of financial institutions. A thing to observe in relation to this is that money creation often takes the form of a layered prosses where “safe” payment commitments are used as collateral for the creation of new less “safe” payment commitments, that again can be used for the creation of even riskier payment commitments. Here the term “payment commitment” refers to what is usually called financial assets. We see here that the level of risk willingness is the main parameter determining the size of the money supply. However, as a result of imperfect information many actors in financial markets might not even know that they are taking high risks when participating. This was the case during the sub-prime bubble in the 2000s. Since credible institutions gave misleading risk ratings to financial assets, actors trusting them thought they held safe assets.

A risky process is also at paly when asset values, calculated on the basis of asset prices, grow faster than net investment would indicate. What is essentially happening is that debt is being created for the purpose of purchasing assets based on the expectation that the value of the asset will increase in the future and thereby create a net gain for the holder. However, if the goal of the “investment” is not to hold the asset and earn a profit form the income it yields in the form of for example dividends, but rather to hold it in order to sell it at a higher price in the future, then the profit the “investor” earns is in reality originating from the creation of the additional debt the future buyer uses to purchase it. For everyone else holding an equivalent

asset to the one being sold at a higher price, this aforementioned transaction will indirectly have contributed to increasing their wealth based on market value. This process has thereby caused an increase in net worth through the creation of new debt. As long as the asset eventually, maybe even far into the future, starts yielding an income that justifies its value increases, all the participants in these transactions will have received the compensation they were expecting. However, if these incomes do not manifest themselves, a house of cards consisting of debt and value expectations will at some point collapse.

When the process described above regenerates itself as price increases create expectations for further price increases, it will usually lead to the formation of an asset price bubble. How much this bubble is allowed to inflate depends on the expectations of the participants in the asset market and their willingness to take risks. However, if it really is an actual bubble, it eventually has to burst. The deflation of the bubble does not necessarily have to take the form of sudden bang, though that often is the case, it can also slowly witter out as expectations are progressively readjusted.

Fiscal Dynamics

In a previous section we saw that, according to the neoclassical models aswell as an aggregate demand breakdown, profit should equal investment in the steady state. This result however is not something we always find in the data. Instead, it is not rare to observe that profits exceed investments. If the economic equation is to add up in such a scenario, then either some profits are used for consumption, which does not usually constitute a large portion, or there is debt financed consumption generating the profit excess of investment. It is the latter explanation that usually correctly describes what is going on.

The largest source of the debt financed consumption is often public spending. How this spending influences the economy is usually not as straightforward as one would expect. As governments run deficits, they create debt in the form of bonds to finance their spending in excess of tax income. If it was straightforward, the deficit spending would show up as increased profits for companies, then as these additional profits go into the financial market, they will in the aggregate be used to purchase the bonds that generated them in the first place.

However, there is a cost to this deficit spending. As the government issues bonds to the central bank and receive newly created money in return that they then spend in the economy, money becomes less scarce, which will, all else equal, drive down interest rates. These low interest rates are, however, only temporary if the central bank intervenes in order to for

example preform inflation targeting policy. They may want to do this if the government's deficit spending increases consumer price inflation, something that it most likely will if it is great enough. The simplest way to execute this policy when the central bank has large reserves of bonds at hand, which it does after deficit spending, is to simply sell them to commercial banks in order to limit the money supply. This will again affect the interest rate, but this time it will be pushed upwards. Since the government's spending most likely ads to consumption and not to investment, the net effect of the issuance of new government bonds to the financial market, in order to finance the government deficit without increasing inflation, will be that savings are dragged away from investment. When there are less savings going towards actual investment, money available for this purpose becomes scarcer, thereby eventually leading to higher interest rates than before the deficit spending.

When interest rates suddenly decrease or increase as described above, it will change financing conditions. When financing conditions are changed in this way it is difficult to determine what the end result will look like. For example, if rates go down, it will affect the asset market as bond and stock prices go up. The lower price of debt can for example incentivize increased asset speculation, as well as push up real estate prices. If financial markets are not stable and prudent enough, the seeds of future crises will be sowed in such an environment. When rates suddenly go up, we get the opposite effects, this can also cause instability. It is usually in such an environment that the crises that had their seeds sown under more favourable conditions are triggered.

In more recent decades many central banks have stated a commitment to inflation targeting. This has made financial actors' uncertainty about the future slightly lower when facing the processes described above. If the central bank is credible in its inflation commitment, asset markets will more or less immediately plan for higher future interest rates in the face of deficit spending. As a result of this, part of the fluctuation in interest rates might be avoided. As they may rather than to first go down and then up instead increase immediately.

International Dynamics

So far, we have mainly had a closed economy perspective. Once we include international dynamics the equation becomes more complicated. On the international level things also have to be balanced out somehow. If countries have a trade surplus or deficit, there has to exist some counterbalancing surplus or deficit in the asset market. Through this interconnection of trading countries' asset markets, government policies in one country can affect financing

conditions in a different country. Therefore, the more interconnected the world economy is, the less predictable it becomes.

If trading countries integrate their economies to the degree that they have the same currency, or a fixed exchange rate, the same central bank policy, and a free flow of goods and capital, they should in theory act as one cohesive economy where things are not much more complex than in a closed economy. Even though this result has been attempted to be achieved in many regions of the world, it is far from a scenario that describes the global economy as a whole. Many nations seem to prefer to have control over their own monetary policy, and to at least partially be able to mediate the flow of goods and capital. In order for this to work there has to exist mechanisms that balance the international economic system.

The first mechanism works through floating exchange rates. This mechanism hands the responsibility to the market. By allowing exchange rates to move freely, countries maintain control of their internal economic policy while allowing the international currency market to decide how their policy decisions will affect the country's trading position. If exchange rates are not floating, but the policies of trading nations are still significantly different and conflicting, the currency market will nevertheless intervene to correct imbalances. This happens as currency traders are incentivized to build up reserves in order to make spread bets. This can cause a depletion of a country's currency reserves, as well as increase inflation, something that will have negative consequences if not acted upon. Finally, if a country does not want to allow their exchange rate to float, but still wants to conduct independent policy without having the currency market intervene, they have to mediate the flow of goods and/or capital. Then, if the country still wants to maintain a great deal of trade in goods the solution will come in the form of capital controls.

There are many types of capital controls. A country can for example limit the outflow of capital by restraining the ability of citizens to invest abroad. It can also control the inflow by limiting where in the country's economy foreign capital is allowed to be invested. When capital controls are in place, the state, or the central bank, partially takes on the role of the asset market in balancing trade surpluses or deficits. It does this by managing currency reserves and by holding foreign financial assets. The safest asset to trade in, and one which is usually in great supply, is government securities. They therefore often constitute the largest portion of a central bank's foreign reserves.

This shows an interesting mechanism where countries can exchange government debt in order to balance their trading position. We can now see how a state is able to run a budget deficit without significantly affecting interest rates or inflation by allowing a corresponding trade deficit to exist so that the budget deficit is effectively being financed by foreign countries. This will however create a commitment to run a trade surplus in the future that will pay down the debt and its corresponding accumulated interest.

Global Trends in Nominal Wealth Growth between 1900 and 2020

The Dataset

The data that are used in this paper are gathered form the free website of the World Inequality Database. They mainly consist of standard economic measurements for a relatively large sample of countries. In the appendix there are a collection of figures that show the relative developments in wealth/income ratios during the last 120 years. The data was downloaded in excel format and transformed into figures in RStudio. There are a couple of clusters of countries that are used more than others, mainly because thy have more data available. The countries most focused on includes, the UK, France, Germany, the US and Japan. Aswell as Italy, Spain, Canada, Australia, South Korea, Taiwan and China.

Other than having standard graphs that show the evolution of ratios relative to each other, as is the case in appendix 1, there are also figures showing a breakdown of factors affecting the changes in ratio values. These are found in appendix 2. As the wealth/income ratio will change whenever there is a deviation between nominal wealth growth and nominal income growth the growth rate of the ratio will equal the growth rate of nominal wealth minus the growth rate of nominal income. As nominal income growth can come in the form of either real economic growth or in the form of consumer inflation it is interesting to see which of these are causing the changing of the ratio.

When looking at the graphs showing annual changes in nominal wealth, nominal income and the ratio, it is good to remember that the growth rates that are usually referred to when economic growth is discussed are quarterly and not annual. When a growth rate is reported for a year, it is therefore not a representation of the total percentage change between income at

the beginning and at the end of the year, it is rather the average quarterly growth rate which is reported. That means that in order to find the annual percentage change in income from these rates you have to add 1 and square them by four, meaning annual percentage growth is a higher, or more negative, number than the quarterly growth rate. For someone who is used to seeing quarterly rates the graphs in the appendix might therefore have unexpectedly extreme values for income growth. This is because the data used is annual and not quarterly.

These growth rates were also not directly gathered as values. They were instead calculated from yearly values by simply dividing each year's value by the preceding one, thereby getting the relative increase in value over the year. This may result in some the values being less precise than more adjusted calculations, especially with respect to real income growth. The real income growth rates were calculated by downloading an inflation adjusted income time series, and thereafter doing the transformations described above.

Appendix 3 shows the components of the national wealth of a country. Above the zero line are assets, both physical and financial. Below the zero line are debts or negative net foreign assets, depending on which figure you are looking at. As debt cancels out some of the financial assets in the economy, a high amount of debt will cause net worth to be lower relative to assets than otherwise. This is why the black line representing net worth often is at a lower level than total assets. The figures showing net foreign assets demonstrate how countries can have more wealth than domestic assets, aswell as the other way around. It is particularly interesting to see how large these asset surpluses and deficits have become for certain countries in recent years.

1900-1950: Increased Global Instability and General Turbulence

1870-1914: The Era of the Gold Standard

As we established earlier, a good metric for aggregate asset price analysis is the nominal net worth to nominal net income ratio. If we want to find an estimate of the historical evolution of this ratio, we first require reliable historical data that allows us to calculate it. Since not many countries have had active capitalistic asset markets for very long periods of time, our analysis at this stage will have to be limited. That means we will focus on countries that have good records of market-price net national worth as well as net national income. That mainly leaves West Europe and North America.

In appendix 1 is a graph which shows the nominal net worth to nominal net income ratio for four different countries in the time period 1900-1950. Represented in the graph we see the three great European powers of the late 19th and early 20th century, the UK, France and Germany aswell as the United States.

We first focus on the UK, France and Germany, as their ratios seem to have similar paths. In the early section of the graph, from 1900 to 1914, their ratios seem to hover around a value of about 6 to 7. They then start to steadily drop down to a value of about 3 as the Great War and the immediate post-war crises unfold. This is then followed by an upward movement towards a value of about 4 in the years leading up to the Second World War. The ratio then finally settles at a level slightly below 3 immediately following the Second World War.

Most of the dramatic changes in the West-European ratios for this period are mainly explained by the effects of the Great War. In the years before the outbreak of war in 1914 their ratios seem relatively stable and there seems to have existed an approximate trend value. This pre-war period, from the 1870s to the early 1910s, corresponds to the era of the global gold standard system. As a result of relative global stability both politically and financially, this period was defined by large-scale and expanding global trade. In the centre of the global trade network sat the maritime power of the UK, who took an active role as a promoter of free trade, low tariffs and the gold standard. The UK was also a financial centre, and its financial institutions often acted as lenders-of-last-resort to the rest of the world. When they took on this role, they usually did it in order to stabilize the world economy and avoid financial turmoil. This was mainly done in the name of self-interest as the UK often had the most to gain from stability. Also, no other financial community had the scale and sophistication to do the same.

During this era, the West-European nations were close to the only advanced industrialized economies in the world, aside from the emerging United States. Their position as colonialists and imperialists also gave them the power to control and steer the flow of capital and investment globally. This provided for an asymmetric world economy where industrial production was particularly concentrated in their corner of the globe. Since industrial production is defined by high capital intensity, it is not surprising to observe a large capital stock relative to the size of the economy for these West-European economies, who essentially acted as the factories of the world in this period. As we mentioned in an earlier section, net worth can be seen as a broad measure of the capital stock. A relatively high wealth/income

ratio is therefore what we would expect in this scenario and is also what we observe in the graph.

It is however important to note that this wealth is not necessarily formally stored in what is usually thought of as productive physical capital, like for example machinery. Even though it might be that such physical capital is the true source of a large portion of the wealth, the economic value of a country also has a lot to do with its institutions and human capital. It is the efficiency of a country's institutions and its store of human capital which facilitates the existence of the essential infrastructure that allows for the production, application, and maintenance of its physical capital. Therefore, a large "capital stock" represented by a high net worth, may often, if one looks at national accounts, be a result of high real estate values, even when most of the real estate is used for recreation and not production. This shows the difficulty of defining the infamous capital stock that is so central to neoclassical models. However, if one stretches the imagination, it is possible to argue that for example wealth stemming from high real estate values can indirectly represent the value of a country's institutional and human capital.

1914-1918: The Great War

The stable pre-war world order, which the British Empire so desperately attempted to maintain, would however eventually collapse as the imperial ambitions of Germany dragged the continent into a massive and destructive war. With the outbreak of war, resources that before had gone to the development and expansion of commercial enterprise were redirected towards military purposes. This was achieved through the expansion of the government and increased deficit spending. Unsurprisingly, this eventually led to inflation and an unpredictable financial environment. As nominal national income increases with inflation the wealth/income ratio inevitably shrinks unless there is a corresponding increase in net worth. To see how the ratio ultimately evolves we must therefore first look at the wars effect on net worth.

Firstly, many financial assets take the form of contractual payment commitments that do not change in response to external factors. Financial assets therefore usually loose value in the face of unexpected inflation unless they are renegotiated. Secondly, since a wartime environment and unpredictable inflation makes financial actors more risk averse, activity in asset markets is likely to go down. Thereby causing a reduction in demand and consequently a downward drag on market valuations. Increased printing at the central bank does however

mean that more money is available in the economy, asset prices will therefore usually increase as a result, but may do so at a slower pace than consumer prices because of the forementioned reasons. We therefore ultimately end up with a reduction in the wealth/income ratio like we observe in the graph.

In the appendix there are graphs showing the development of net worth and net national income, aswell, for the countries shown in the ratio graph. By looking at them it is possible to see which changes in nominal wealth and income caused the fluctuation in the ratio.

1918-1929: The Brief Return of the Gold Standard, and German Hyperinflation

Following the war, we see that the UK's ratio quite quickly starts climbing up from its initial post-war slump. The same is the true for France, only with a few years lag. Germany also has a similar development, and even has a more modest slump to begin with. The story behind the different ratios' evolution is however more dissimilar for this period than for the preceding ones.

After the war the UK sought to reestablish the pre-war world order. One of the first things on their agenda was the resurrection of the global gold standard system which had been wrecked by wartime money printing. They therefore initiated a deflationary policy of credit tightening in order to push the gold parity of the pound back to its pre-war level. Deflation in excess of growth causes a reduction in nominal net income as prices go down. This will lead to an increase in the wealth/income ratio if net worth stays constant. However, net worth is likely also affected. Firstly, the demand for assets is to a large extent determined by the availability of credit. As credit is tightened and the money supply shrinks because of deflationary policy, the demand for assets will initially go down, and as a consequence lower their market prices, thereby reducing net worth. On the other hand, deflation also causes a simultaneous opposing effect on the value of assets which in isolation pulls prices upwards. Since the future profits assets are expected to generate gain a higher real value when future consumer prices are expected to go down, their net present values will increase if future profits are expected to stay the same or go down less than consumer prices. Furthermore, the attractiveness of holding assets compared to consumer goods in the face of deflation, as they can act as long-term stores of value, will in isolation drive an increase in the demand for them, which also causes and upward pull on asset prices. In summary, the total net effect of the post-war deflationary policy on the wealth/income ratio caused it to increase as we observe in the

graph. This happened as income went down more than wealth as the deflationary processes affected net income harder than net worth.

In the previous section we saw how aggregate demand dynamics tell us that profits will go down as prices fall. If not handled carefully this will lead to insolvency, accumulating bankruptcies and increasing unemployment followed by an uncontrolled deflationary spiral being set into motion. A deflationary policy can therefore be dangerous for the health of the economy. With this in mind it is therefore not surprising to observe that the real economic performance of the UK in the post-Great-War period was relatively modest, likely as consequence of risky procyclical policy being implemented for the sake of the gold standard.

France did not immediately revert to its pre-war policy like the UK did. Rather they allowed inflation to continue and even accelerate. Without the presence of credit constraints as in the UK, the post-war optimism caused asset prices to swell, all though not as much as consumer prices, immediately after the war. Only after several years of periodically high consumer inflation and a significant weakening of the franc did the French government follow the UK with their own counter-inflationary parity policy towards the end of the 1920s. As confidence in the French asset market got restored and the parity policy was implemented, we observe an upward movement of the French wealth/income ratio similar to the UK's as nominal net income growth slows down because of lower consumer inflation, and asset market participants turn optimistic again driving nominal net worth growth.

Germany had an even more dramatic post-war development than its neighbours. As the looser of the war Germany was forced to pay reparations to the victors. In order to pay both their own aswell as their victors' war debt the central bank needed gold or foreign currency. To buy this gold and foreign currency the central bank only had one effective tool at its disposal, which was to print Deutscher Marks. This eventually led to hyperinflation as money printing caused devaluations, and devaluations created a need for further money printing in order to buy foreign currency. In a hyperinflationary economy holding assets becomes highly attractive as they tend to absorb price increases, whereby they are, as a consequence, safer stores of value than money. It is therefore not surprising to observe asset price growth keeping up with or even sometimes surpassing consumer price growth in such a scenario. This is what we see happening in post-war Germany as the wealth/income ratio only modestly declines during the hyperinflation, after which it starts to steadily increase. However, just like for the other war-ravaged economies, the behaviour of these nominal values and ratios does not

necessarily give a good impression of how the real economy preformed. Expectedly, there was a significant real economic cost that came with the hyperinflation.

In the graph we see that also the US experiences a reduction in their wealth/income ratio as the war proceeds. However, it never gets as low as the other countries in the graph. They entered the war relatively late and maybe gave their largest contribution through providing loans to their allies. This led to them being the final stop for a stream of debt repayment transactions after the war, which flowed from Germany and the European victors. This eventually caused a steady inflow of gold to US bank vaults. Since the concept of the gold standard was not completely abandoned in the early inter-war period, large gold reserves equated to a large money supply. This inevitably facilitated easy access to credit and as a result periods with increasing prices.

1929-1940: The Great Depression

The price increases were greatest for assets as debt financed asset speculation was seen as a safe form of investment in the rapidly growing American economy of the 1920s. As is well known, this accelerating growth eventually came to a sudden halt with the stock market crash of 1929. This initiated the deflation of the asset price bubble as nominal net worth fell like a stone. However, if we look at the wealth/income ratio we observe that it does not fall as significantly as one might expect in this period. This requires that there occurred a simultaneous fall in nominal net income at a similar scale, something which we also observe in the data. From the perspective of aggregate demand dynamics and Keynesian theory this comes as no surprise. A sudden fall in asset prices causes a fall in investment, which results in a reduction in profits, which leads to insolvency, which causes bankruptcies, which increases unemployment, which lowers aggregate demand, which again lowers profits and repeats the cycle. The asset price crisis in the US therefore clearly passed a threshold which set off this negative spiral.

The depression which followed the American financial crisis eventually also infected other economies. The eventual collapse of world trade and the international financial system caused temporary declines in net worth for both the UK and France during the 1930s. This shows up as a reduction in their wealth/income ratios. On the other hand, the depression was not as severe for them as for the US. The decline in net income was significantly more modest. This most likely stemmed for their restrictive credit policy in the years leading up to the depression. A policy which had been implemented in order to strengthen their currencies,

something the less war scared, and more gold rich, US did not need to do to the same degree. As easy credit is one of the prerequisites for the inflation of an asset price bubble, the lack thereof therefore limited West-European pre-crisis net worth growth. Germany had also remained restrictive after hyperinflation was halted in the 1920s. However, they were hit relatively hard by the depression, in part because of political instability.

During the 1930s the global gold standard system was progressively dismantled as governments facing economic depression and currency speculation let their currency float as the price of gold standard commitment seemed too high. Surprisingly, one of the first to leave was the UK, who had been one of its greatest proponents. Their early abandonment might have been inspired by their experience in the 1920s, where the procyclical policy required to maintain parity was shown to be a drag on the economy.

1940-1950: The Second World War and Post-War Recovery

The world had not yet fully recovered from the great depression when the second world war erupted. With the outbreak of war, the same tendencies of increased inflation, as the government expanded, and more financial uncertainty, as we saw during the Great War, manifested themselves. The industrial scale of this total war was however so great that it resulted in significant growth in real aswell as nominal output. This expectedly caused a decrease in the wealth/income ratio of the warring countries. The ratio then stabilized at a lower level after the war. This lower level of the ratio resulted from the unprecedented increases in output that occurred during and after the war. Capital had also become more abundant and cheaper as efficiency had increased, and larger portions of the world had become industrialized. This ultimately led to the value of the capital stock relative to income for the western economies settling at a lower level than in the pre-Great-War or inter-war period.

1950-1995: The Return of Global Stability and the Rise of Developing Economies

West Europe and North America

The Bretton Woods System

After 1950 the western economies' wealth/income ratio increased at a similar and relatively steady pace until the late 1960s. The ratios moved from a value of a little less than 3 to a value

of a little less than 4. This was a period defined by global economic tranquillity and steady growth. As infrastructure and real estate investments, that manifested the potential of post-war technology and efficiency, were made, net worth grew faster than net income in this period, thereby increasing the ratio. The tranquillity was however disrupted by the arrival of the 1970s.

The post-WWII currency system was constructed around the Bretton-Woods agreement. This system attempted to achieve a proxy for the gold standard by only pegging the US dollar to gold while other currencies were then pegged to the US dollar. This made the US dollar the reserve currency of globally trading nations. This allowed for a new stable world order, where trade and finance flowed efficiently and smoothly. While newly established institutions like the IMF and the World Bank worked to even out imbalances.

This system was however dependent on trust in the US dollar. When the state finances of the US government became increasingly disorderly towards the end of the 1960s, as it was struggling to finance the war in Vietnam and its growing welfare programs, the Bretton-Woods system began to break down. Part of the reason for the breakdown was the increasing US inflation resulting from government spending, as well as less synchronized growth patterns between the Western nations. The US was also more frequently running trade deficits, and as a consequence benefitted from the demand for US dollar reserves as it made it easy for them to balance their current account. This was seen, especially by France, as an abuse of their advantageous position in the Bretton-Woods system. Eventually, in the first years of the 1970s the Bretton-Woods member countries moved to let their currency float. Once and for all removing the last remnants of the gold standard form the global currency system.

The currency turmoil was more a symptom than a cause of the problems facing the western economies in the late 1960s and early 1970s. Their rapid post-war growth had stalled, and they were facing increasing competition in the global market as East-Asian economies were increasing their exports, and developing countries who had been investing in their own heavy industry were becoming less dependent on the old industrial north. The nature of the developed countries' economies in the second half of the 20th century also made them slow to adjust to a new competitive environment. This was as they were characterized by a large public sector where employment and wages were particularly inflexible, and a private sector where there existed an unhealthy expectation that the central bank and the government always had the back of large corporations that were "too big to fail". This meant that uncompetitive

industries would be artificially kept alive in order to avoid unemployment and the potential economic depression that would follow.

The 1970s were as a result of the mentioned reasons characterized by increased fluctuations in output, inflation and unemployment. It is often pointed out that the main cause of the largest fluctuations was the oil crisis mid-decade. This is of course partially true, but it itself was in large part caused by economic factors and not exclusively political ones. As the Youm-Kippur war broke out, OPEC imposed an oil embargo on the US and other countries they deemed as supporters of Israel. Aswell as cutting general production. This quickly led to a global oil shortage since OPEC constituted a substantial share of global oil production at the time. Even the previously self-sufficient US had become increasingly dependent on OPEC oil in the three years leading up to the crisis.

Even though members of OPEC, especially Saudi Arabia, were using this as a political weapon in relation to the war, this was also a move which forced an economically advantageous readjustment of the US dollar denominated international price of oil. Since there had been high inflation for several years in the US, while the price of oil had stayed relatively constant, real oil revenues had gone down. This imbalance, which had been built up, became a reality for oil exporters when the Bretton-Woods system broke down and the US dollar lost a lot of its value in international markets. The price hikes that came as a result of the OPEC actions therefore in essence drove a rebalancing of global prices that adjusted for the inflation and depreciation that had occurred in the preceding years.

The UK's Turmoil in the 1970s

Although many important economic metrics fluctuated violently in the 1970s, we do not observe the same for the wealth/income ratio of most of our sample countries. There is however one country which deviates from this trend. We see that the UK's ratio floats away from the western cluster as the 1970s begin, and thereafter has wide movements up and down. The UK is therefore an interesting case for studying wealth/income ratio dynamics of post-industrial economies. There are certain developments in 1970s the UK that explain this evolution, and they maybe not surprisingly relate to some extreme manifestations of the modern complicators, labour power and large government.

After WWII the UK nationalized many of their largest industries. This was done in the name of employment security and fair wages. Even though the state was now the company owner in these sectors, with the interests of workers at the top of their priorities, the power and

importance of labour unions was strengthened and not weakened by this change. This stemmed from the fact that a private company can credibly argue that it is at risk of insolvency and bankruptcy if it were to meet unsustainable union demands, while a state company cannot credibly make a similar argument. Since the state has the power to collect taxes through coercion, issue debt at its own discretion, and print money at will, union demands can almost always be meet as long as political decisionmakers do not put up a resistance. As labour unions had significant political influence in post-war the UK it was rarely in the interest of elected officials to initiate a conflict with them.

In this period, wage increases caused inflation, which then lowered purchasing power, thereby creating a demand for further wage increases, which again led to more inflation. This created a situation where a steady push for higher wages by unions in the state industries caused persistent consumer inflation. Since policymakers at the time, hiding behind an incomplete Keynesian doctrine, saw inflation as a general good as it sustained aggregate demand and protected against dangerous deflation, there was little slowing down this self-generating inflationary process. This was however not a big problem until real economic growth slowed down and the balance of payments became harder to manage as a result of a devaluation pressure on the pound.

In the early 1970s it started to become clear that the pound would eventually depreciate, thereby hurting the trading position and prosperity of the UK unless growth was quickly sped up as soon as possible. This made the government start desperately searching for tools and policies it could use to stimulate the economy. They ended up leaning on the then widely accepted logic of credit- and monetary expansion as effective and net-positive tools for economic stimulus. The government therefore went about both bailing out struggling banks, loosening financial sector regulation, and lowering the interest rate. All these moves cause an increase in net worth growth as debt financed speculation pushes up prices. One of the markets that were affected was the real estate market where prices increased significantly as private debt grew, inflating a real estate bubble. It was however the growing market value of state net assets that was responsible for most of the stable increase in the wealth/income ratio. This makes sense as private actors were building up debt liabilities that partially counterbalanced the asset side growth of their balance sheet. While state enterprises simply adjusted asset values upwards based on market prices, but they themselves were not part of the speculation and therefore did not build up debt. As this large increase in money facilitated higher spending, unprecedently high consumer inflation followed with a short lag. As the

stimulus only modestly affected real output, shocks in the form of oil crises and large strikes led to significant contractions in the real economy, which further accelerated inflation. The sudden up and down movements of the UK's ratio came from the fact that net worth was inflated first, thereafter as income did the same with a lag the ratio was suddenly reduced, followed by a repeat of the process. It was the movement of inflation adjusted real estate prices that was responsible for most of the abrupt changes in the ratio.

The reason the same growth and fluctuation of the ratio did not happen for the other western countries stemmed from the fact that they responded to the situation in a different manner than the UK. France did not take similar stimulating actions early in the 1970s as their growth had not slowed as dramatically yet. However, it did eventually slow down toward the end of the decade. They also did not face the same political instability. Germany was in the opposite situation from the UK as they were facing appreciation of their currency. They also had a stable political environment and a healthy industrial sector. Like the others, they did experience turbulence and consumer inflation in the 1970s, but they managed to maintain a relatively prudent attitude. The US was also in a different position. They were not facing a threat to prosperity at the same scale as the UK. As they were still the superpower of the free world. They also did not have a nationalized industrial sector, which limited their ability to create an equivalent type of stimulus.

All the western ratios, if we look away from the UK's extreme, do however move up to a slightly higher level towards the end of the 1970s, and stay at this level into the 1980s. This is probably partly stemming from the credit expansion that came in the aftermath of the real economic downturns, which resulted in some net worth growth in excess of consumer inflation.

The UK's Recovery in the 1980s

Into the 1980s we see that the UK's ratio remains significantly higher than the other sample countries. It only has a slight dip in the early years of the decade when Margaret Thatcher executes her famous counter-inflationary campaign. As part of this campaign, in order to halt inflation credit was tightened as the interest rate was set up. If credit tightening was the only factor reducing consumer inflation it would be reasonable to observe a significant reduction in the wealth/income ratio as credit tightening can be expected to affect asset growth harder than consumer price growth. In this case however we only observe a slight and temporary down movement. This might indicate that other factors were at play reducing consumer inflation.

This was indeed the case, as another important part of the campaign was aimed at the breaking up of labour union power. This element of the campaign was famously a messy affair, but it sems to have been successful in breaking some of the inflationary processes in the UK economy.

It is however possible to argue that a relatively modest credit tightening was preformed compared to how unbalanced things had become in the 1970s. If we assume that the level the other sample countries' ratios were at represented a more sustainable ratio value, then a rebalancing of the UK ratio to that sustainable level would have required a much stricter credit policy. This stricter credit policy might also have reduced the need for highly intensive intervention in other areas in the fight against consumer inflation, for example in relation to the unios. A stricter credit policy would however have been less favourable for asset owners. The logic of this argument goes as follows. As long as both nominal income growth and nominal wealth growth are positive, credit tightening can be expected to reduce wealth growth more than income growth, thereby reducing the ratio growth rate. If both their growth rates are negative however, as with deflation, the opposite may be the case as a result of the positive deflationary effect on wealth, and thereby increasing the ratio growth rate. Credit tightening can therefore work as a wealth/income ratio reducing tool as long as deflation is avoided. It is however uncertain whether these actions would harm the real economy more than they would help through the potential deflating of an asset price bubble.

When the UK's counter-inflationary credit tightening was loosened again mid-decade, once consumer inflation has stabilized, the high level of net worth growth was allowed to continue. This causes the wealth/income ratio to reach new hights, even surpassing the peaks of the 1970s by several degrees. This time the absolute largest portion of the net worth growth came in the form of increasing real estate prices. Corporate assets also have a steady movement upwards, but the increase is considerably more modest. The real estate price increases were not to last, and the bubble burst in the end of the 1980s, followed by a steady decline until about 1995. At which point the real-estate/income ratio was back to about the same level as 1985.

Private debt was, as one would expect, increasing as the real estate bubble was inflated. However, of course, not at the same rate, as only a few debt-financed asset purchases are needed to increase the value of net worth by many times as it affects the value of all similar assets. This way a given increase in private debt can stimulate a several times higher increase in real estate values. The deflation of the bubble was triggered by an increase in the interest

rate as the central bank was induced to cool the economy. This led to a decrease in demand for real estate as debt was more expensive. It also caused many mortgage holders to default on their debt payments, resulting in banks acquiring their houses and putting them on the market, thereby increasing supply and pushing prices even lower. The high amount of defaults clearly indicates an excessive or hastened loosening of credit restrictions in the 1980s. If banks had been more prudent and restrictive there would likely have been more limited how much changes in the interest rate affected the issuing of mortgage debt.

The Diversity of Outcomes in the Developed World

There did not occur a similar real-estate bubble in France or Germany as it did in the UK during the 1980s. In both countries there was a steady and undramatic increase in real-estate prices through the decade. There was very modest and short-term decrease in the real-estate/income ratio in the early 1990s but nothing indicative of a significant bubble. By 1995, after their bubble had been deflated, the UK had a real-estate/income ratio with about the same value as France, while Germany's was slightly higher. The US also had a relatively steady and undramatic rise in the real-estate/income ratio during the 1980s, ending at a value similar to Germany and France. They also had a decline mirroring that of France in the early 1990s. The US did however have a slightly higher growth in private debt than France and Germany, but lower than the UK.

The explanation behind why the UK again deviated from the trend in the 1980s and early 1990s has several factors. The most obvious factor was as mentioned the rapid loosening of credit restrictions during the 1980s. It is however possible to partially rationalize this deviation in aggregate asset measures by the real economic evolution of the UK compared to the other sample countries. In table 1 and 2 the total growth in real national income and real national income per capita for the US, UK, France and Germany is shown for different periods. When looking at the table it is good to take into consideration the unification of Germany in 1991 when looking at the values for Germany, the years before 1991 only count for West Germany. As it is possible to see form the tables, the UK had a strikingly low total real growth per capita between 1964 and 1979 compared to the other countries. While they had a significantly higher total real growth per capita than the rest between 1979 and 1994. This sudden acceleration of the economy might help to explain the drastic inflation of the housing market. As real incomes grew and consumer inflation was reduced, at the same time as home ownership was becoming more common, all in a relatively short span of time, activity in the housing market quickly rose, and then quickly fell as the growth slowed and the

market became saturated. Another factor to consider was that the UK had a cyclical housing market in the 1970s aswell. Part of the reason why the 1980s bubble affected the wealth/income ratio more in the 1970s ones was that consumer inflation was much higher in the 1970s, thereby resulting in less reduction in the wealth/income ratio.

Total percentage growth of Real National Income					
Country / Period	**USA**	**UK**	**France**	**Germany**	**Japan**
1964-1979	67.2748261%	24.0167704%	87.7729172%	64.5628038%	162.4209314%
1979-1994	51.4544225%	50.7516502%	33.3402999%	47.2122682%	65.2475697%
1964-1994	153.3451219%	86.9573279%	150.3769708%	142.256636%	333.6442116%

Table 1: Total percentage growth of Real National Income (West Europe, the US and Japan). Source: wid.world

Total percentage growth of Real National Income *per Capita*					
Country / Period	**USA**	**UK**	**France**	**Germany**	**Japan**
1964-1979	42.6197216%	19.0574161%	68.0812828%	56.1054443%	119.5565465%
1979-1994	29.4084375%	46.525749%	23.3882515%	10.9546425%	53.2298062%
1964-1994	84.5619534%	74.4497706%	107.3925561%	73.2062377%	236.4260707%

Table 2: Total percentage growth of Real National Income per Capita (West Europe, the US and Japan). Source: wid.world

The situation in the 1980s was also shaped by the fact that the UK had a larger financial sector relative to the size of their economy than any of the other four countries. The City of London was, during the 1980s, trying to reclaim its former glory as the financial capital of the world. It was well positioned for this as it was well connected with both the American and European market, and therefore could act as a bridge. It was also well integrated with the East Asian financial centres and former British colonies Hong Kong and Singapore. Both cities that were playing central roles in facilitating the entrance of developing East Asian economies into the global economy. The UK had also joined the EC, later EU, in 1973, something which eventually resulted in the City becoming the financial capital of Europe.

The liberalization of the financial sector in the mid-1980s, both in the UK and the US, was followed by a rapid growth in the stock market. This however ended with a crash in October 1987 in both countries. Since the stock market usually represents a smaller portion of most countries' asset base than the housing market does a bubble there often does not change the ratio to the same degree as a housing bubble. The bubble in the UK and US market had also

not had time to inflate enough to significantly affect the ratio before it burst. The downturn was also relatively short, and the market started growing again quite fast. It did however trigger a short recession.

East Asia

The Rise of Japan and the Asian Tigers

As we move closer to the present more data is made available as a growing number of countries make use of economic metrics. To gain a more global perspective we can use this additional data to get an impression of developments in East Asia. The countries of most relevance are Japan, South-Korea and Taiwan. Japan grew rapidly in the immediate decades following WWII. They had invested heavily in industrial manufacturing, becoming highly efficient producers of cars and other motor vehicles, as well as electrical appliances and other modern goods. They were also early on of the leading developers and producers within the emerging electronics and semiconductor industry.

Like many other countries, Japan was also facing a slight slowdown in growth towards the end of the 1960s. They responded in a similar way as the UK, by loosening credit. This expectedly led to rapid asset price growth followed by increased consumer inflation. This chows up as an increase in the wealth/income ratio. As can be seen in table 1 and 2, the situation in Japan however differed from the one in the UK as the Japanese economy actually achieved a high level of growth compared to other developed economies in the 1970s. This fact thereby partially rationalizes some of the ratio growth as representing actual real wealth growth and not only the inflation of an asset bubble. They were also hit hard by the oil crises, which accelerated inflation, but they managed to get through the downturns relatively well.

Even though there generally excited a free trade regime in the non-communist sphere in the first decades after the war, there did not exist as extensive merchandise trade as it does today. This started to change however as the Bretton Woods system broke down and the following oil crises revealed the weakened position of the western economies during the 1970s. As the world became soaked in inflation demand for the cheaper and more fuel and energy efficient products offered by Japan, aswell as Korea, started to grow. The expansion of global trade most likely played an important role in reducing some of the inflationary pressures in the world economy, and thereby made it easier for governments to restrain it in the 1980s.

It was first Japan and the Asian tiger economies that dominated the increased trade. The Asian Tigers were Korea, Taiwan, Hong Kong and Singapore. These were all, maybe apart for Hong Kong, economies structured around extensive government intervention and guidance. While Japan was a democracy, the others were ruled by authoritarian governments well into the 1980s. Both in South Korea and Taiwan this came about partially as a result of them officially being in a state of martial law as a result of the frozen conflicts with North Korea and the PROC respectively. This gave the autocrats the legitimacy and the power to execute extensive government sponsored development projects, leading to unprecedented industrial growth and increased efficiency. Singapore was also characterized by a strong and powerful executive branch of the state which drove and guided economic development.

The Waking of the Chinese Giant

After the death of Mao, the Chinese leadership started a program of sweeping reforms that reversed some of the excesses and mistakes of his rule. These reforms where mainly internally focused in the late 1970s and early 1980s and facilitated accelerated growth and increased efficiency. Toward the end of the 1980s however, China gradually shifted its growth strategy toward export industries. Thereby emulating its successful East Asian neighbours. Being equipped with a strong central government and a large labour force, it had the tools necessary to craft its own recipe for growth inspired by the policies of the Asian Tigers' autocratic governments. Instead of trying to immediately compete with its neighbours in high-tech industries and high-value-added production, China rather focused on its competitive advantage which was its deep and almost untapped pool of chap low-skilled labour. China thereby attracted vast amounts of FDI from multinational corporations who moved their final assembly factories to China. Now that the largest labour market in the world was gradually becoming integrated with the global economy the western world could import ever higher quantities of cheap goods thereby achieving a downward pressure on inflation.

The Beginnings of Globalism

As stability was regained in the world economy by the mid-1980s there was implemented increased financial liberalization in both America, Europe and Asia, allowing for a freer flow of investment and capital. This gave investors high hopes about the future prospects of globalization. As growth hungry developing countries were opening up for increased imports and investment, and the west was decommissioning some of its old industry, Japan and the Asian Tiger economies were exceptionally well positioned as the centres of much of this

change. This, combined with low interest rates, set the stage for a rapid growth in asset prices both in in the stock market and the housing market.

The increase in Japan's wealth/income ratio dwarfed the one simultaneously occurring in the UK. The growth that was happening in the UK was also mainly concentrated in the housing market while it was more equally divided between business and housing assets in Japan. The Japanese ratio went from about 5,5 in 1985 to a about 8 in 1990. When there is rapid growth in asset prices it is hard to avoid the formation of a bubble, it is therefore not unexpected that we observe one for the Japanese asset market in this period. After the ratio had peaked in 1990 the bubble finally burst in 1992 with a dramatic stock market crash and a fall in house prices. The ratio declined before the crash because consumer inflation first shrank it in 1991 before asset price growth became negative.

After the crash the wealth/income ratio fell to about 7,5 by 1993. This level which it settled at was however far above the initial one before the growth began. This indicates that, at least for the business-asset market, i.e. stocks etc., a large portion of the increase in values was initially not perceived to be the result of a bubble. There has however been a steady decline in the ratio since then and up to today, with intermittent plateaus. In the post 1992 asset-bubble-crash-era Japan has also been struggling with low growth and deflation since the 1990s, which in large part stems from negative population growth and an ageing population.

China also saw some modest growth in their ratio in the late 1980s and early 1990s. This growth was however mainly happening for state owned assets. China did not experience high growth in house prices in this era though. And the growth of the ratio slumped in the mid-1990s before the recent global ratio growth trend set in.

1995-2000: Deflationary Pressures and Rising Nominal Wealth

The Manifestation of Globalism in the 1990s

In the mid-1990s there seems to occur a shift in the global trend of wealth/income ratio growth. Before 1995 there was a relatively steady level of the ratio for most economies. In general, there had been a slight increasing trend since WWII. Something that can be rationalized as representing the effect of reconstruction and the gradual decrease of the government debt left over from the war. Of course, as we have seen, there were some deviators from this trend, notably the UK, Japan and the Asian Tigers, who since the 1970s have had more dramatic movements in their ratios. But they represent exceptions that were

shaped by internal factors. Because of the global dimension of the post-1995 trend it is reasonable to assume that there have existed common global factors that have influenced the developments in individual countries.

To identify the factors that have been driving this recent global growth in ratios it can be good to first try to characterize what has been special about the post-1995 era compared to preceding periods. An obvious thing to start with would be the end of the Cold-War in the late 1980s and early 1990s. The end of hostilities and nuclear tension probably played a part in creating a more optimistic and open attitude around the globe, facilitating a freer flow of goods and capital. A sizable slice of Europe was also suddenly transformed from communist autocracies into capitalist democracies. This was of course a triumph for the many people who had been unhappy under the old regimes, but other than facilitating a higher global supply of commodities like oil, gas and grain, it did not significantly affect the balance in the global economy. Other than the conflicts in the Balkans and the Caucasus the transition happened relatively peacefully without significantly disrupting trade and investment flows. The general consensus about the unipolar liberal capitalist world order that was so quickly established after the end of the cold war was demonstrated by the wide support for the US lead intervention in Iraq in 1991. As most countries saw it as favourable to protect the stability of the global oil supply, remembering the previous crises, the intervention was seen as preferable for most economies as it aimed at preventing conflict escalation in the oil rich gulf region.

The end of the cold war was also coinciding with, and accelerating, the opening up of China to the world, integrating it into global economy. China represented a much grater labour force than East-Europe, and also one that was cheaper and more efficient. Furthermore, China was characterized by a typical East-Asian culture that was generally less consumption oriented than what is the case in most other regions of the world. To obtain the foreign currency China needed in order to purchase the commodities and capital goods that would fuel their internal development and growth the Chinese authorities adopted an export-oriented strategy which allowed them to exploit their greatest resource and competitive advantage, cheap and plentiful low-skilled labour. By establishing special-economic-zones along the coast they gave foreign companies the opportunity to establish labour intensive manufacturing operations with relative ease and without extensive bureaucracy or unions. At the same time these zones isolated the inflow of foreign capital so that it could not infiltrate the rest of the domestic economy. This was a crucial aspect as the state still desired to exert strong influence over most other sectors. These zones where first experimented with in the late 1970s and early

1980s and were then progressively expanded, becoming global manufacturing hubs in the early to mid-1990s.

As western, Japanese, Korean, and Taiwanese companies moved their final assembly operations to China, a deflationary pressure was created which kept the prices of a range of products in the international market low compared to general consumer inflation. This was further exacerbated by the simultaneous expansion of export-oriented sectors in other developing countries, mainly in South and South-East Asia.

The Rise of Electronics

All these developments point to accelerated global growth, accompanied by lower global prices as commodities were in relatively stable and plentiful supply and the rapid expansion of the global trade-oriented labour force lowered the relative factor price of labour. There is however yet another factor which makes the late 1990s and the following era special. After WWII most of the basic technologies that define our modern industrial societies had been invented. The steam, internal-combustion, and jet engine had all been developed and successfully applied for usage. At that point it was mainly a question of building the electrical grids, highways, and airports that would expand their application that determined their potential for generating prosperity. Other important technologies were the communication related ones, telegraph, telephone, radio, and television.

In connection with these communication-technologies there was a development of so-called electronics. Electronics are defined by their use of transistors in the processing of electrical signals, transforming a given input into a different output. The sophisticated application of this technology was still in its infancy after the war, and its prospects for growth were limited by the bulky and large size of the transistors used. This changed as semiconductor integrated circuits were developed in the 1950s and 1960s. They made it possible to shrink the size of the technology as well as lower its price. As it turned out, the precision of silicon chip producing machines was possible to progressively increase at an exponential rate. This led to an almost constant and accelerating growth in the processing power of chips which started in the 1960s and continued into the following decades. As their processing power increased, while their size and cost stayed relatively constat, electronics became progressively less expensive adjusting for inflation. There were mainly four countries that were leading the development of this technology, they were the US, Japan, Korea and Taiwan. Sweden and

Finland were pioneering in cell phone technology, but their market shares were small relative to the giants, as cell phones were not a very big industry before into the 2000.

The increasing use of computers by commercial, non-research, businesses in the 1970s and 1980s was slowly driving up the demand and gradually allowing for economies of scale. It was, however, still a very big investment to computerize a part of a business, as it required large servers and special IT-experts. This steady growth lasted into the early 1990s until the relative price of personal computers for home use reached a threshold which facilitated rapidly expanding consumer purchases of them. This eventually set the stage for the opening up of the internet for all private individuals and commercial entities who wanted to access it. The internet was originally a network of university servers connected through traditional telephone-landlines. Most of the internet as we know it today is basically the commercial use of that same method. With the internet open to the public, a commercial company only had to acquire a domain accessible on the World Wide Web, buy a server, fill it with the content or service they wanted to provide, link it to the internet so that consumers simply had to connect a landline to their computer via a router to gain access to the company's website.

The Dot-Com-Bubble

The watershed moment, which was the opening up of the internet to private and commercial use, was followed by a dramatic increase in speculation on the stock markets of several countries. That there was promise in this new market was without doubt. One of the biggest global companies of our time, Amazon, was established and started growing in this period. It was also one of the many intensively traded stocks that were speculated in. It was not just online internet companies that were growing. There were also the software providers, like Microsoft. Companies who built the physical infrastructure of the internet, aswell as computer-hardware companies, were also desirable for stock market investors. Furthermore, there was the growing cell phone industry, where cell towers and other infrastructure had to be built, setting of a race for the valuable market shares that were up for grabs, adding an element of urgency.

It was maybe the special focus on being early to grab market shares that was very particular about this investment boom. As most internet companies had relatively low and few costs, while they had the opportunity to reach extremely many users if they became strong enough brands, there was a lot to gain from becoming "the" website for this or that service. Because the scales were so large, just a slight exploitation of consumers brand preference could

generate large profits in the future. There was also the network effect, where a large user base provides utility for individual users, creating a self-reenforcing process. To initiate this process companies had to do all they could to grow fast in their early stages. These types of arguments made internet companies seem like good potential investments, even when they were yet to generate any profits whatsoever.

The end result was a rapid growth in stock prices, starting around 1995 and accelerating around 1998. The climb abruptly stopped in the beginning of 2000. The market then started a fall largely mirroring its climb that lasted until about 2002 after which the stock market slowly started to grow again. This stock market bubble expectedly shows up as a sudden rise and fall in the wealth/income ratio of the countries who had a speculative IT-expansion in this period.

Rising Housing Wealth

The fall of the wealth/income ratio which happen in the wake of the 2000-stock-market-crash is, for most of the countries who were affected, usually not as sharp and extreme as the one for their stock markets. This is because there was a simultaneous steady climb of their housing wealth which compensated for some of the fall in stock market wealth. This was part of a wide-spread global trend of house prices rising relative to income. With the exception of Japan this seems to be a general global phenomenon which started around 1995.

It especially accelerated after the bursting of the dot-com bubble in 2000. This has a relatively intuitive explanation as many central banks lowered their interest rates to historical levels after this event. The reduction in interest rates was done in the name of inflation targeting, as a sudden fall in asset prices, as had happened, will cause a deflationary pressure and increase the risk of deflation setting in, something that can be dangerous for the functioning of financial markets and the economy as a whole. Expectedly, the sudden reduction in interest rates caused an acceleration in house price growth. This happens as debt becomes cheaper, thereby increasing the amount of debt an individual purchasing a house can manage to service. It also increases general spending on housing. We therefore observe an eventual rise in the wealth/income ratio of the countries who reduced their interest rates, as housing wealth, and in the case of the US also stock market wealth, starts to increase.

A Zoomed-Out Perspective on the Global Trend of Rising Wealth/income Ratios

Even though the specific chain of events points to the stock market crash as the cause of the reduction in interest rates, and through that the growth in housing wealth, and thereby the

increase in the wealth/income ratio, it is possible to take a more zoomed out perspective. In this other perspective we should take into account the fact that we observe a similar growth in housing wealth, and increase in the wealth/income ratio, for countries that had a significantly smaller stock market slump, or none at all. To reconcile this, we should try to find a more general explanation for the global rise in housing wealth. This other explanation should be quite intuitive if one keeps in mind all the factors that have been pointed out as special about the post 1995-era. Which were, in summary, deflationary pressures stemming from cheaper global labour and cheaper IT-technology. When the relative price of some products goes down it will usually lead to a larger share of nominal income going towards spending on things that have a more inelastic supply. One of these relatively inelastic spending categories is housing.

The size of housing wealth relative to income gives an indication of how much of total nominal income goes towards spending on housing. When housing wealth increases relative to income it either means that people are using more housing relative to other products, for example having larger houses, or it means that they can get the same quantity of other products for a lower price, thereby leaving more nominal income left to spend on housing. It is the latter explanation which most likely explains the greater part of the post-1995 trend. The former explanation is however probably also playing a role. As the global economy becomes more efficient as a result of these developments, merchandise production can be reduced in certain regions, thereby releasing labour from that sector which can then go into, for example, the construction sector, increasing the share of the economy going towards spending on housing. The greater efficiency, resulting from better use of competitive advantage, can ultimately facilitate an increase in the quantity of consumption of all products, even though the relative spending becomes more asymmetric towards inelastic products.

The housing wealth also increased in China at a similar rate as for developed countries. This is expected as real income increased when the economy grew and became more developed. This then causes more spending on housing, which is usually quite low in an underdeveloped economies with a large agricultural sector relative to the rest of the economy, and higher housing wealth.

If we zoom back in a little, we can now summarize this by saying that the growth in housing wealth was generally caused by interest rates being unusually low relative to how low consumer inflation was, at least in comparison to what has been the case in most other periods. This was, as mentioned, a consequence of a rapid transformation of the global

economy at a pace not seen many times before. Since countries wanted to avoid deflation, as they had learned how dangerous it was during the Great Depression, the solution was to have low interest rates.

2000-2020: Acceleration and Deceleration of the Global Nominal Wealth Trend

The Preludes to the Financial Crisis of 2008

There is nothing inherently saying that the periodic changing of interest rates by central banks in accordance with inflation targeting should cause the formation of unmanageable bubbles in asset markets. If markets behave rationally and prudently then fluctuations in relative wealth and disposable income caused by careful interest rate changes should lead to bearable readjustments. Even though asset prices temporarily might decrease or activity in certain asset markets may go down, it should not in itself be enough to set of spiralling negative effects. For that to happen there has to exist some underlying instability that has been created by other factors. A logical argument stating that the financial crisis of 2008 was mainly the result of central bank policy must therefore be nuanced by adding that it was caused by their naiveite and rather than their commitment to inflation targeting.

As we have already mentioned, several countries were experiencing growth in their housing wealth during the early 2000s. One of them was France, who also had a modest stock market slump after the dot-com-bubble burst. Their wealth/income ratio was however not strongly affected by the events of the 2008. That was however the case for the US, UK and Ireland. France did on the other hand, similarly to large portion of the globe, experienced a real economic downturn and a period of falling asset prices as the crises unfolded. The fall in asset prices was however not large enough to significantly affect the wealth/income ratio, partly because it was counterbalanced by lower income growth. After the crisis, asset prises quickly started to grow again. This time however, they grew at a steadier pace which generally mirrored income growth, thereby leaving the ratio relatively constant for many years. This clearly shows that accelerated wealth growth in a certain period, particularly in relation to housing wealth, not necessarily has to be followed by an immediate dramatic downturn once the upward movement stops and credit is slightly tightened.

Developments in the US before the Financial Crisis of 2008

What caused the financial crisis of 2008 was quite simply reckless and highly risky behaviour by the shadow banking system in the US. It was not in itself the use of mortgage-backed securities that was a problem. It was rather the creation of financial instruments consisting of several layers of collateralization, aswell as the provision of risk amplifying "insurance policies" for these instruments. Furthermore, there was the additional short-term lending issued with these so-called collateralized debt obligations as safety. Together these moves created a situation where the entire financial sector of the US, and a large slice of the global financial system, was dependent on the continuous and undisturbed growth of US house prices, something which was not in any way guaranteed to be maintained.

As the risk associated with bad loans was spread thin across the market through the creation of these financial instruments, it is not surprising that the quantity of these bad loans increased. This happened as loaning requirements were reduced in response to rising demand for mortgage-backed securities. An important factor contributing to this process was probably the international scale of the investment in these instruments. As foreign buyers had asymmetric information relative to their American sellers about the functioning of the US housing market and US financial system in general, this might have contributed to creating an irrational demand for these financial assets.

Another important factor was the growing foreign holdings of US government debt. These holdings originated from consecutive years of significant trade deficits. As mentioned in an earlier section, these deficits in the consumer goods market have to be balanced by a corresponding deficit in the asset or currency market. As Asian economies were competing about export shares, their already cheap currencies were often kept lower than necessary in the fear that too hasty revaluations may harm exports. China rarely devalued its currency, but they were usually rather late than early when it came to deciding on revaluations. Japan was, and is, the country with the largest foreign currency and bond reserves. As they were already struggling with deflation in the early 2000s, an appreciation was seen as dangerous and risky to allow. Taiwan was also a major holder of foreign reserves. As these reserves drained the domestic US market of some of its safest securities, aswell as driving up their prices and thereby lowering their yields, there was increased demand for higher yielding safe assets. Substitutes like collateralized debt obligations were therefore enthusiastically greeted.

The government deficits of western states, mainly the US, started growing towards the end of the 20th century primarily as a result of increasing entitlement payments through their social security systems. Pay-as-you-go pension systems were created after WWII in order to provide safe and reliable pensions that were protected against fluctuations in inflation and investment conditions, thereby socialising those risks. A large portion of the increased entitlement expenditures in recent decades have gone toward medical spending. This is driven by the ageing of the population in many developed countries, aswell as increasingly advanced and expensive medical technology. Even though the US does not have a universal medical insurance, it does have something approaching that for pensioners through the Medicare system.

Since the public expenses associated with social security vary over time it would be difficult and costly to continually adjust tax policies in order to balance the budget. Entitlement payouts also stimulate the economy and work to stabilize fluctuations in aggregate demand. It is therefore often argued that it is better to leave taxes unchanged, and rather wait for economic growth to reduce the public debt burden. The problem occurs when the deficit spending is growing faster than the economy. That can happen when indexed entitlements and increasing government wages start a vicious cycle that drives inflation. As entitlement receivers and government employees' pressure to maintain their purchasing power in the face of other inflation they can end up causing it themselves. The increased inflation can also eventually lead the central bank to increase interest rates, thereby making the debt burden heavier. A temporary solution to this problem is to run a corresponding trade deficit, and thereby have imports absorb some of the inflation, as well as keep the real economy going. This however creates a commitment to run a trade surplus in the future. It also is dependent on foreign countries being willing to defer consumption.

The Financial Crisis of 2008

In the mid-2000s the federal reserve started to steadily push up the feds funds rate as it increasingly worried that the unprecedently low rates from the post-dot-com-crash years would eventually cause excessive consumer inflation. Even as interest rates were going up the house of cards which was the subprime mortgage complex was still adding levels to its fragile pyramid. Instead of restraining lending, some actors rather lowered their standards, charging even higher rates to borrowers who even at standard market rates would struggle to service their debt.

The growth of the housing market slowed through 2007, and then in 2008 the house of cards collapsed, dragging the US and world economy with it. The familiar process was set into motion. Decreased demand for housing as debt becomes more expensive. Increased supply as people who are unable to meet their commitment either sell or end up defaulting, resulting in the bank possessing the house and putting it on the market, further increasing supply and lowering prices. As if these processes were not enough the collapse of the financial market lad to a real economic downturn. As income decreased the demand for housing became even lower.

Some of the countries who were hardest hit by this collapse in the US financial market was the UK and Ireland, who both were significantly financially integrated with the US. They also saw a dramatic fall in their house prices, but they did not experience the same degree of defaults and emergency actions as the US. This stemmed from the simple fact that they had largely not been infected by the same type of sub-prime lending as the US. Their house price decline was more a result of less credit availability, as their financial sectors were in disarray, and the real economic downturn which came in the wake of the crisis. Their housing wealth/income ratios started climbing only two years after the crisis, while the US had six years of decline starting in 2007.

The US did however see a stabilisation of the non-housing wealth/income ratio after two years of decline. Part of the reason why the decline in hosing wealth lasted so long might also have something to do with overinvestment in housing. As there existed artificially high demand, crated by the sub-prime complex, too many and too large houses were built than there was actual real demand for. This may have caused an oversupply of physical housing assets. This would inevitably keep prices low as long as the housing stock has not depreciated extensively from wear and tear, or abandonment.

The Recovery from the Financial Crisis of 2008

The recovery after the financial crisis was of course accompanied by a general global lowering of interest rates by central banks. This time they were reduced as much as is possible without having negative interest rates. Central banks, particularly the federal reserve in the US, also performed an expanded form of quantitative easing where they even bought large holdings of underperforming mortgage-backed securities. These actions basically collectivized the cost stemming from the recklessness of the financial sector. There was an urgent need for liquidity immediately after the crisis, so there was some president for drastic

actions like these. However, the consecutive rounds of quantitative easing which came in the following years are more questionable. There existed plenty of reserves and adequate liquidity after the first rounds of easing, and the problem in the financial sector in the later years stemmed more form low risk willingness than lack of reserves.

Even with close to zero interest rates, bulging reserves, and large-scale deficit spending, there was still strikingly low consumer inflation in most economies for several years following the crisis. This fact indicates that the deflationary processes we discussed earlier were still exerting a downward pressure on global prices. Another factor that was contributing to keeping inflation low, at least for western economies, was the continuation of foreign reserve buildup by Asian governments. As a result, western governments could run large budget deficits without significant inflation or increases in interest rates. Their trade deficits meant foreign goods could maintain consumer spending, and keep the real economy going, at the same time as it absorbed some of the newly created money, keeping domestic prices low. The East Asian economies were therefore effectively financing their recovery at a discount.

It was at a discount as the yields on government bonds were usually lower than the domestic interest rates of the foreign holders, thereby central banks were making losses on their reserve holdings. This came about as central banks increased domestic interest rates in order to stem the inflationary pressure coming from foreign purchases of domestic goods, most importantly the purchases representing their net export, or trade surplus. The interest rates were usually pushed up through the selling government bonds in order to limit reserves, for domestic banks to be willing to purchase these bonds the government had to increase their yields. Thereby increasing their domestic interest expenditure at the same time as their foreign interest earnings were reduced by ever more foreign debt being issued, thereby driving down their price and respective yields. This was however a cost the Asian economies were willing to endure as a further reduction in global demand, caused by the breakdown of the state finances of developed economies and the increased inflation and interest rates that would follow, would mean increasing unemployment in export sectors and reduced aggregate demand, which would cause general uncertainty and instability.

A Brief Look into the Future

By the end of the 2010s most countries wealth/income ratios had recovered from their slump after the financial crisis. Many of the countries who were hit only in passing, seem to have moved toward a stabilization of their ratios. If these levels represent a long-term sustainable

situation is however yet to be shown, as many aspects of the world economy are still highly dynamic. The data used in this paper generally have their last observations in either 2019 or 2020. From the data for 2020 it is possible to see the dramatic effect of the covid pandemic. Where some countries ratios suddenly shoot up as governments implement stimulus, others stoop down because of increased pessimism in asset markets.

Whether the high wealth/income ratios of many countries will remain at their current levels largely depends on the nature of real economic growth in the future. It is reasonable to expect that developing economies like China eventually will shift their spending towards more consumption as higher standards of living become entrenched. This will inevitably lead to less labour being available for export production. Once this happens labour will eventually stop being as cheap as it is today. This will remove some of the deflationary pressure that has been present in the last decades. There are also sings that the exponential growth in integrated circuit processing power is slowing. This will cause the deflationary pressure that has been caused by the continuous cheapening of IT-technology to stop. At least as long as new technologies are not developed. Of course, there may come new deflationary pressures from other areas, like AI-technology, but a lot is still uncertain. There may also appear a deflationary pressure stemming from negative population growth as developing countries, and eventually China, see an aging of their population. If we look at Japan an example, where there has been negative population growth for many years, there are strong signs that a increased deflationary pressure will become a growing issue.

Let us now look away from the demographic issue. If merchandise and IT-tecnnology stop becoming cheaper at a faster pace than other goods, there may be a more even consumer inflation in the future. This will cause spending on relatively inelastic goods like housing to increase more in line with general spending, thereby eventually either causing the housing-wealth/income ratio to remain stable or to start decreasing.

There can also occur more dramatic changes in the ratio. Sudden increases in consumer inflation which is not counterbalanced by asset inflation can reduce the ratio relatively fast. This is what seems to be happening now in the wake of the covid-19 pandemic. As government stimulus during the pandemic suddenly flood into the economy, at the same time as global supply chains are slow to recover, driving up prices on imports, inflation has hit many developed economies very hard recently.

When the response comes in the form of increasing interest rates, asset price growth is usually reduced faster than consumer price growth, especially when inflation is imported, this inevitability causes a reduction in the wealth/income ratio. Since the data used in this paper does not include very recent data it is hard to say something very precise about the weight of these effects. It is however possible to say something about the direction general direction wealth/income ratios seem to be heading in the near future, which is downwards. This can be seen as representing an abrupt end to the global trend that has been present since 1995, and the start of a new era of less asymmetrical globalization, or maybe even the begging of the end of globalism.

Reflections

The motivation of this paper was to obtain a deeper insight into the periodic changes in aggregate wealth and to gain a more nuanced understanding of developments through history, especially with respect to more resent global developments. The review that has been conducted in this paper has attempted to construct a relatively consistent and complete picture of global developments and trends in the last 120 years. The wide diversity of individual ratios makes it difficult to formulate a very precise rule of what is a sustainable wealth/income ratio for a given economy. Of course, one would expect there to exist some long-term stable ratio for each economy, as wealth is ultimately a temporal movement of income and therefore is a function of it. Assets are in essence just goods that are consumed over consecutive periods instead of all at once. The nature of asset markets does however make the relation between income and wealth less constant.

A general observation to remember after this review however is that the large and violent movements and swings of asset markets do not necessarily have to mean catastrophe for the economy as a whole as long as there are buffers in place and households are sound. Another thing to take away is that the explanations behind most financial crises and asset price bubbles generally seem to be quite unflattering. Of course, there may exist real economic developments that are increasing the chances that things will spiral out of control, but it is usually reckless behaviour which pushes a manageable real economic slowdown over to a dramatic and violent crash.

This should maybe cause people remember that the financial sector is in large part composed of corporate entities that do not care more about their own soundness and good image than

their owners. Consumers and citizens can therefore not sleep behind the wheel, they have to be awake and active in monitoring firms and institutions. As long as firms have market power, which is often the case in the financial sector, the invisible hand is not always working in the collective best interest, that only happens in a perfectly competitive economy, which we do not have.

Appendix: Figures

Appendix 1: Wealth/Income Ratios between 1900 and 2020

1900-2020: West Europe, North America and Japan

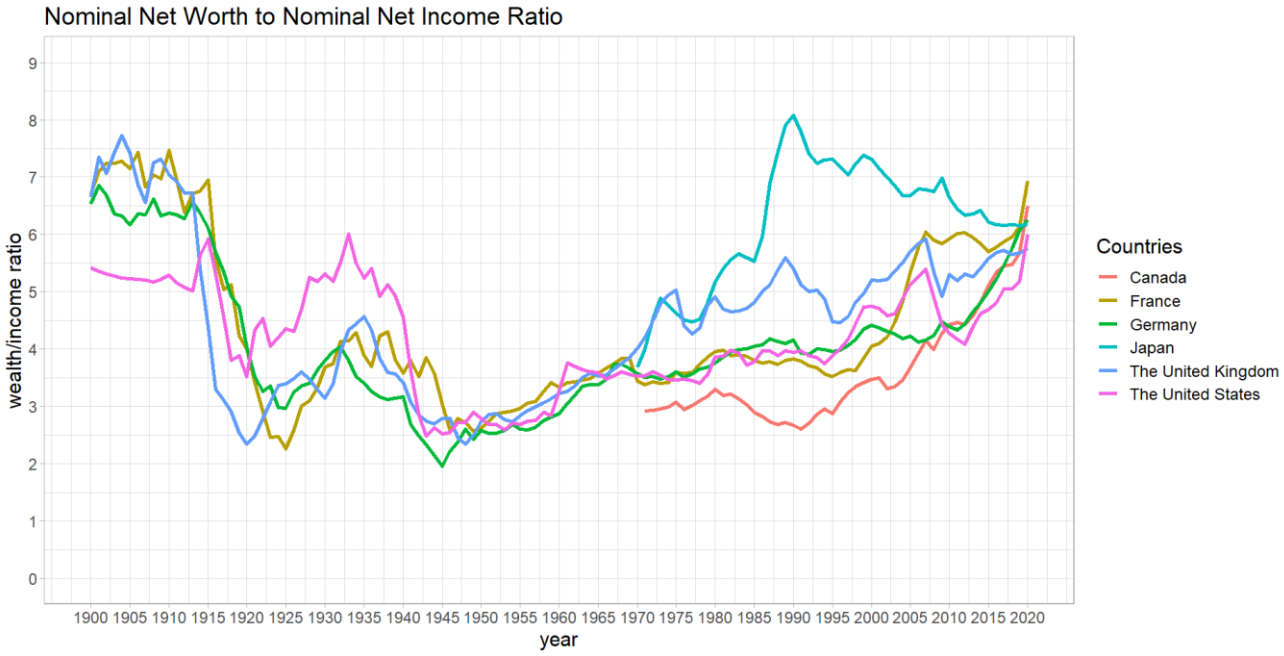

Figure 1.1: Wealth/Income Ratios between 1900 and 2020 (West Europe, North America and Japan). Source: wid.world

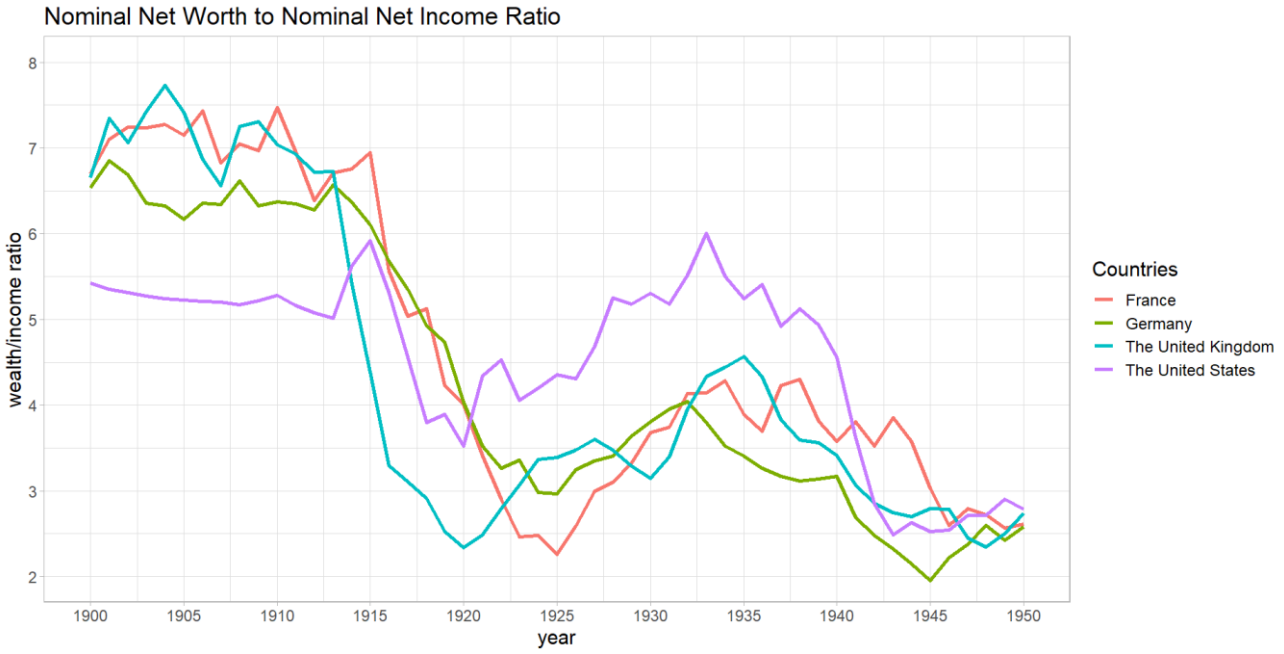

Figure 1.2: Wealth/Income Ratios between 1900 and 1950 (West Europe and the US). Source: wid.world

1950-2020: West Europe and the US

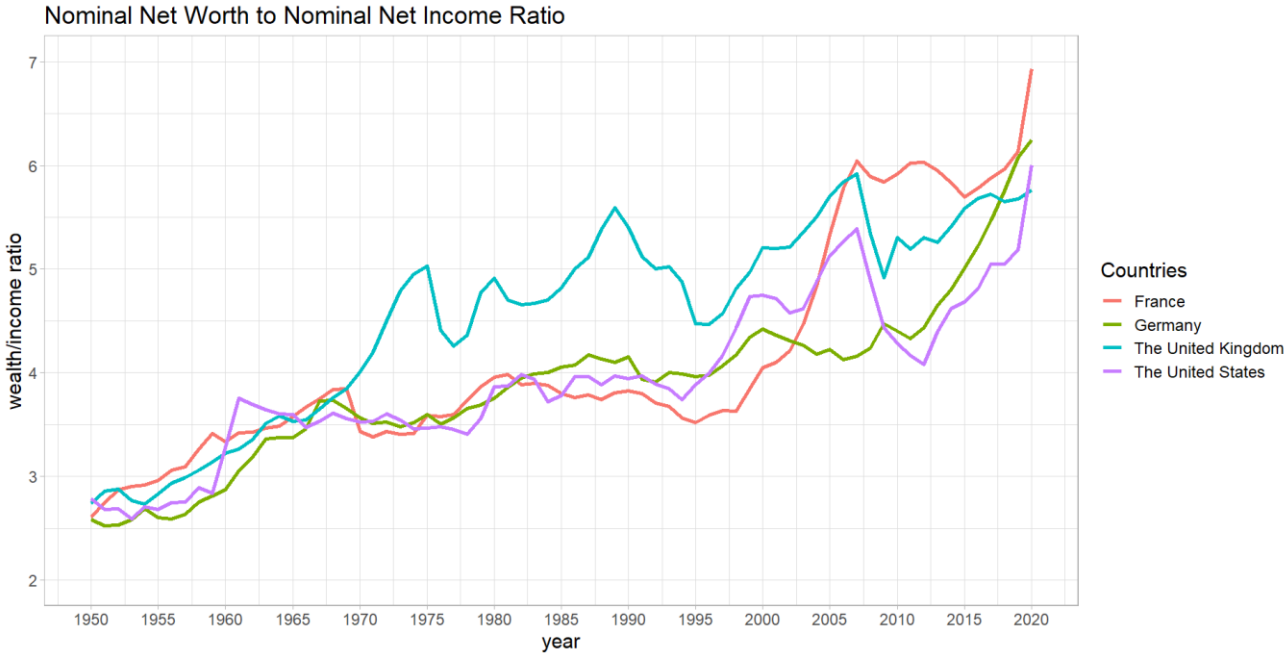

Figure 1.3: Wealth/Income Ratios between 1950 and 2020 (West Europe and the US). Source: wid.world

1950-2020: South Europe, Canada, Australia and Japan

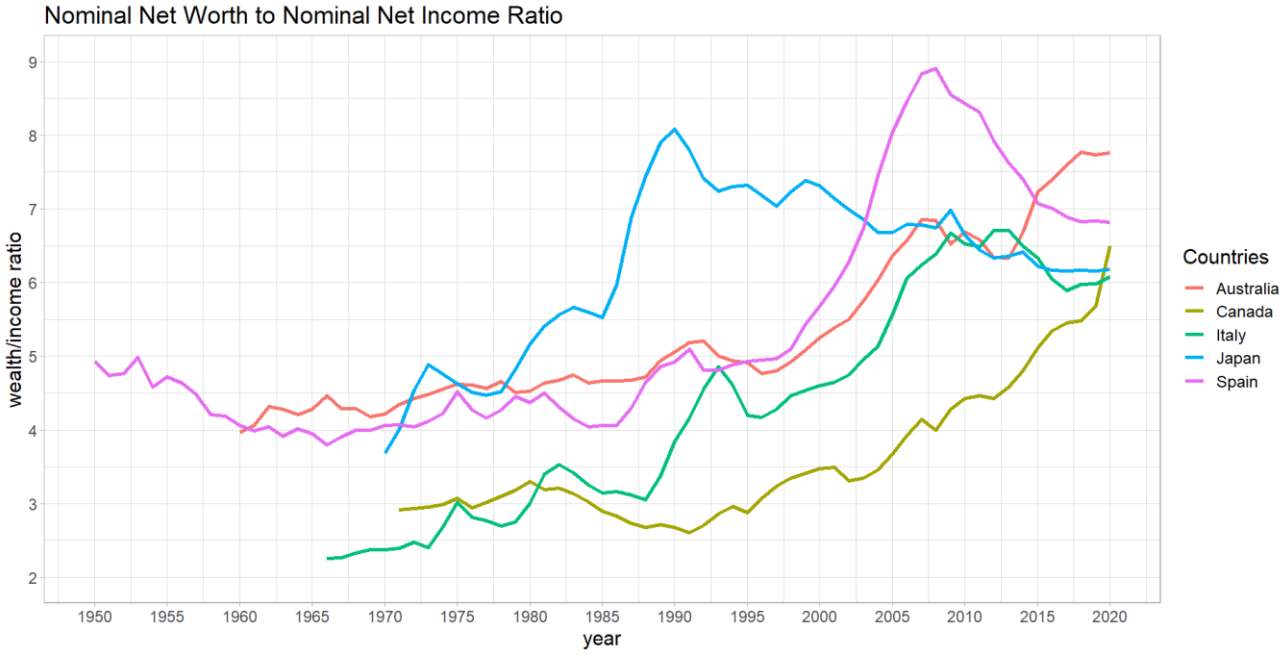

Figure 1.4: Wealth/Income Ratios between 1950 and 2020 (South Europe, Canada, Australia and Japan). Source: wid.world

1950-2020: All Sample Countries

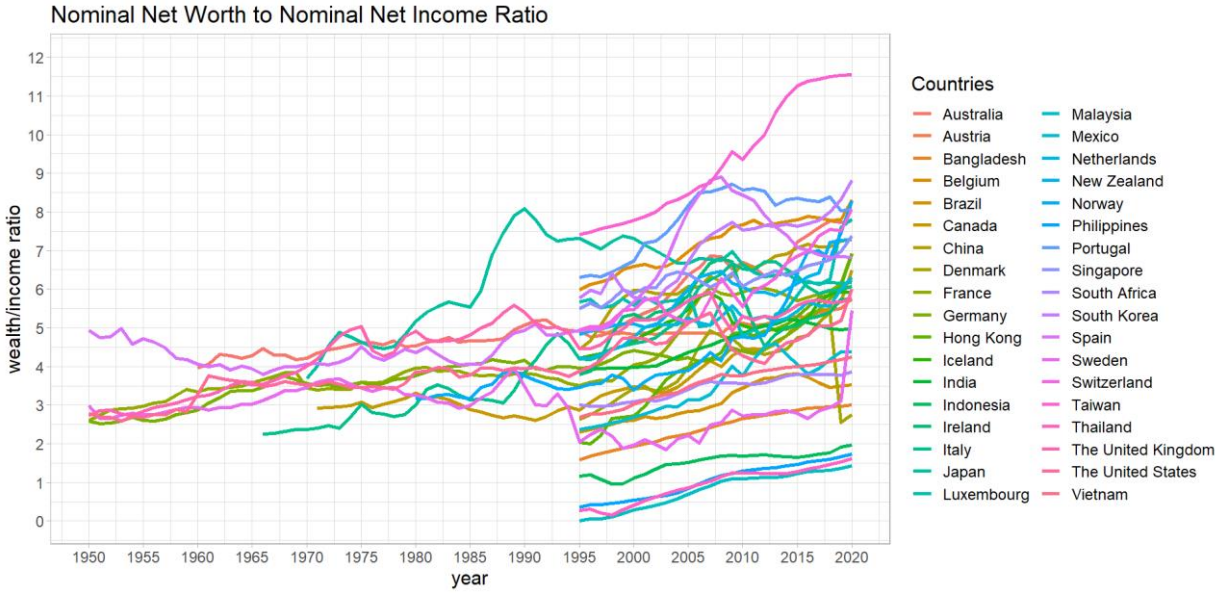

Figure 1.5: Wealth/Income Ratios between 1950 and 2020 (All Sample Countries). Source: wid.world

1980-2020: East Asia and the US

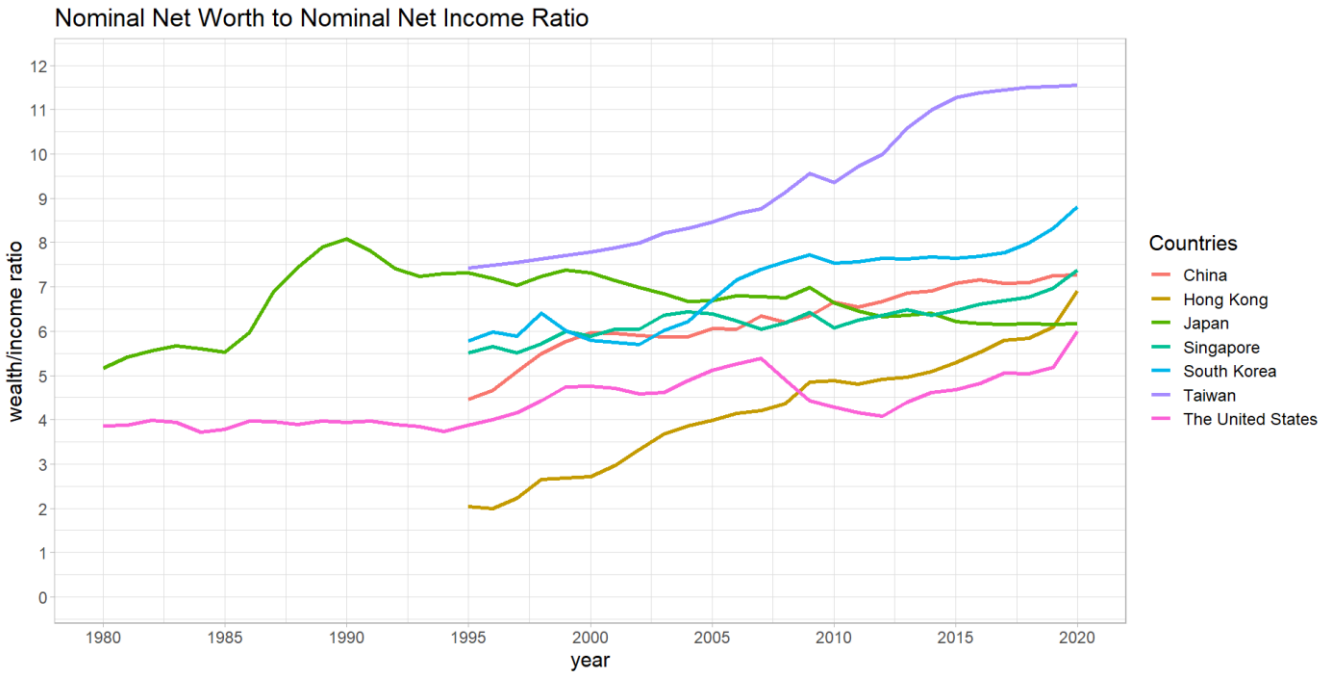

Figure 1.6: Wealth/Income Ratios between 1980 and 2020 (East Asia and the US). Source: wid.world

1980-2020: Developing Countries, the US and Japan

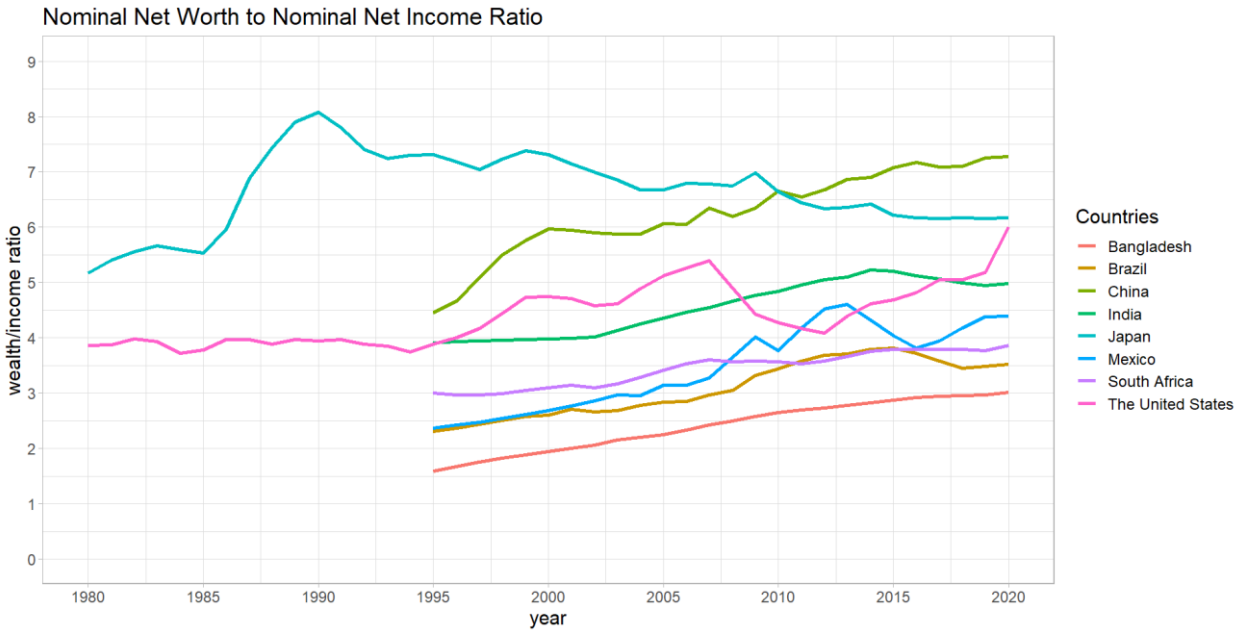

Figure 1.7: Wealth/Income Ratios between 1980 and 2020 (Developing Countries, the US and Japan). Source: wid.world

Appendix 2: Factors Affecting Wealth/Income Ratios between 1900 and 2020

1900-1920: West Europe and the US

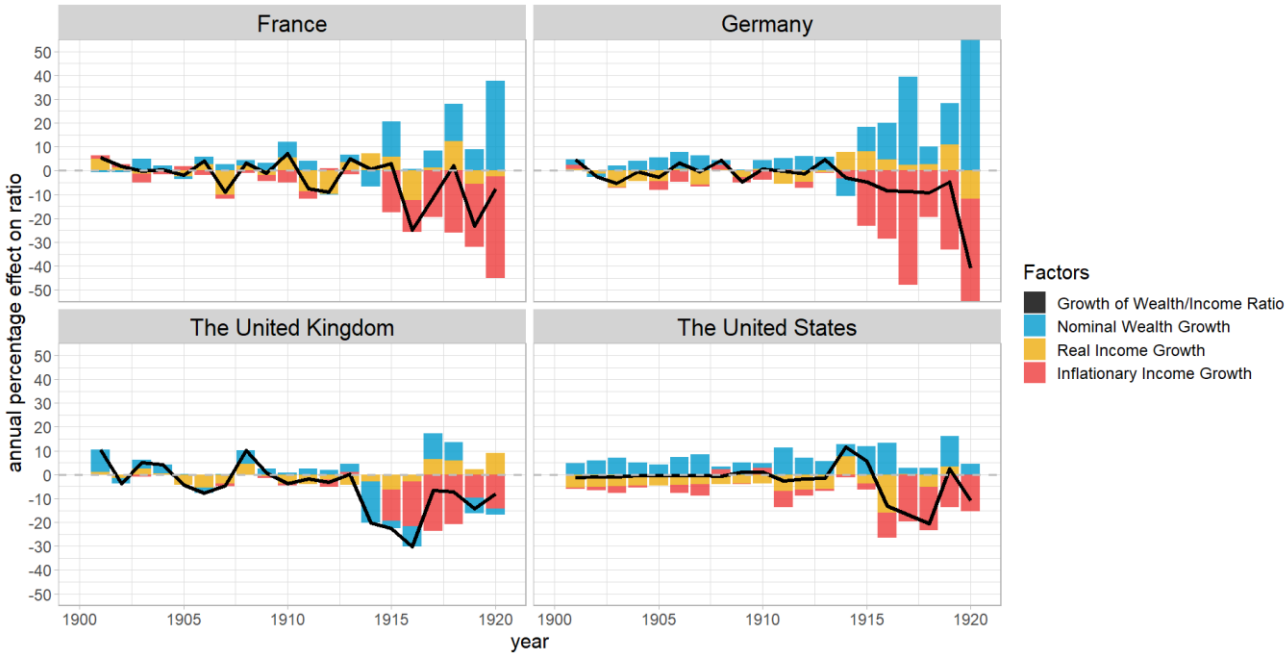

Figure 2.1: Factors Affecting Wealth/Income Ratios between 1900 and 1920 (West Europe and the US). Source: wid.world

1920-1950: West Europe and the US

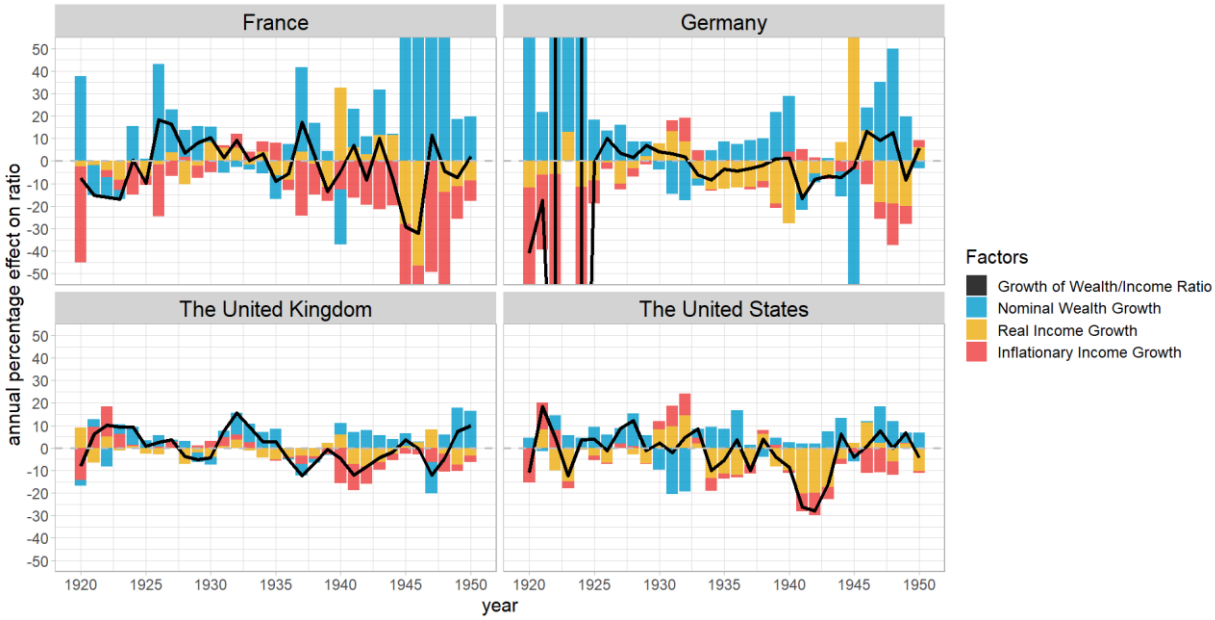

Figure 2.2: Factors Affecting Wealth/Income Ratios between 1920 and 1950 (West Europe and the US). Source: wid.world

1950-1995: Core Sample Countries

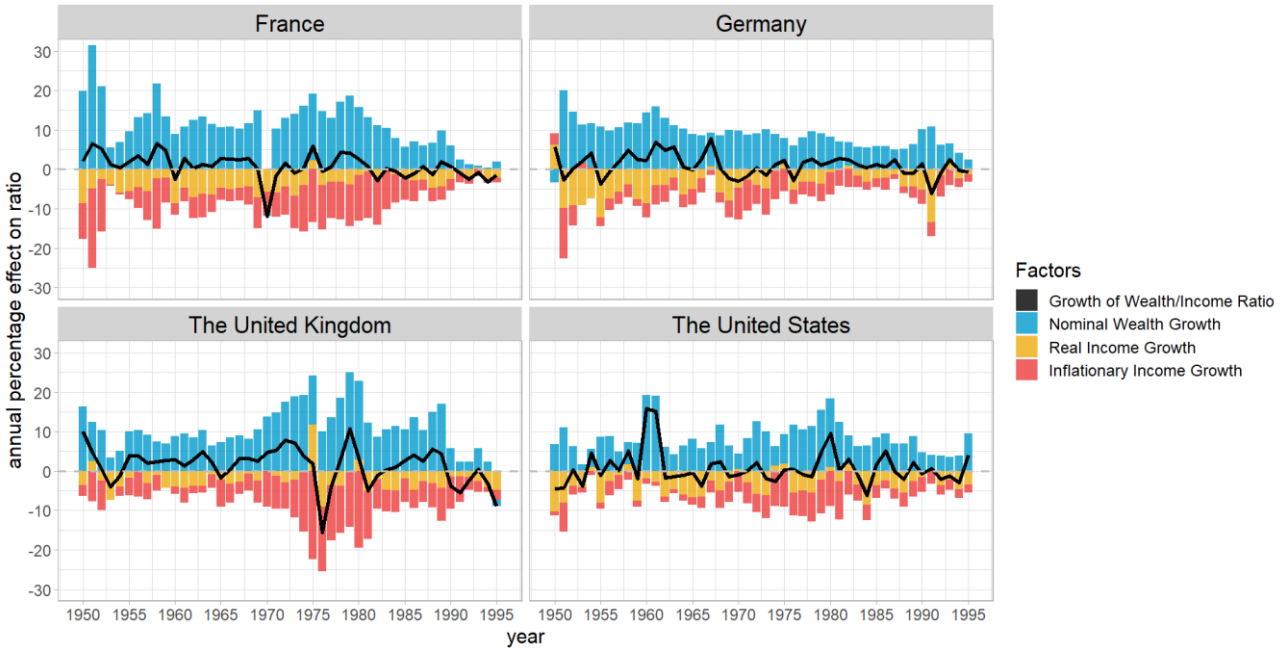

Figure 2.3: Factors Affecting Wealth/Income Ratios between 1950 and 1995 (West Europe and the US). Source: wid.world

1950-1995: South Europe, Canada and Australia

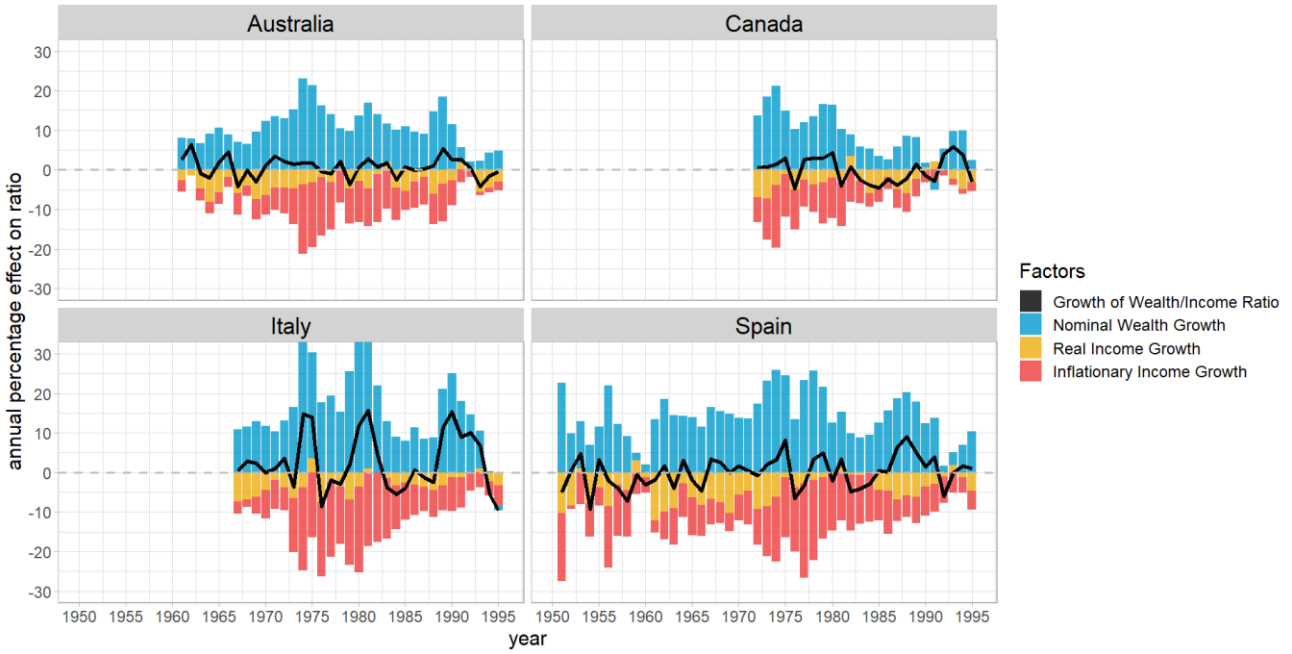

Figure 2.4: Factors Affecting Wealth/Income Ratios between 1950 and 1995 (South Europe, Canada and Australia). Source: wid.world

1970-1995: Japan

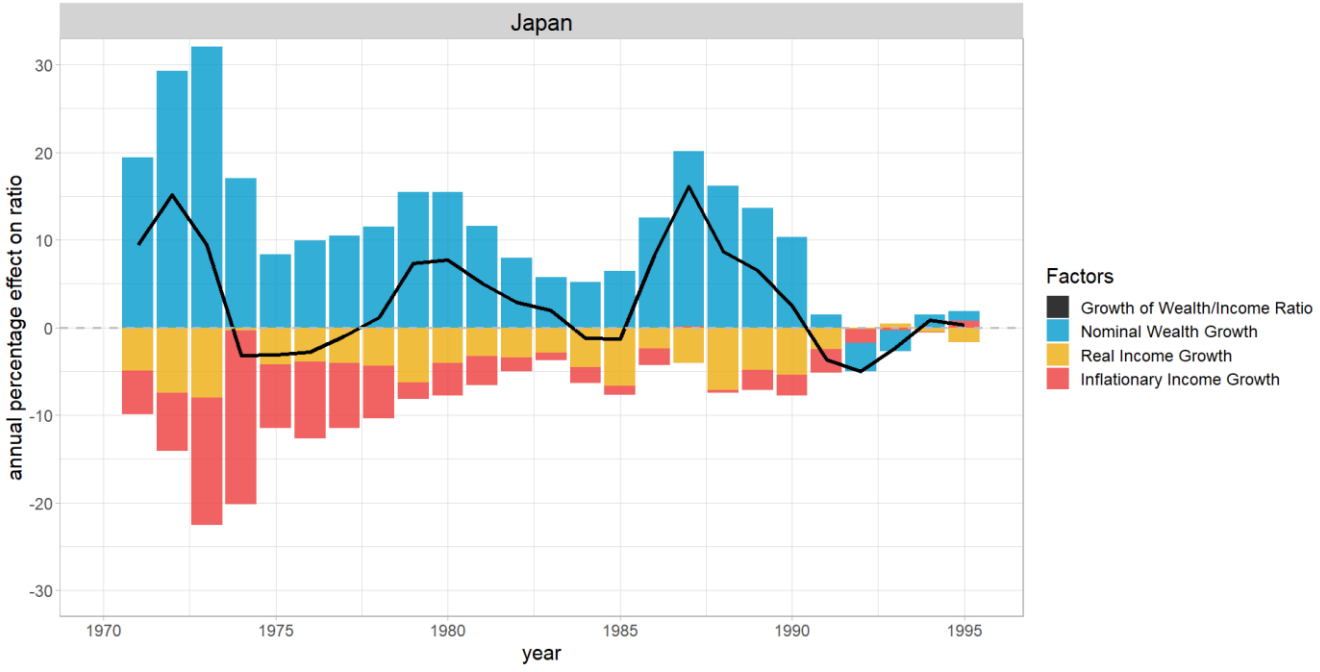

Figure 2.5: Factors Affecting Wealth/Income Ratios between 1970 and 1995 (Japan). Source: wid.world

1995-2020: West Europe and the US

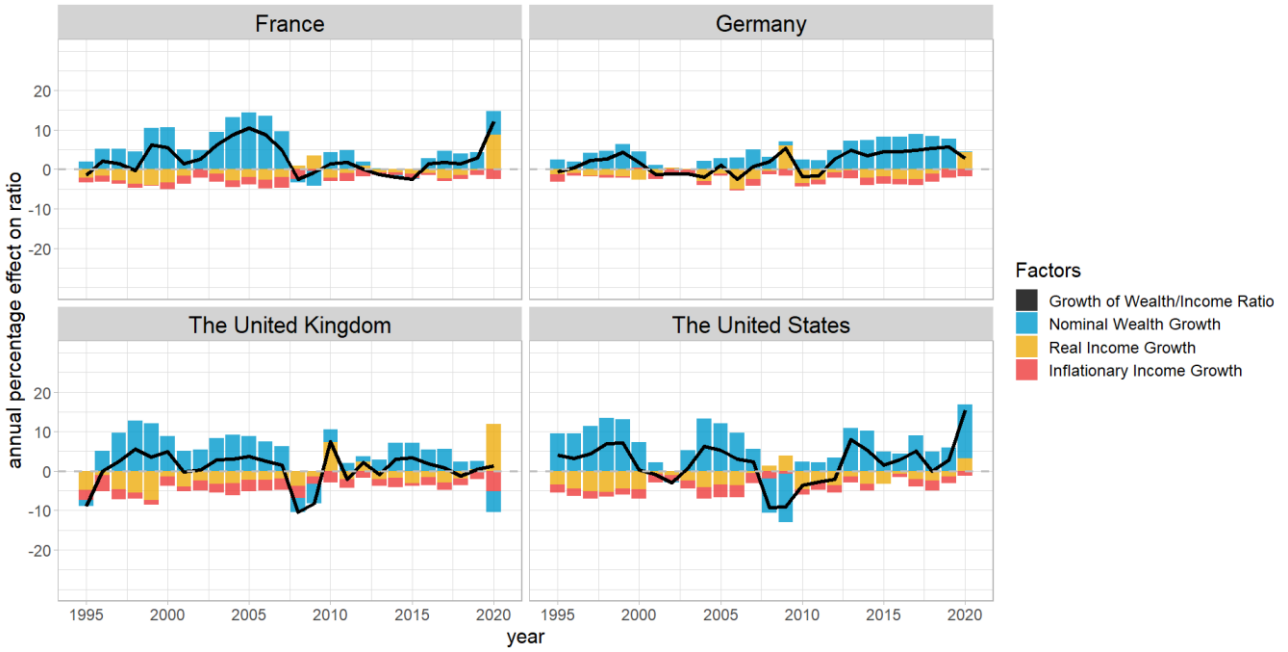

Figure 2.6: Factors Affecting Wealth/Income Ratios between 1995 and 2020 (West Europe and the US). Source: wid.world

1995-2020: South Europe, Canada and Australia

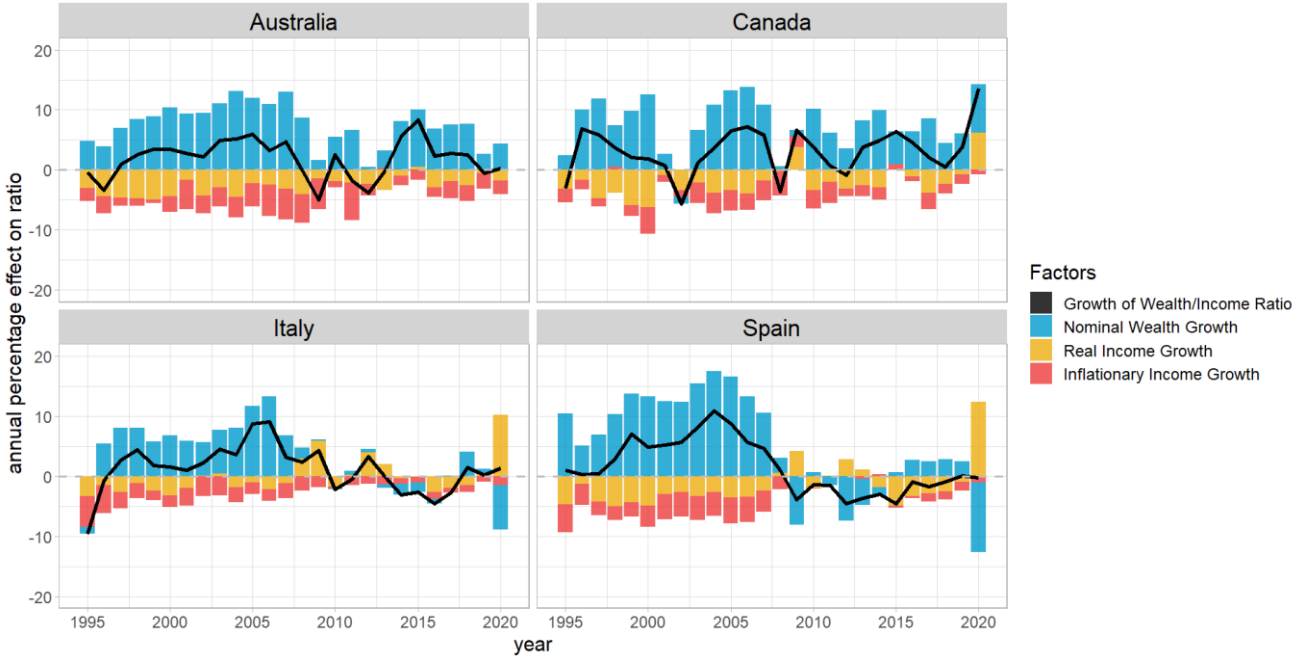

Figure 2.7: Factors Affecting Wealth/Income Ratios between 1995 and 2020 (South Europe, Canada and Australia). Source: wid.world

1995-2020: East Asia

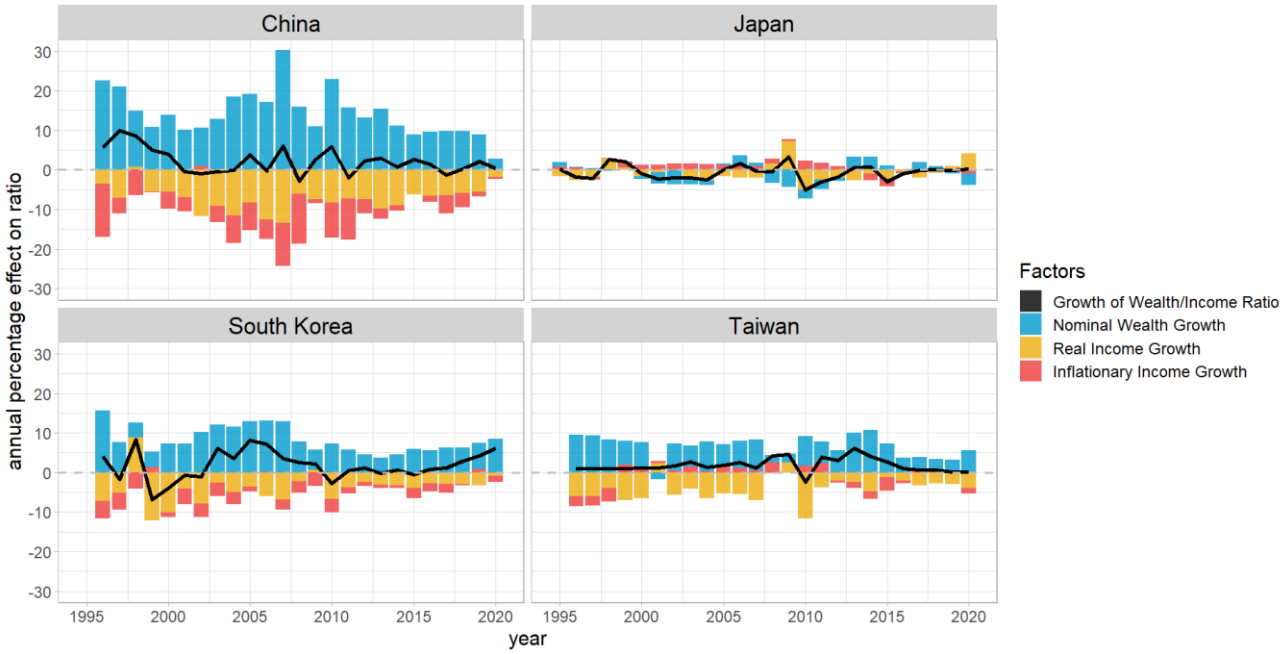

Figure 2.8: Factors Affecting Wealth/Income Ratios between 1995 and 2020 (East Asia). Source: wid.world

Appendix 3: The Composition of National Wealth between 1950 and 2020

1950-1995: West Europe and the US

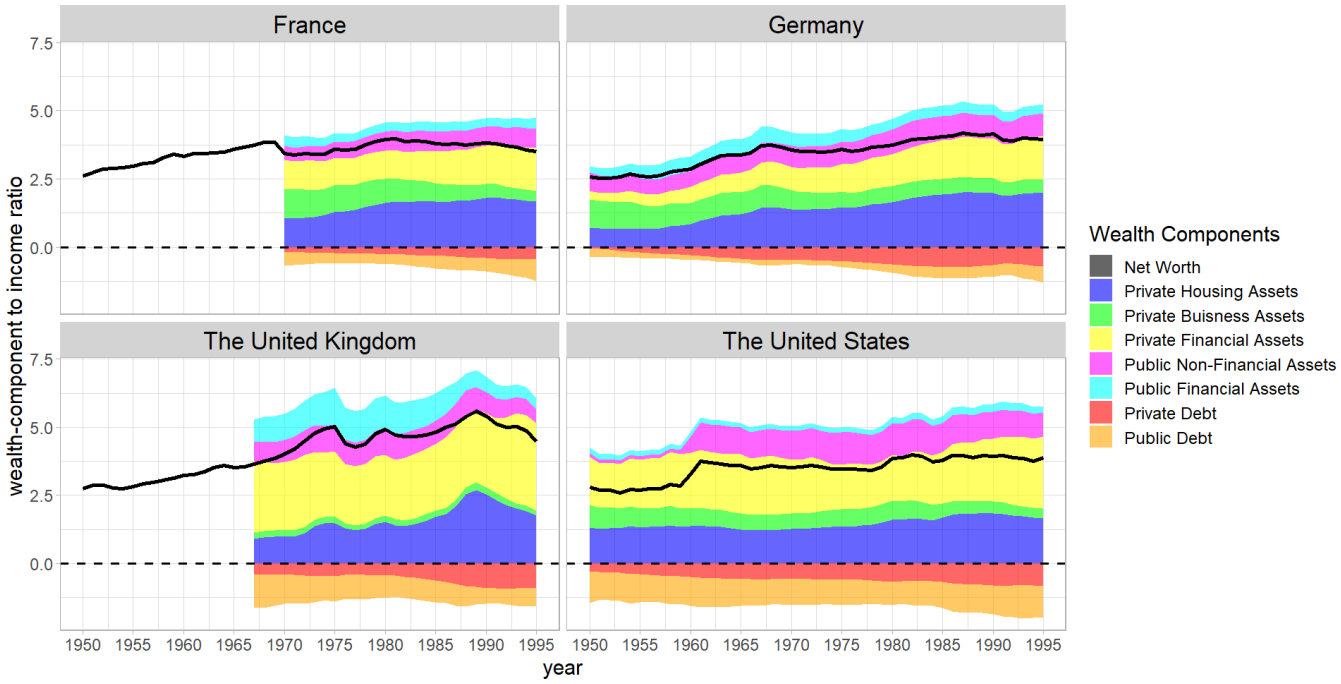

Figure 3.1.1: Components of National Net Worth between 1950 and 1995 (West Europe and the US). Source: wid.world

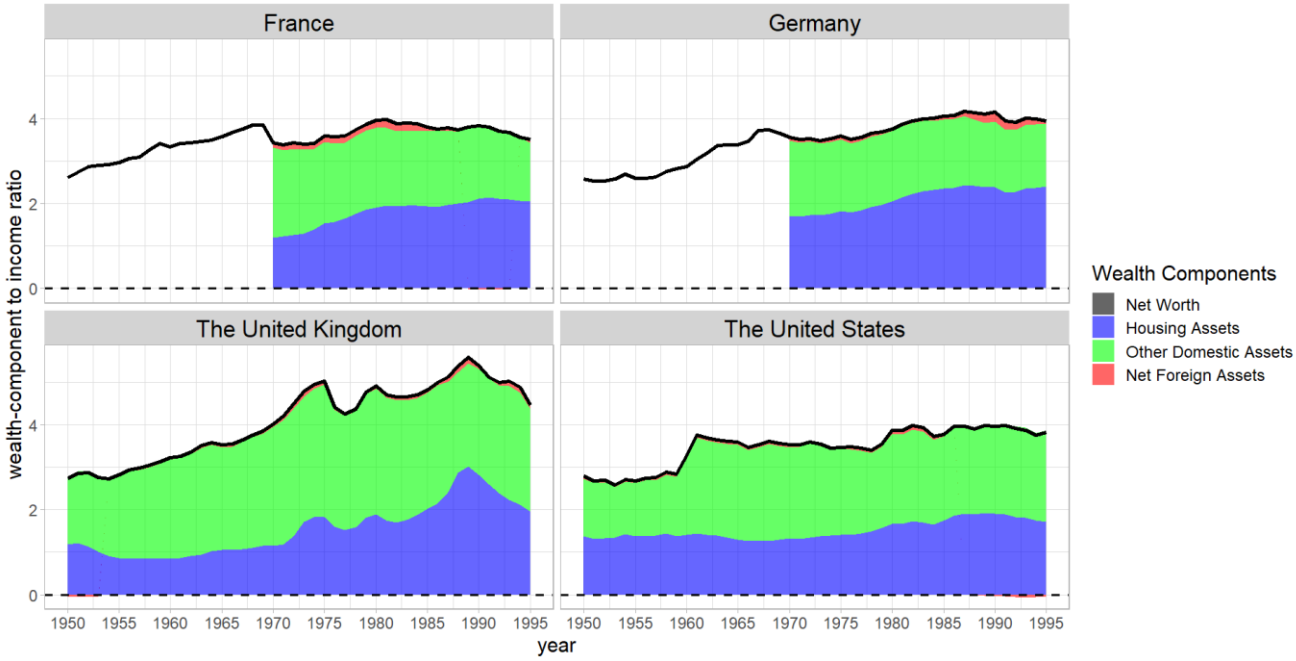

Figure 3.1.2: Foreign and Domestic Shares of National Wealth between 1950 and 1995 (West Europe and the US). Source: wid.world

1950-1995: South Europe, Canada and Australia

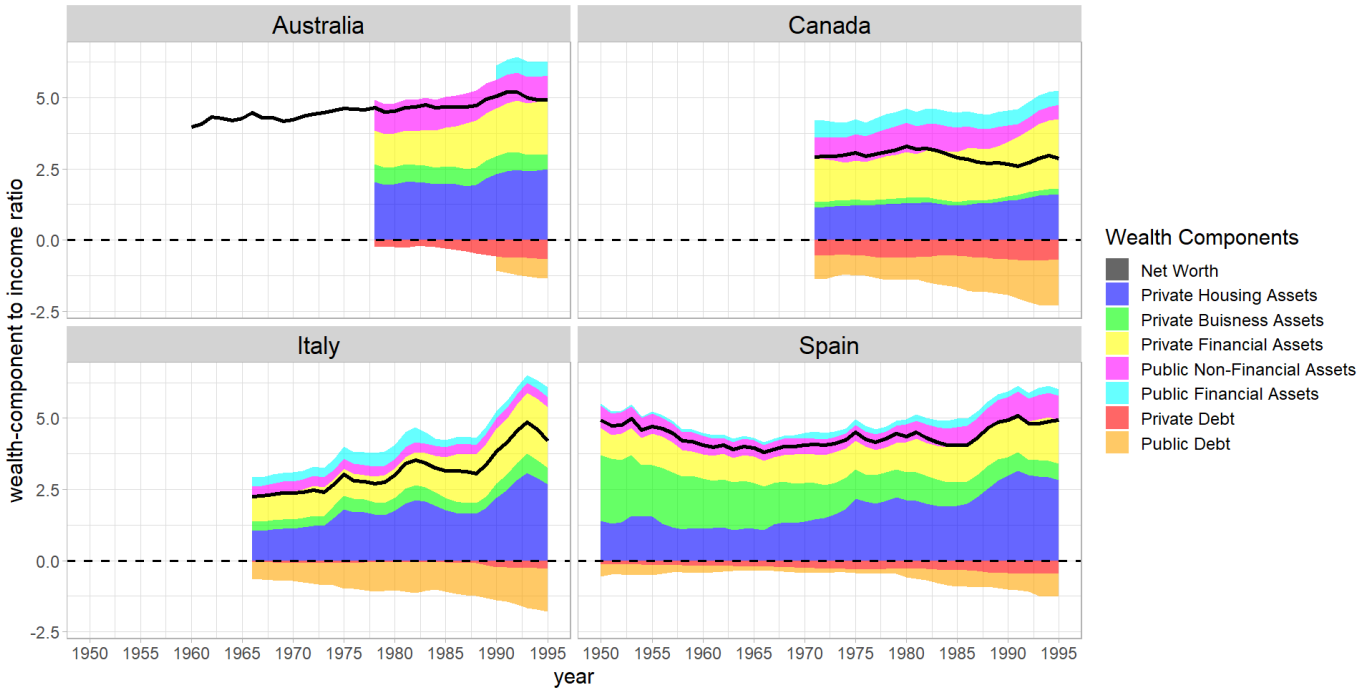

Figure 3.2.1: Components of National Net Worth between 1950 and 1995 (South Europe, Canada and Australia). Source: wid.world

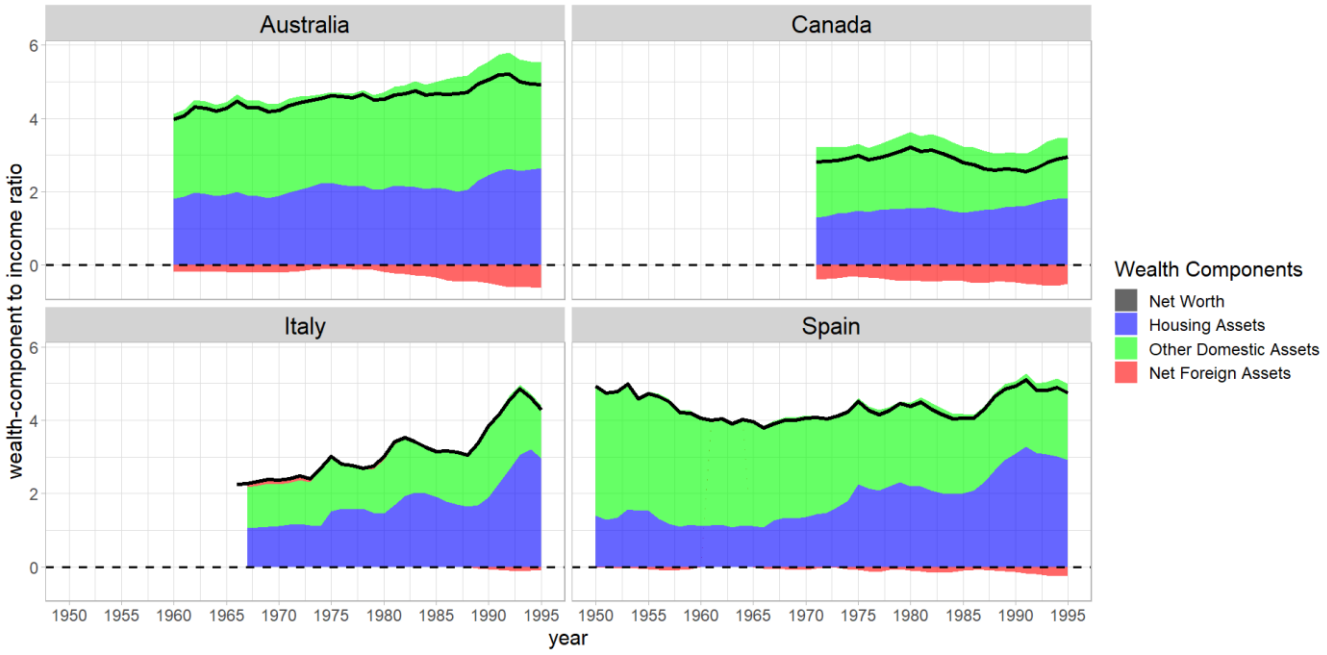

Figure 3.2.2: Foreign and Domestic Shares of National Wealth between 1950 and 1995 (South Europe, Canada and Australia). Source: wid.world

1970-1995: Japan

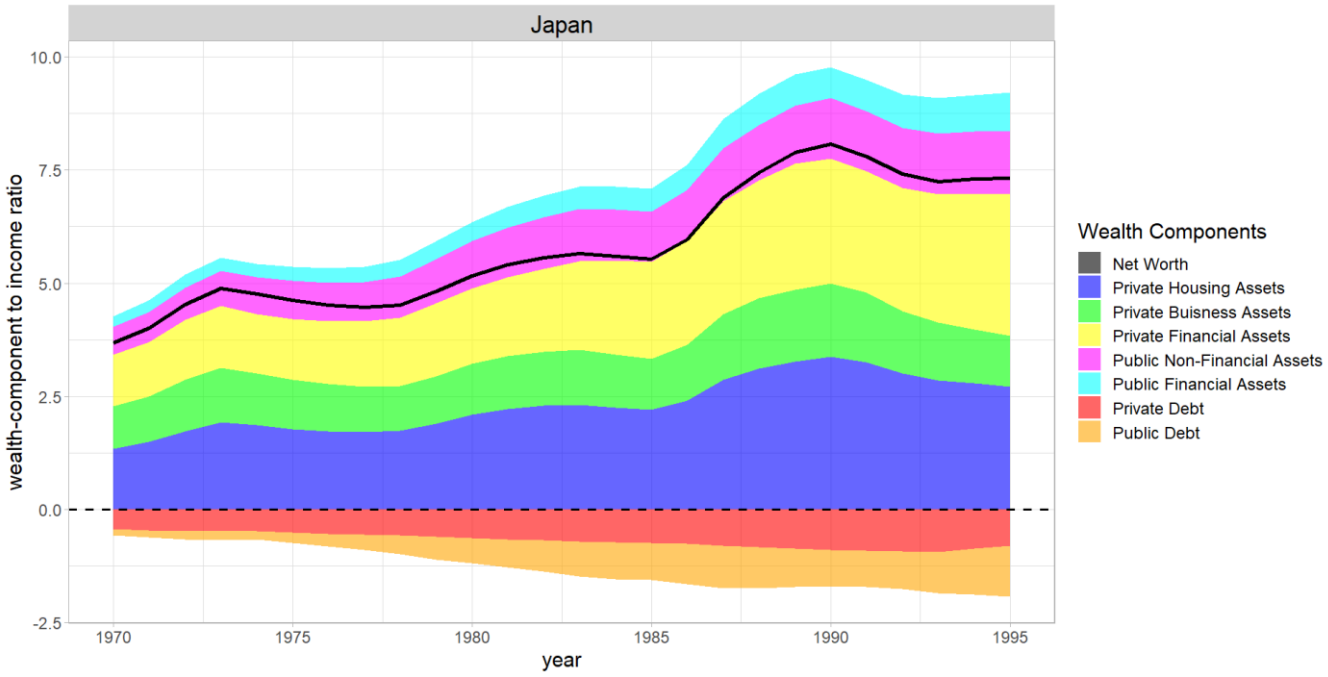

Figure 3.3.1: Components of National Net Worth between 1970 and 1995 (Japan). Source: wid.world

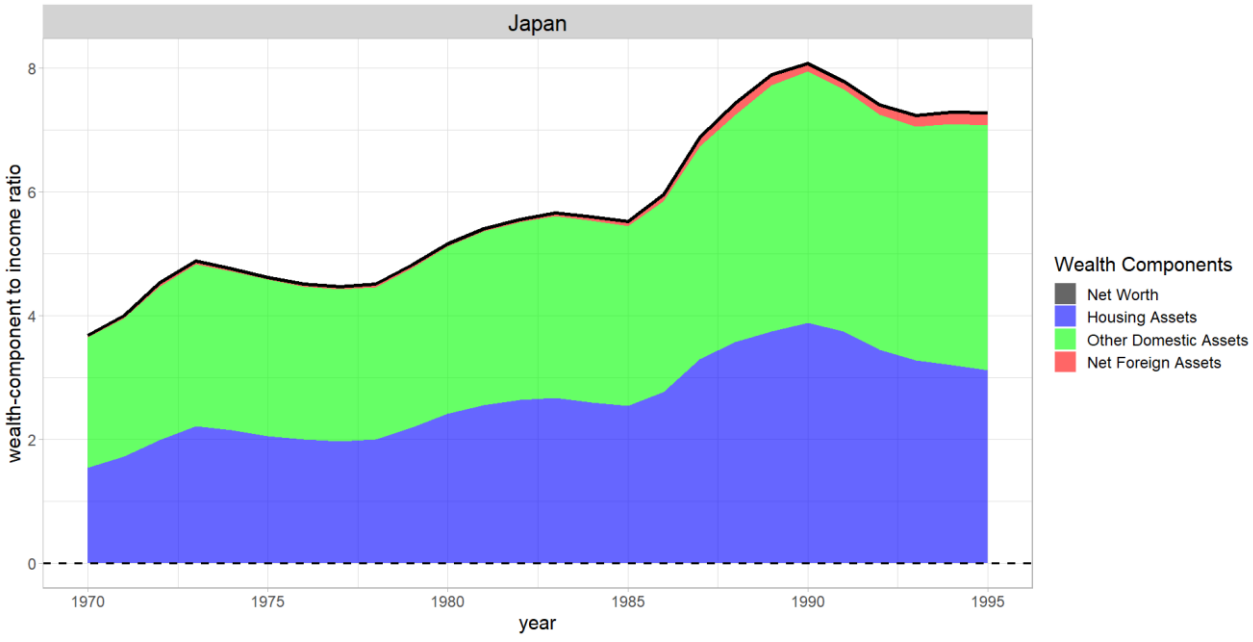

Figure 3.3.2: Foreign and Domestic Shares of National Wealth between 1970 and 1995 (Japan). Source: wid.world

1995-2020: West Europe and the US

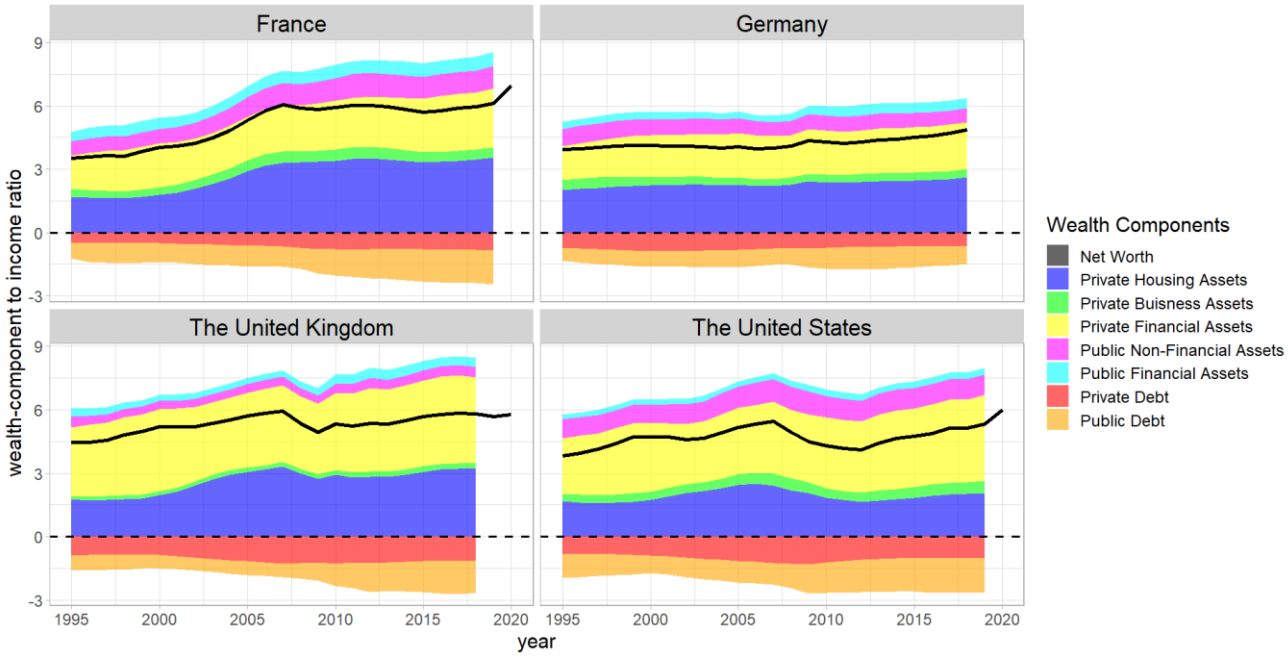

Figure 3.4.1: Components of National Net Worth between 1995 and 2020: (West Europe and the US). Source: wid.world

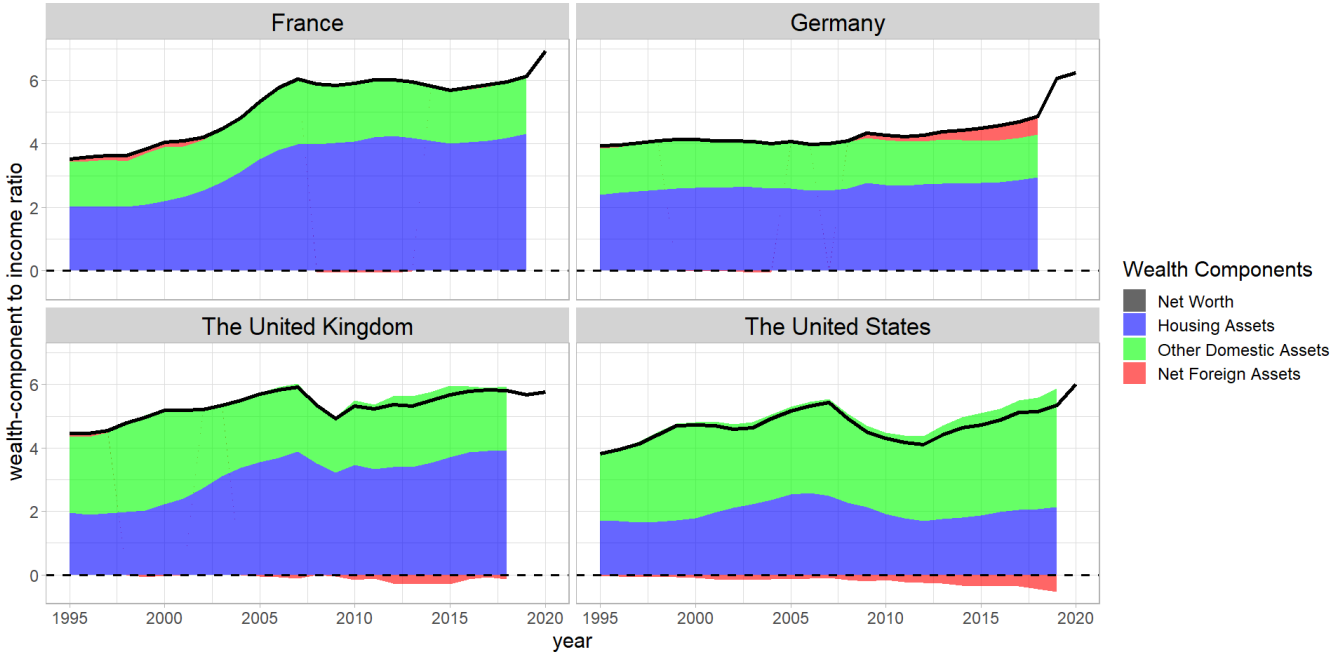

Figure 3.4.2: Foreign and Domestic Shares of National Wealth between 1995 and 2020 (West Europe and the US). Source: wid.world

1995-2020: South Europe, Canada and Australia

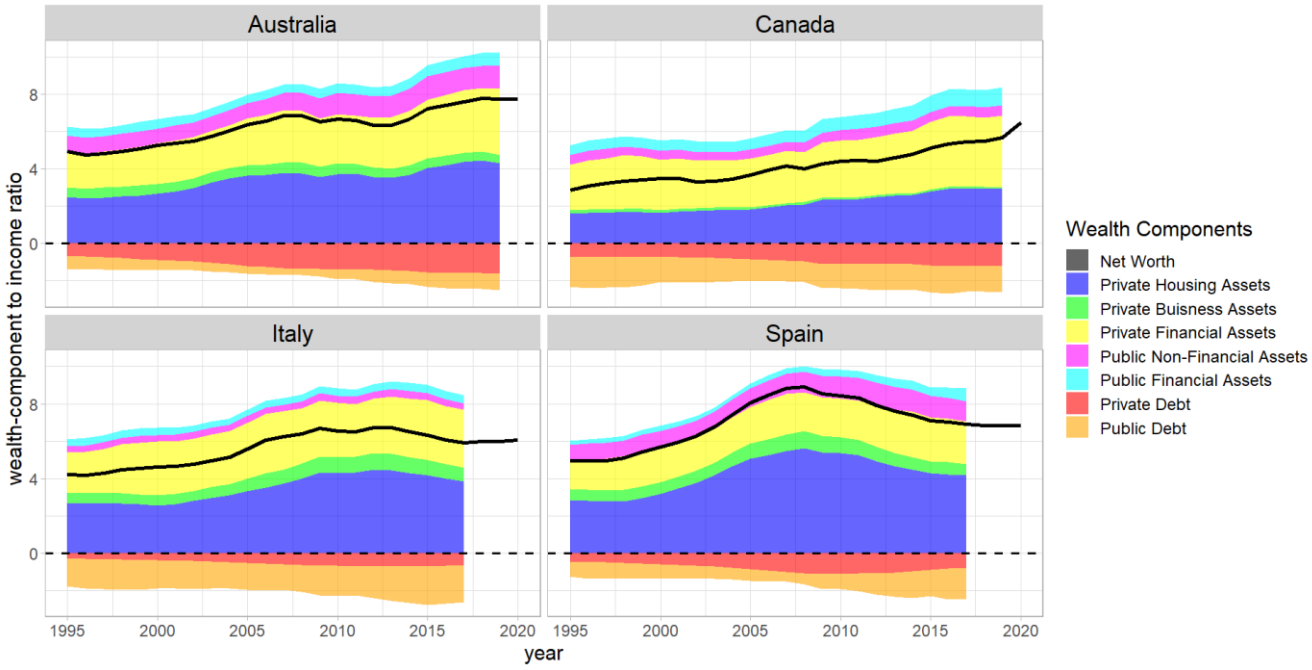

Figure 3.5.1: Components of National Net Worth between 1995 and 2020: (South Europe, Canada and Australia). Source: wid.world

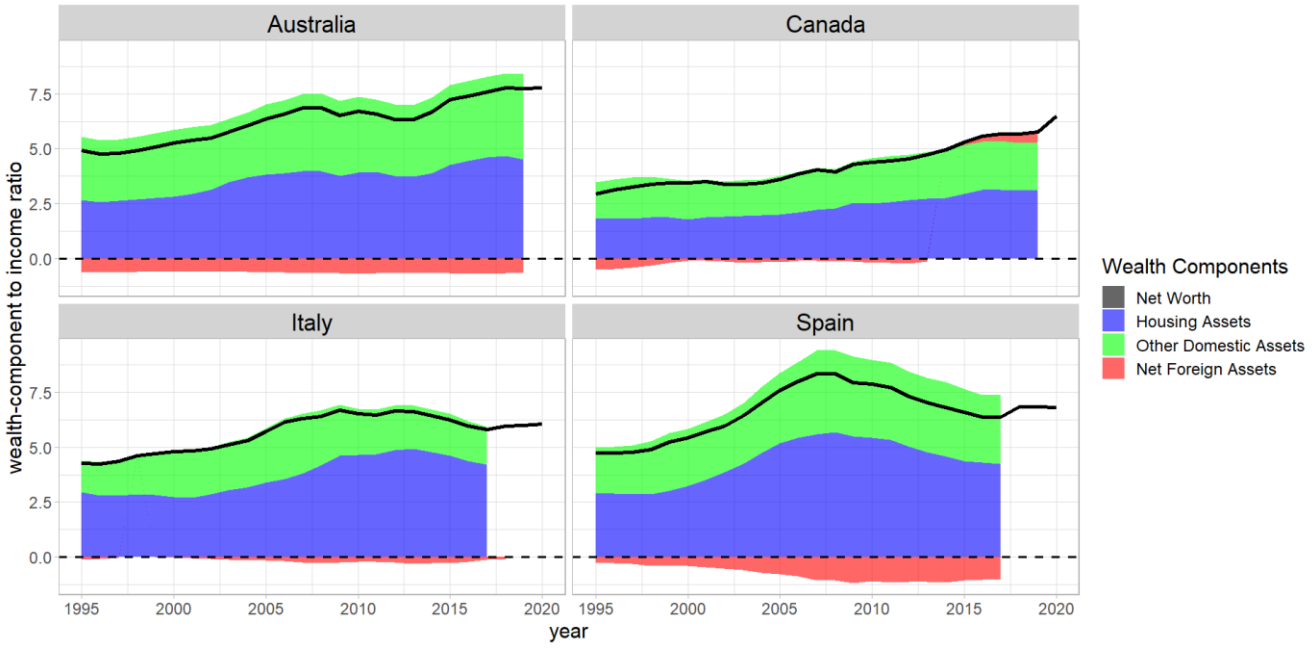

Figure 3.5.2: Foreign and Domestic Shares of National Wealth between 1995 and 2020 (South Europe, Canada and Australia). Source: wid.world

1995-2020: East Asia

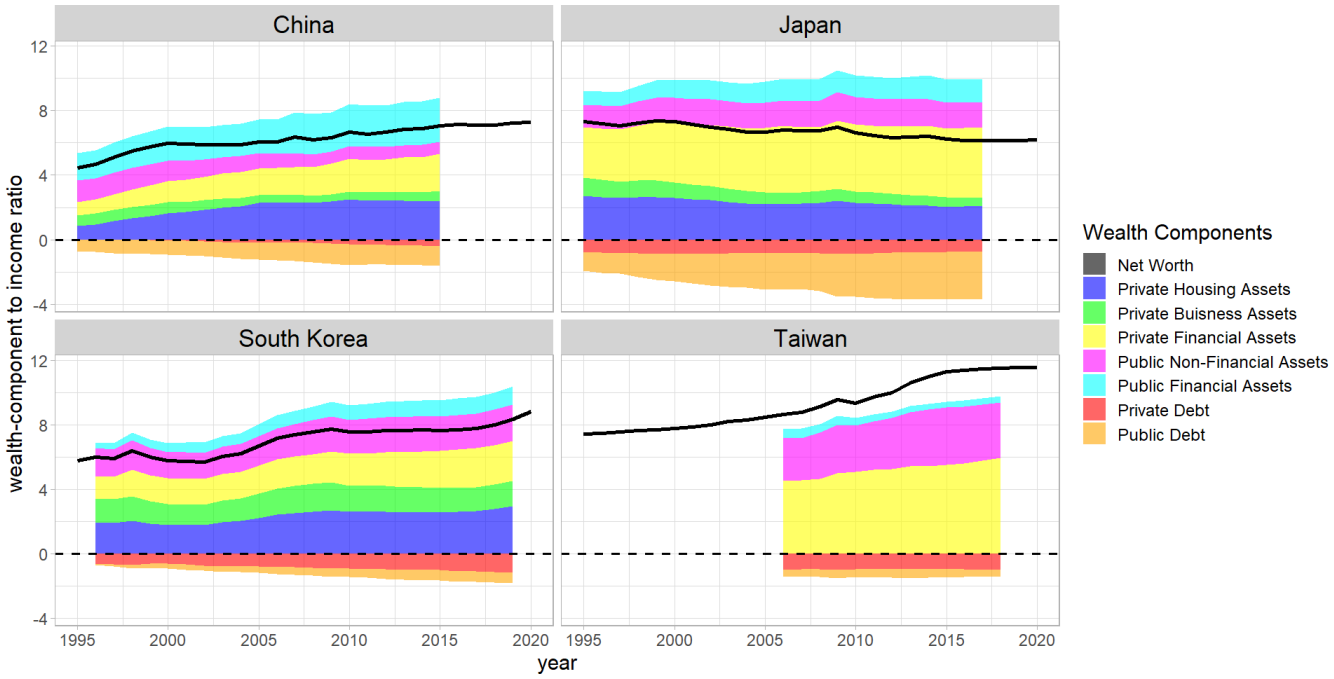

Figure 3.6.1: Components of National Net Worth between 1995 and 2020: (East Asian). Source: wid.world

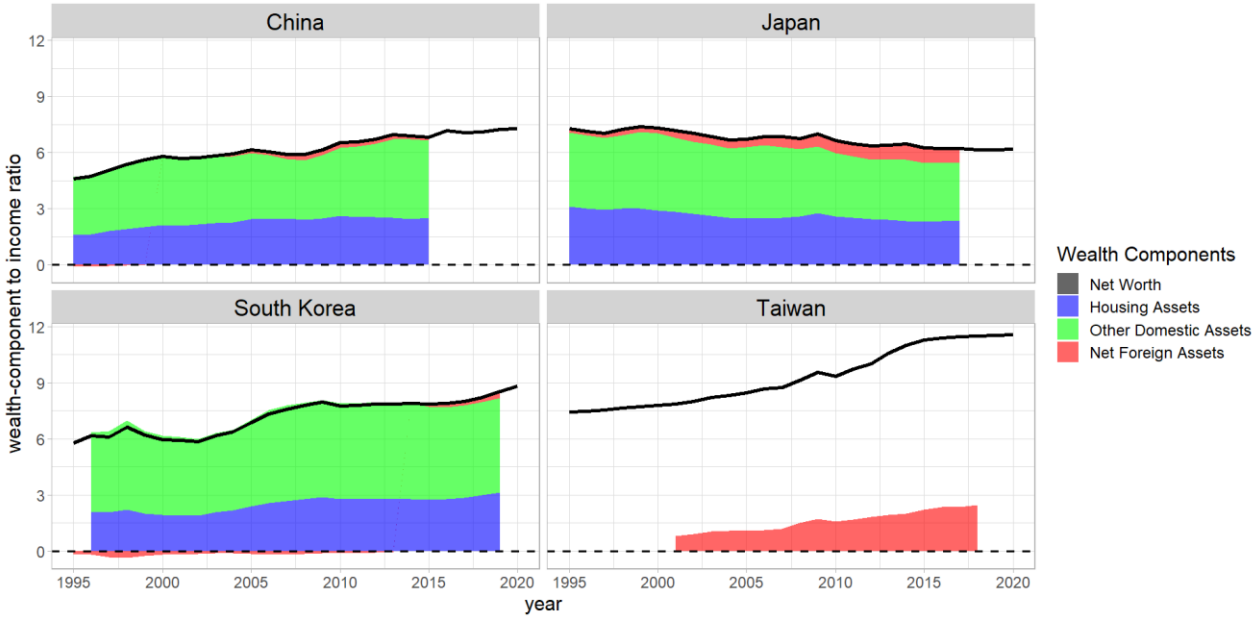

Figure 3.6.2: Foreign and Domestic Shares of National Wealth between 1995 and 2020 (East Asia). Source: wid.world

Sources

Minsky, Hyman P. (1975). *John Maynard Keynes*. Colombia University Press.

Minsky, Hyman P. (1986). *Stabilizing an Unstable Economy*. Yale University Press.

J. Woetzel, J. Mischke, A. Madgavkar, E. Windhagen, S. Smit, M. Birshan, S. Kemeny, R. J. Anderson. November (2021). *The rise and rise of the global balance sheet: How productively are we using our wealth?* McKinsey Global Institute.

World Inequality Database: https://wid.world/data/