

# The Economic Consequences of The Global ‘Debt Shift’

**Dirk Bezemer, University of Groningen**

## **1. Introduction**

The significance of credit goes beyond simply accommodating changes in the economy’s fundamentals. Credit itself may be among the drivers of the business cycle. There is no dearth of explanations for this observation — if anything, we have too many: Hayek’s mal-investment theory, Fisher’s debt deflation theory, Keynes’ theory on the collapse of effective demand, Minsky’s financial instability hypothesis, Schumpeter’s creative destruction theory, Koo’s balance sheet recession (an extension of Fisher), and Perez’ financial cycles description (an extension of Schumpeter). Contemporary cutting-edge DSGE models have financial accelerator mechanisms, which ensure that any exogenous shock is amplified by nominal rigidities, interpreted as representing the credit system.

All these models offer narratives that explain the boom-bust dynamics of credit, and that provide us with reasons why this engenders boom-bust dynamics also in the macroeconomy, a dynamic that would not otherwise — in the absence of a financial system — exist. In these models, the ups and downs of the private credit system is not a stand-alone casino that macroeconomists can ignore. It is not “the oil that smooths the running of the economic engine,” as the usual allegory has it. If anything, it is more like the fuel for the economic engine in the upturn, without which growth would not

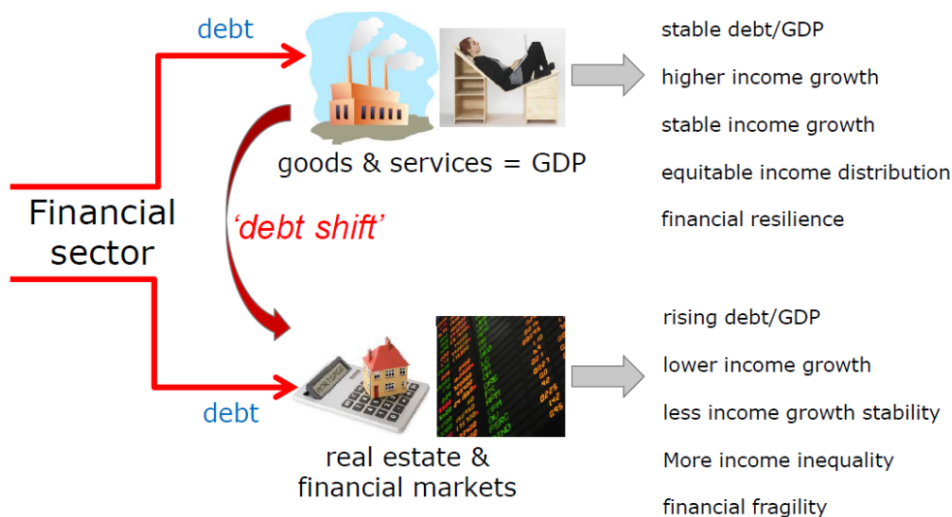
be possible. In the downturn, it becomes sand in the wheels of commerce. Without debt, the bust would never be so deep.

With the exception of Richard Koo's, all these theories miss an important feature of financial systems today: they were constructed with business debt in mind. In them, loans are extended by lenders to nonfinancial firms to finance working capital or new investment. However, today, most credit does not finance new output, but transactions in assets, especially existing assets, like real estate. This paper argues that this structural change in debt—what we label the “debt shift” — needs to be placed at the heart of a theory of debt and the business cycle. Most advanced and emerging economies today are financialized economies and most of the debt in a financialized economy does not generate wages or profits, but rather fuels capital gains through asset price increases.

## 2. Productive and Unproductive Credit

We argue that the *type* of lending — either to productive enterprise or to finance the sale and purchase of existing assets — matters to the growth, stability, and distribution of incomes. Figure 1 illustrates this.

**Figure 1: Debt shift and its consequences**



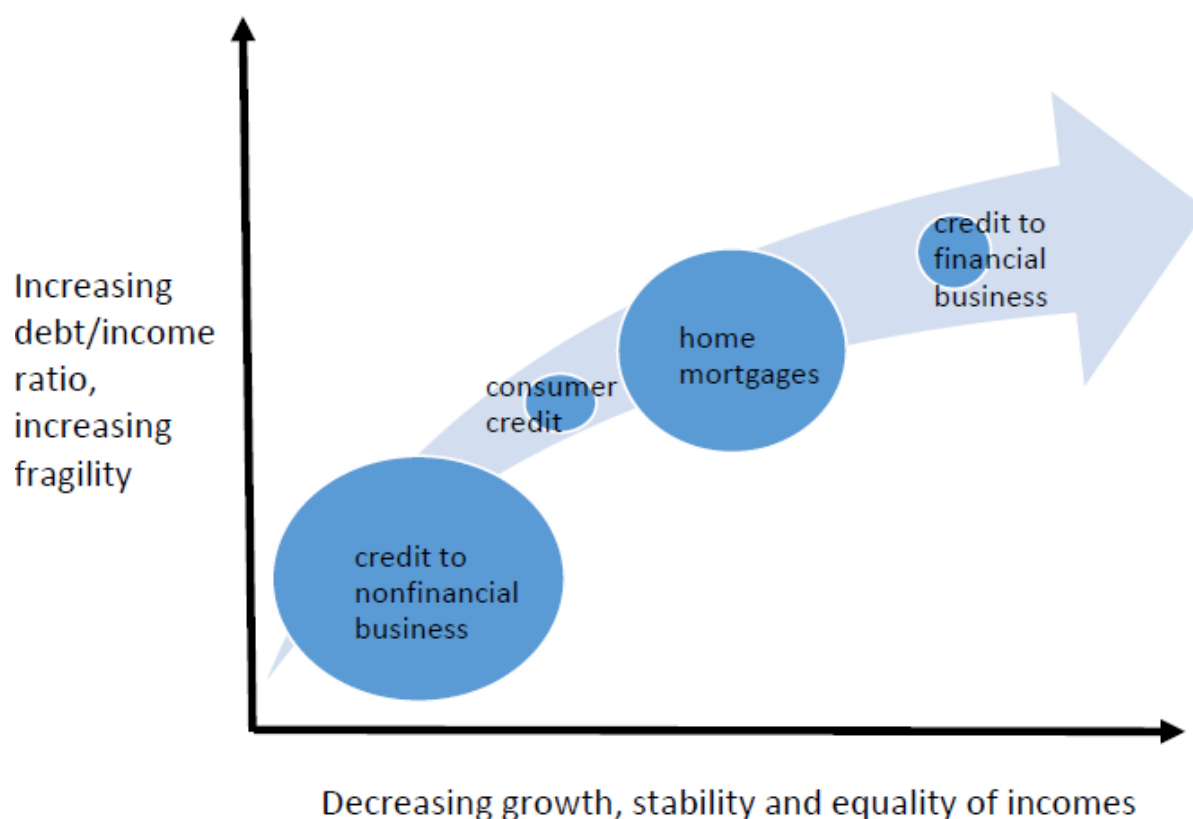
Here, we make a juxtaposition between “productive” and “unproductive” credit. Productive credit is shorthand for credit that directly finances the production, sale and

consumption of goods and services. Unproductive credit finances transactions in existing assets. The uses of debt by households and firms are to invest and purchase working capital on one hand, and on the other hand to buy real estate assets, to buy back their own stock, or to buy any other financial asset. The first is a productive use of debt in the top part of Figure 1, by which we mean that it results in the production of goods and services and the generation of incomes (wages and profits). The second is unproductive use of credit.

We use the terms “productive” and “unproductive” in a neutral way. All economies need debt that finances production as well as debt that finances asset market transactions. Our questions are what are the consequences of these two types of lending and what the desirable balance between them is?

To answer these questions, we have used published data collected by central banks in developed economies. Central banks report differentiated private credit data issued by domestic banks as household loans and loans to (non)financial business, in four categories. For reasons of cross-country consistency (explained in the next section), we will characterize an economy’s credit structure by these types of bank credit, and map this onto the distinction between productive and unproductive credit. This characterization, imposed by data availability, is necessarily incomplete but not wholly inaccurate, as discussed in more detail below. Let us first consider the implications for growth and stability of each of these kinds of bank credit. They are illustrated in Figure 2.

**Figure 2: Debt shift and its consequences**



**Four kinds of debt**

First, if a bank issues a loan to a nonfinancial firm and the debt is used to finance production, the production then results in sales revenues, from which wages are paid and a profit is realized. In the process, the supply of goods and services is enlarged and incomes increase. Thus, the economy has expanded and, therefore, economic growth has occurred. This has consequences not just for incomes and profits but also for financial stability. The loan has been used to realize future cash flow revenues from sales that land on the balance sheet of the borrower who can therefore repay the loan, or safely roll it over. Debt that is used to finance production is an increase in an economy's debt but also in its income. Therefore the debt/income ratio in the economy, its leverage, need not rise.

As the income from production accrues to the borrower who financed the production, loans can be repaid and financial fragility need not increase.

*Second, consumer debt* also supports production in the sense that it finances demand for output of goods and services, helping industry to realize sales, profit and wages. Durable-goods industries, in particular, use this financing model on a large scale. While it ultimately supports the productive process, consumer debt poses larger risks for financial stability than business debt. The cash flow income generated by spending the loan is income to a firm. But the cash flow commitment generated by taking on the debt is a future liability to the household. Whereas for business debt, the only challenge is to match cash flow revenues and cash flow commitments in time, with consumer debt, there is the additional challenge of matching them across balance sheets. Households taking on consumer debt do not realize larger future incomes from having taken on the debt. Firms realizing sales that are debt-financed by their customers have benefited from the increase in sales made possible by this additional consumer debt but they are under no obligation to share their increase in profits with indebted households. Unless there are macroeconomic arrangements that direct the additional cash flows that business enjoys to households — for instance, as additional wages — it has become more likely that the household cannot meet its future commitments. Thus, financial fragility has increased.

The *third* type of debt— *household mortgage debt*—has different financial implications. Unlike loans to nonfinancial business and unsecured consumer debt, the bulk of a mortgage loan supports transaction in a pre-existing asset, not a transaction in a good or a service. While credit to nonfinancial business generates income to the borrower, and credit to consumers generates income to the seller, a typical home mortgage, which is issued to buy an existing home, generates no income at all in and of itself. It generates asset price gains, as an already existing asset is traded. It is, in this sense, unproductive debt. There are ifs and buts to this statement which will be discussed below but they do not detract from the broad validity of the observation that growth in home mortgages implies an increase in debt, but not in income. This has important repercussions for the economy's growth, stability, fragility, and income polarization.

The *fourth* and final category of bank credit is *loans to nonbank financials* — typically, a small volume in each bank's balance sheet compared to loans issued to non-financial

firms. Although obviously very different from home mortgages, the effects are similar. Nonbank financials like pension funds, insurers, and other financial firms use their borrowing largely to conduct financial transactions in assets, not to produce, sell or buy real-sector output. The result is an increase in financial asset prices, but not (or only indirectly) in income generated in the real sector. Again, this is unproductive debt.

In sum, both business debt and household debt can be categorized as either supporting production and income formation, or as supporting capital gains—pushing up the volume and prices of asset markets. A shift from the former to the latter increases the economy's financial fragility. In applying this categorization, we combine finance and real estate into one sector, since both home mortgages and loans to financials will finance asset market transactions. This follows the US National Income and Product Account's approach, where the 'Finance, Insurance and Real Estate' (or FIRE) sector is treated as one sector. There, as here, the underlying logic is that this sector's role in the economic system is to trade assets, whereas other sectors' role in the economy is production and trade in goods and services. To be sure, the FIRE sector needs goods and services to do its job, and the other sectors in the economy need financial and real estate assets to do their job. But the impact of activity in the FIRE sector is on asset prices, and the impact of activity in the other sectors is on incomes. Therefore, the distinction matters.

Because of this effect on asset prices, the presence of an economy-wide debt shift means that the motivation to borrow has changed, away from an investment motive and towards a speculative motive. Borrowing to finance working capital is typically driven by the motivation to invest, produce, and realize sales and profit. Borrowing to finance the purchase of real estate and financial assets introduces a second motive: to sell the asset at a better price. In other words, to realize capital gains. To be sure, real estate and financial assets are often also used in the productive process. However, when asset prices are rising, this productive use typically is not the motivation to borrow; it is superseded by the speculative motive. In a rising market, the returns on buying and selling assets typically exceed the returns on productive use of assets. This motivates further changes in the distribution of debt. The share in all debt of loans that support asset transactions will rise, and the share of loans that support production will fall. In this circumstance, the phenomenon we describe as the debt shift will occur.

The reasons for the debt shift that occurred over the last few decades include deregulation, tax policies, and globalization. An analysis of these drivers is beyond the scope of his paper. Here we demonstrate the extent of the debt shift, and analyze its consequences.

### **3. Debt Shift: the Evidence**

How can one observe the debt shift? Cross-country data on credit provided by central banks do not differentiate carefully between productive and unproductive debt, but they offer proxies. The first study to do this, to our knowledge, was Werner (1997) for Japan. Other cross-country empirical studies that distinguish between household and business debt include Xu (2000), Büyükkarabacak and Krause (2009), Büyükkarabacak and Valev (2010), Beck et al (2012), Jordà et al (2014), Cournède and Denk (2015), and Drehman et al (2016, 2017).

This paper builds on a data collection effort reported in Bezemer et al (2017) using publicly available central bank databases. The cross-country availability of data places important restrictions on the debt instruments that we can observe. Central banks report differentiated private credit data issued by domestic banks as household loans (often separated into household mortgages and unsecured consumer credit), loans to nonfinancial firms (sometimes differentiated by sector), loans to nonbank financials (pension funds, insurance companies, and the like), and (sometimes) lending to local and national governments. This data excludes all non-bank credit, all credit issued by foreign parties, and all cross-border bank lending. In short, it excludes all debt that is not issued by domestic banks. This is an important limitation. It means that we can observe only part of the total debt structure in each economy. For many emerging and developing economies, the unobserved part is small. For most of the economically advanced nations, it is large. Including other debt categories which are reported for some, but not all, countries would make the data collection method inconsistent. A limited view on debt development is the price we pay for consistency in data and definitions.

Given this data availability, private debt is observed in four categories: household mortgages, consumer credit, loans to nonfinancial firms, and loans to nonbank financials. The best possible mapping of productive and unproductive lending on these four

categories follows the reasoning in the preceding section. Consumer credit and loans to nonfinancial firms mostly finance the purchase and production of nonfinancial goods and services. Household mortgages and loans to nonbank financials mostly finance the trade in real estate and financial assets.

There are important qualifications to these proxies for productive versus unproductive debt, and it is not difficult to come up with examples of unproductive borrowing by business, and productive borrowing by households. A firm may borrow not to fund the purchase of working capital or fixed capital formation, but to buy back the firm's own stock or engage in a leveraged buy-out or a merger. In these instances, the loan is not financing the production and consumption of goods and services. To the extent that this occurs, nonfinancial business borrowing overstates productive private debt. This does not result in future cash flow revenues, but it may increase the firm's net worth by pushing up share prices. If all firms do this, this increases both wealth and debt in the economy, but not incomes. The problem then becomes how the debt will be serviced. On the individual level, it looks as if the wealth (higher asset valuations) will be sufficient to cover the debt. However, any trigger that will induce the liquidation of wealth to service debt, will send asset valuations falling. Wealth will not be sufficient to repay the debt; ultimately it must be repaid from income. Since debt has gone up relative to income, financial fragility has increased.

Conversely, households may spend a mortgage loan to commission new housing starts. Or they may spend part of a mortgage on home improvement or on consumption. To the extent that this occurs, home mortgage loans would overstate unproductive private debt. Households may also use consumer loans as mortgage down payments. In this case, consumer loans would overstate productive private debt.

There may be second-round effects of 'productive' debt which increase asset prices, and second-round effects of 'unproductive' debt which lead to income growth. Rising stock prices may (but need not) induce greater consumption by shareholders and so greater demand and more production. The larger net worth of firms may allow them to finance the expansion in productive capacity. Conversely, more production and profit may push up share prices. These are possible, but not necessary outcomes. The first-round effects

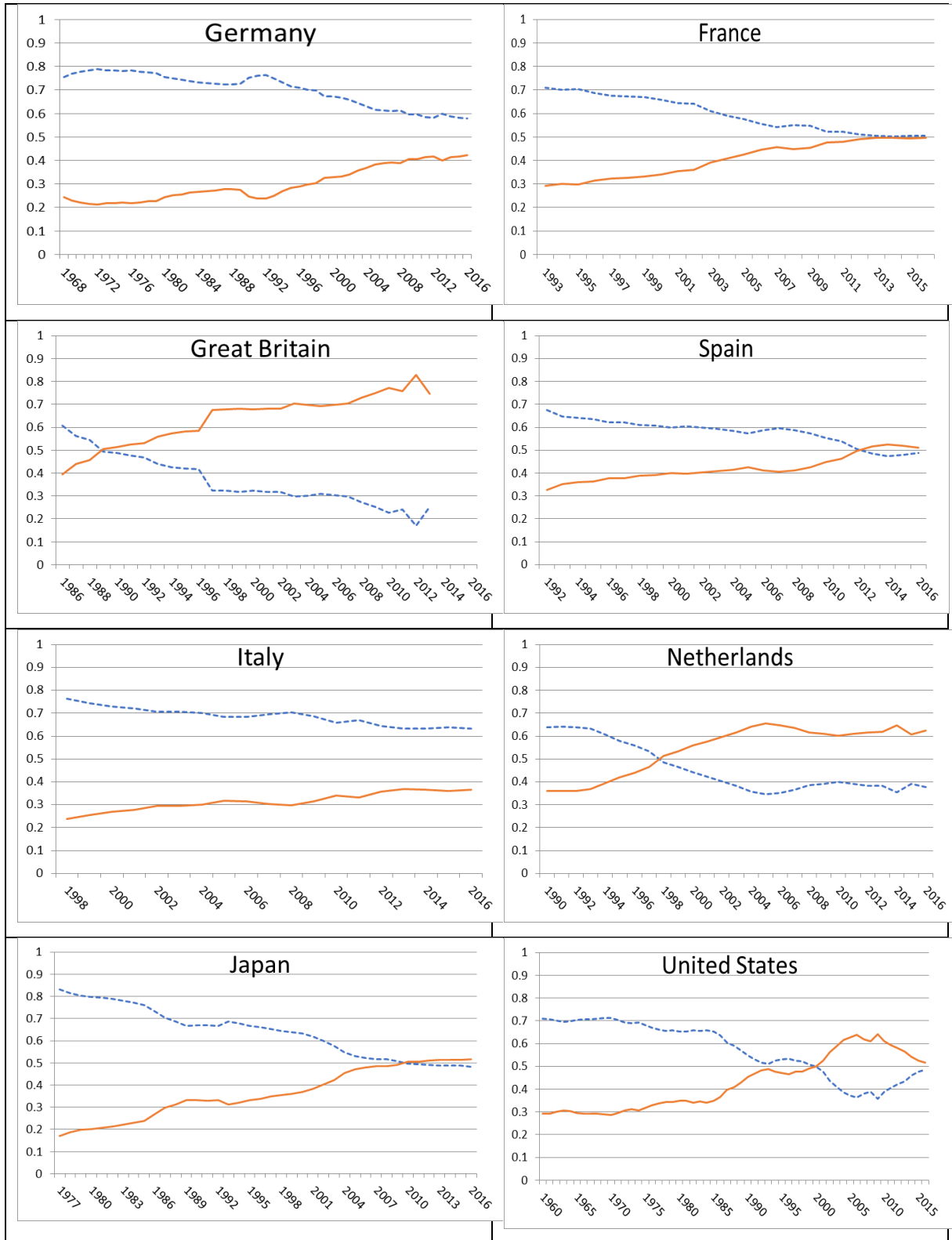


of productive credit are to increase income, and the first-round effects of unproductive credit are to increase asset prices.

It is not possible to trace these deviations from the assumptions in the statistics. For some of them — notably mortgages financing new housing starts — proxies can be constructed, but this involves additional assumptions that are typically inconsistent across countries. If these deviations are small relative to the total debt in each category, then there are reasonable approximations for productive and unproductive debt. We proceed on this assumption. It would be desirable for central banks to report more fine-grained categories of private debt, and to report on the direct use of debt. These reports will be imperfect, as a dollar of debt cannot be followed through the economy. However, if there was data reported on the first round uses of debt, it would be an important first step to improving our understanding of the consequences of private debt for macro-economic outcomes.

With these caveats in mind, Figure 3 shows the extent of the debt shift in seven major economies and the Netherlands. The time series differ in length due to data availability. Most significantly, it shows that the debt shift has occurred in all eight economies. In all countries studied, the combined share of loans to nonfinancial business and consumer credit has fallen. In most of them, productive credit stands at around 50% in 2016; the lowest share is 38% in the Netherlands (of which only 4% is consumer credit).

**Figure 3: Debt shift in selected economies: share of productive credit (dotted curve) and unproductive credit (solid curve) in total bank credit**



*Source: own data described in Bezemer et al, 2017. UK data to be extended to 2016. Productive debt is consumer credit plus loans to nonfinancial firms. Non-productive debt is household mortgages plus loans to nonbank financials .*

In the longest time series (for Germany and the US), we observe that the debt shift started only after the 1970s. This is consistent with the argument that financial deregulation, which gathered speed in the 1980s in the US and the 1990s in Europe, is a driving force behind debt shifts.

There are clear differences in the extent of the debt shift. In Spain, Japan, the US, the UK and the Netherlands, the stock of productive credit is now less than *half* of all bank credit. Each of these economies was severely hit by the 2008 crisis, suggesting a connection between debt shift and increased fragility, which will be explored below.

The debt shift is most extreme in the UK, where only a quarter of the credit stock is to nonfinancial business (19%) or consumers (6%). In contrast, the debt shift has been mildest in Germany and Italy, where still around 60% of bank credit is to nonfinancial business credit and consumer loans — down from around 80% at the start of their time series. Again, this suggests a link with financial deregulation, which was more limited in Germany and Italy. Apart from overt regulation, there is also plausibly a role for cultural factors — for instance, social conventions around the use of mortgages for house purchase, loan to value ratios, and accepted levels of household debt, may all restrain debt shift. These factors merit deeper research.

The global mortgage credit boom after 2001 is apparent in the steeper slopes of the curves in all countries. This suggests that in addition to country-specific factors, the global financial system can exert similar pressures on all economies with sophisticated financial systems. The channels through which these global systems affected local conditions may include the spread of originate-to-sell business models in banks, deepening of securitization markets, and invention (or wider use of) supporting financial instruments and assets, such as credit swaps, syndicated loans, and synthetic credit products. The complex interplay between global and local factors in explaining the change in credit allocation in each economy is another topic that appears under-investigated due to the confusion of net current account positions defined by country borders with gross capital flows across borders (see Avjiev et al, 2016).

In all observed economies, with the possible exception of the US, the debt shift temporarily halts or reverses near or immediately after the 2008 crisis, and then continues. It is difficult to understand these results within the framework of traditional credit cycle theories, which suggest a long period of deleveraging after a crisis.<sup>1</sup> To interpret the current predicament, factors not incorporated in these theories, such as central bank purchasing of debt and different magnitudes of fiscal stimulus need to be considered. The continued growth of non-productive credit relative to productive credit is a source of concern for policy makers (e.g., IMF, 2016).

#### **4. Consequences of debt shift**

Debt shift implies a change in the effects of private debt on the economy — on the growth, fragility, stability, and distribution of incomes. In this section, the mechanisms involved in each of these effects are discussed. Evidence is provided from the cross-country empirical literature and from the data.

##### *4.1 The Effect of Debt Shift on Leverage*

When a business loan is made, the economy's debt increases, but so does (with a lag) the sum of all incomes earned in the economy because of the productive use of the business loan. Debt used to finance production is an increase in the economy's debt but also in its income. The debt/income ratio in the economy (that is, its leverage) need not rise.

With an asset transaction like a mortgage loan, the economy's debt increases and its asset prices rise. But capital gains are a zero-sum game on the economy-wide level, different from the rise in profit and wages resulting from the business loan. An asset transaction in and of itself does not generate incomes (although it may increase spending out of capital gains). The process of realizing capital gains, by selling an asset dearer than it was bought, simply means that the counterparty must pay more for the asset, by giving up on other spending, or going into debt, or selling assets. Within the logic of double entry accounting, there are no other options. Therefore, capital gains do not increase the purchasing power in the economy, other than debt-financed purchasing power. Debt-

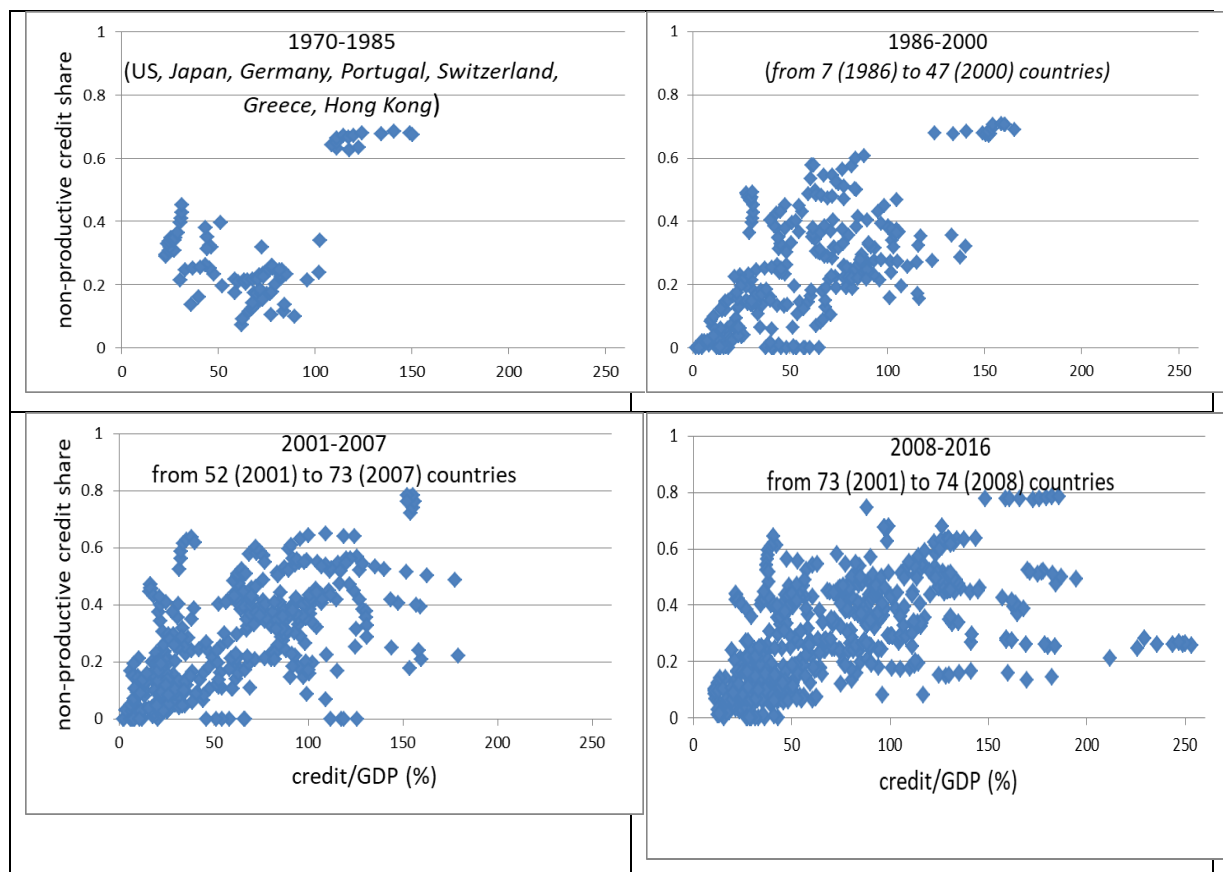
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<sup>1</sup> The debt shift in the US has yet to resume and may therefore be an exception to this observation though it should be noted that here 'bank credit' is an especially incomplete measure of total credit.

financed asset purchases increase the economy’s debt level, but not its incomes, pushing up the overall private debt/income ratio in the economy, which is its leverage.

Underlying the other macroeconomic effects discussed below is this one key consequence of the global debt shift: the rise in leverage. High private leverage slows down economic growth and it increases fragility, instability and inequality. Figure 4 illustrates that debt shift on average is associated with a larger credit/GDP ratio, which is the ratio of private debt to income. On the vertical axis is the share of non-productive credit in all private credit. Over four episodes, this share is strongly positively related to private leverage measured by the credit/GDP ratio in percent on the horizontal axis.

**Figure 4: Non-productive credit correlates to leverage, 1970-2016**



Source: own data described in Bezemer et al, 2016. Non-productive credit is household mortgages plus loans to nonbank financials .

Starting in 1970-1985, there are data for only seven countries and 63 country-year observations. The binary correlation between the non-productive credit share and

leverage is already .38. Six economies have leverage levels of less than 100% of GDP; Switzerland's is much higher. A much larger data set of up to 47 economies with 289 country-year observations is available for 1986 to 2000; the correlation between the non-productive credit share and leverage is now much higher, at .66. By the year 2000, Canada, Denmark, Germany, the Netherlands and Switzerland all have leverage levels above 100%. In 2001-2007, the credit boom years, the sample is much larger again with 74 countries at the end (449 country-year observations). Leverage rises significantly in many countries, lifting 14 economies above the 100% mark by 2007. The correlation with the non-productive credit share is similar to 1985-2000, at .63.

Strikingly, leverage has not fallen post-crisis in the 2008-2016 years either in the individual countries surveyed, or on average. Sixteen countries find themselves at private leverage levels above 100% in 2016; Cyprus is the outlier at 230%. The sample is practically balanced at 74 countries (656 observations) and the correlation with the non-productive credit share again is similar at .57. There is remarkable stability in the relationship over time. This is empirical support for the causal relation argued above: from the rise of non-productive credit shares to the growth of private leverage.

#### *4.2 The debt shift and Economic Growth*

To think through the effects of debt shift on economic growth (which is income growth), consider again the two typical loan transactions for productive and non-productive credit, respectively. In the business loan example, there is economic growth due to incomes generated from new production. Measured as GDP growth, this equals an increase in the value-added of final goods and services (the production-definition of GDP) and an increase in profit and wages (the income definition of GDP). In the mortgage example, there is no economic growth. Trading an existing asset in and of itself adds nothing to value-added, or to incomes. There may be second-round income effects and wealth effects due to rising house prices, but these are qualitatively small relative to the loan. Carroll (2011) estimates the immediate (next-quarter) marginal propensity to consume from \$1 change in US housing wealth at about 2 cents, and the final long-term consumption effect at around 9 cents.

By contrast, the marginal propensity to spend on goods and services out of a business loan is close to 100% if the loan is used to finance working capital, capital formation or

wages. This is a one-off effect on incomes of spending a loan, but it is continuously adding to incomes when the stock of loans is continuously expanding — the normal situation in market economies. In addition, there is the permanent effect on increased productivity as productive resources are reallocated or created with the help of finance. In these two ways, productive credit spurs income growth while unproductive credit does not. When banks shift the allocation of credit from the former to the latter, lower economic growth is the result. This is an obvious reason why the debt shift leads to lower growth. Another reason why debt shift decreases income growth is that it increases future leverage, which in and of itself slows down growth. Drehman, Juselius and Korinek (2018) show that the debt service effect of past lending depresses income growth, even without a financial crisis.

Empirical work confirms this. In Bezemer et al (2016), we estimate the effect of debt on economic growth for a sample of 36 economies over 1990-2012. The average variation (one standard deviation) in asset-market credit is associated with a 0.74 standard deviation decrease in the annual growth rate. In this sample, that equals a 1.83 percentage points decrease in growth — a sizeable loss relative to the average growth rate in this sample of 2.3 percentage points. In contrast, a one standard deviation increase in productive credit flows is associated with a 0.32 standard deviation increase in growth, which is equal to an additional 0.79 percentage point increase in growth in this sample. These numbers clearly imply that the debt shift decreases income growth.

Jordà et al (2014) also study mortgage debt, with the same result. Other studies focus on household debt versus business debt. Since overwhelmingly most household debt is mortgage debt, this is close to the definition of unproductive debt used here. All the cited studies show that household debt has weaker effects on income growth than business debt, or even negative effects — see Xu (2000), Büyükkarabacak and Krause (2009), Büyükkarabacak and Valev (2010), Beck et al (2012), Cournède and Denk (2015), and Drehman et al (2016, 2017).

## *4.2 Debt shift and Fragility*

Financial fragility is the damage (in terms of loss of income growth, for instance) that would result from a financial calamity, such as a banking crisis or a currency crisis to an

economy. Financial fragility can be measured in two dimensions. It increases when the probability that a crisis occurs rises, and it increases when the damage to incomes from a crisis, if one occurs, rises.

There are several reasons why the debt shift, and the attendant shift in motives to borrow, increases financial fragility along both measurements. One is that capital gains are more volatile than profits and wages. This raises the likelihood that future revenues from a loan used to finance an asset purchase will fall short of the level needed to cover the financial commitments that the loan projects into the borrowing unit's future. Also, when loans go bad in this scenario, this damages not only the borrower but also the bank that is a lender. The bank will restrict credit to other borrowers, increasing the likelihood of calamity for them as well.

In a recent paper (Bezemer and Zhang, 2018), we relate the debt shift (the change in the share of household mortgages in total bank credit before the 2008 credit crisis) to the severity of post-crisis recessions, across 51 economies. In Figure 5, the severity of post-crisis recessions can be observed as the depth and the duration of stagnations (or recessions). We computed the percentage peak-to-trough difference in quarterly GDP during the five post-crisis years 2007-2012, as a percentage of the initial level. This is a measure for macro-financial fragility. It correlates positively to our measure for a debt shift, the change in the share of household mortgages in total bank credit before the 2008 credit, as shown in Figure 5. As does the duration of post-crisis stagnations, computed as the number of quarters it took to recover to 2007 real GDP per capita levels (if at all).

There are many studies of growth in household debt (practically equal to mortgage debt) and its effect on fragility – more than can be discussed here.<sup>2</sup> Ours is the only study that examines a debt shift as a harbinger of post-crisis effects on growth rather than only a sign of pre-crisis financial fragility. The lesson from these papers is that private leverage increases financial fragility. This is important, but the point here is that a debt shift within private leverage increases financial fragility *more* than the rise in private leverage in aggregate and that this influences post-crisis growth paths. When we include both private leverage and a debt shift in one model explaining the costs of post-crisis stagnation across

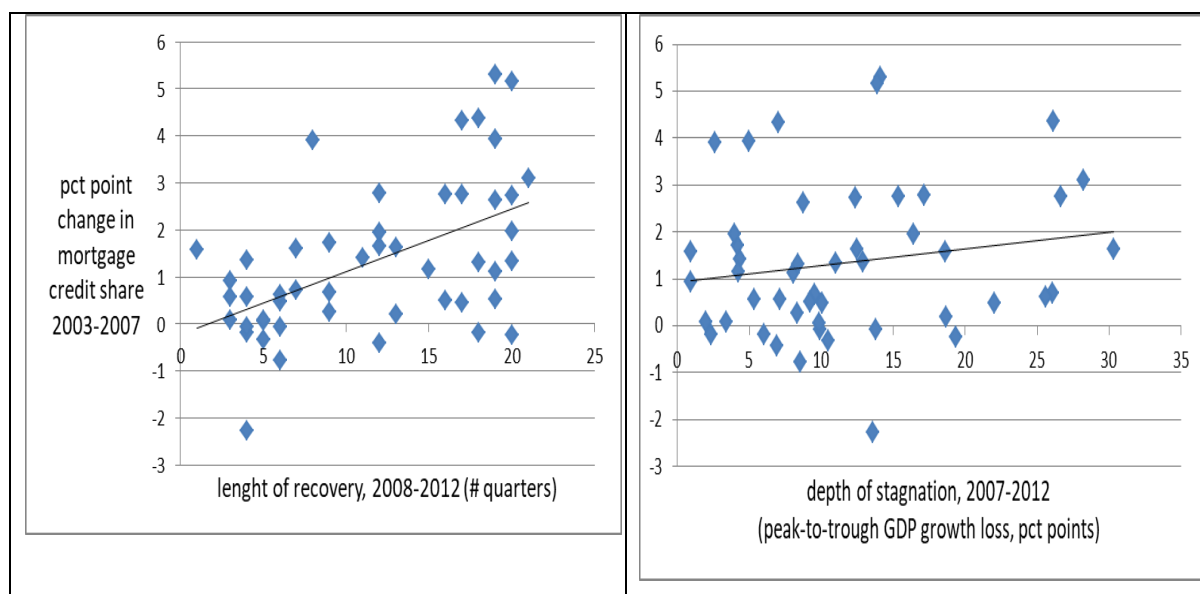
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<sup>2</sup> See Lane (2011), Rose (2011), Claessens (2010), Feldkircher (2014), IMF (2012, 2016), Lombardi (2017), Andre (2016) Berrak (2009, 2010), Jorda(2014), Jappelli (2008), Barba (2009), Obstfeld (2009), Frankel (2012), Sutherland (2012).



51 economies, debt shift is the statistically significant correlate of stagnation while total private leverage is not (Bezemer and Zhang, 2018). This is because the debt shift not only raises private leverage but also pushes the economy towards more “Ponzi-like” financing structures, which rely on continuously rolling over debt to maintain solvency.

**Figure 5: Debt shift Increases Financial Fragility**



Source: data reported in Bezemer and Zhang (2018). The large values for length of recovery include Denmark, Estonia, Finland, Italy, Japan, Luxembourg, the Netherlands, Norway, Portugal and Spain. The large values for depth of stagnation include Bulgaria, Estonia, Finland, Georgia, Greece, Russia and Turkey. Kyrgyzistan (52 pct points) is left out for visibility

### 4.3 Debt shift and Instability

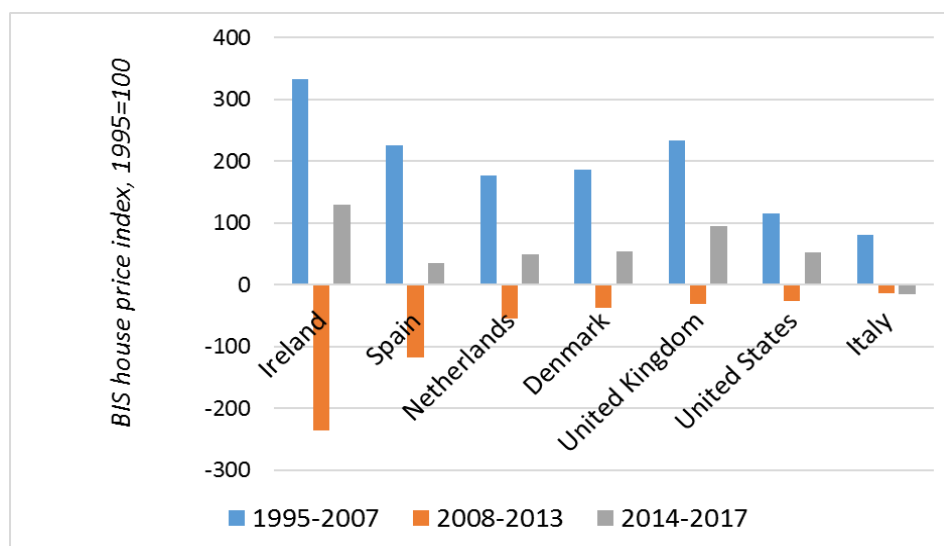
An economy is more unstable when upswings and downturns in its business cycle (measured in its output gap or its GDP growth) are larger. Instability is created in the boom phase, not in the bust (Minsky, 1975: 165). Market economies with sophisticated financial markets are inherently unstable because in the stable times, they encourage rising optimism, rising asset prices, rising risk appetite and rising leverage. This is how the stable times turn into boom times.

Asset markets are the linchpin of this process. These tendencies do not play out in the markets for goods and services or inputs and outputs. Markets for real estate, stocks, bonds, futures, and derivatives are where the rising returns are realized. These asset markets are the object of rising optimism and even euphoria in a boom. Their returns typically rise far above the gains that can be made from goods-and-services sales, and above productivity gains that can be realized in the real sector. The fundamental instability of capitalism is upward (Minsky, 1980:512) and the mechanism for this is located in asset markets, not in markets for goods and services.

The connection to the debt shift is clear. A debt shift is the increased channelling of financial resources to asset markets, with falling shares of debt going to goods and services markets. This is fuel first to the upward instability of asset markets themselves, and then to the economy's instability. Larger swings in asset markets cause larger swings in GDP growth, in two ways. In the boom, the *wealth effect* induces more consumption as households owning assets feel richer. As noted, this increase is small relative to the increase in debt during boom, but it can be large relative to the level of GDP growth. After the boom, *debt deflation* takes hold. Equity turns negative as asset prices fall. This constrains consumption and investment. Households increase their savings in response to an uncertain future and to pay off their debt. Firms postpone investment as profit levels fall. Banks rein in their lending to rebuild their balance sheets.

In sum, in so much as it increases the financing to asset markets, debt shift accentuates both GDP growth acceleration in the boom and GDP growth contraction (or decline even) in the bust. In economies with a large debt shift towards mortgage lending, the effect can be quite significant. Or as Leamer (2015) succinctly put it, "Housing Really Is the Business Cycle." Figure 6 illustrates this effect for six economies with large debt shift and high levels of non-productive credit (between 0.4 and 0.5). Housing markets here went through several boom-bust-boom cycles over the last few decades. The contrast is with Italy, where non-productive credit shares were low (around 0.2) and housing markets have been more stable.

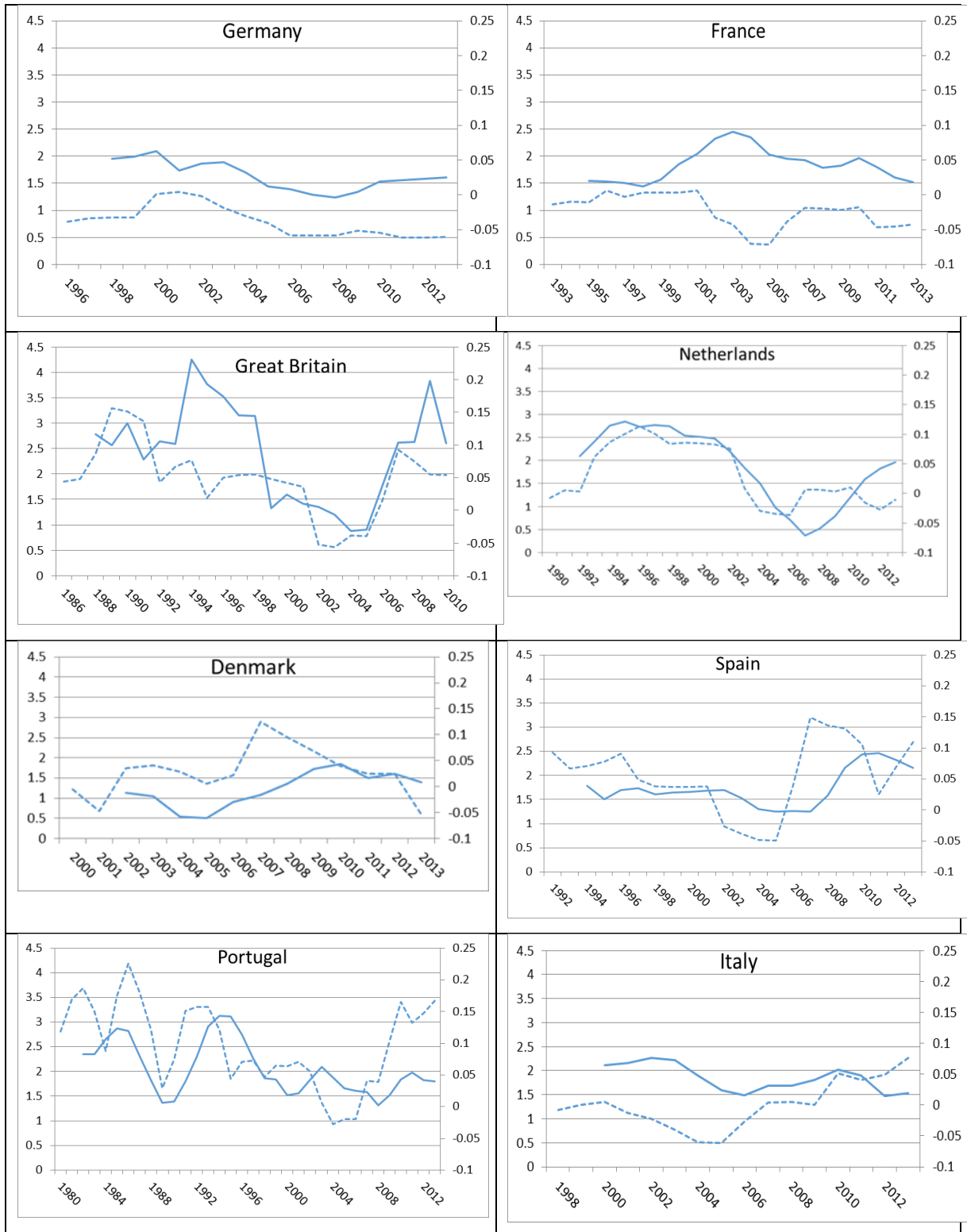
**Figure 6: The boom-bust-boom sequence in economies with debt shift: percentage change in the house price index.**



Source: BIS data

Booms and busts in asset prices induced instability in consumption and, since developed economies are consumption-driven, in the economy as a whole. The correlation between the debt shift and instability in consumption varies with the level of non-productive credit shares and the extent of debt shift along with other factors that fall outside the scope of this descriptive analysis, including trade balances, capital flows and financial market deregulation. Figure 7 provides an illustration for eight European economies. Since the relation is a long-run one, long (six-year) measures for consumption instability and for debt shift are shown. In Britain and (especially) the Netherlands, the link between debt shift and the instability in consumption appears tightest. But it is present in all the economies except France. The long data series for Portugal suggests that the link has held since the 1980s. The arguments and evidence here suggest that an economy wide debt shift increases instability, but no solid studies of a debt shift and instability exist, as of yet. This merits more analysis.

**Figure 7: Debt shift (solid curve, six-year rolling average, right hand axis) and consumption instability (dotted curve, six-year rolling standard deviation, left-hand axis)**

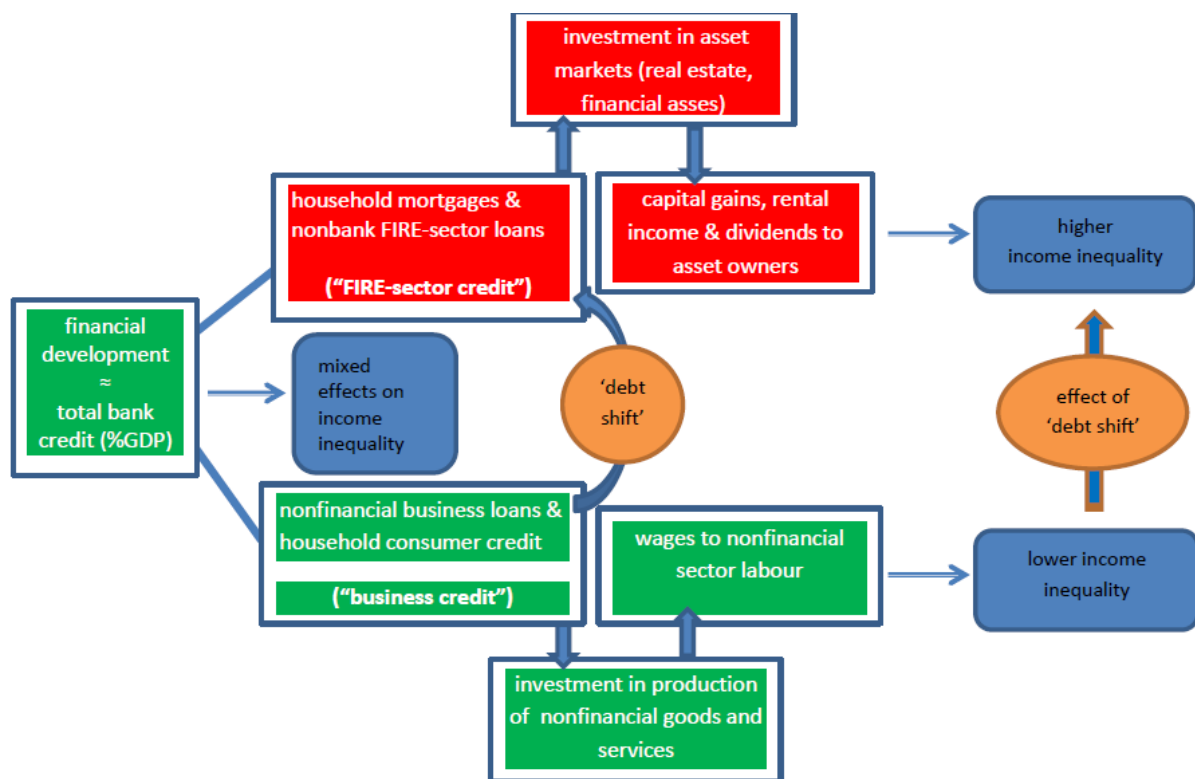


Source: own data described in Bezemer et al, 2016. UK data to be extended to 2016.

#### 4.4 Debt Shift and Income Inequality

The debt shift has consequences not just for the rate, fragility and stability of income growth, but for its distribution. In a boom driven by asset valuations, those who own assets free and clear gain the most, and they stand to lose the least from debt problems when the bust comes. That is why an asset market boom tends to accentuate income inequality. But wealth inequality also spurs a process that pushes up income inequality, as Figure 8 illustrates:

**Figure 8: Linkages between debt shift and income inequality**



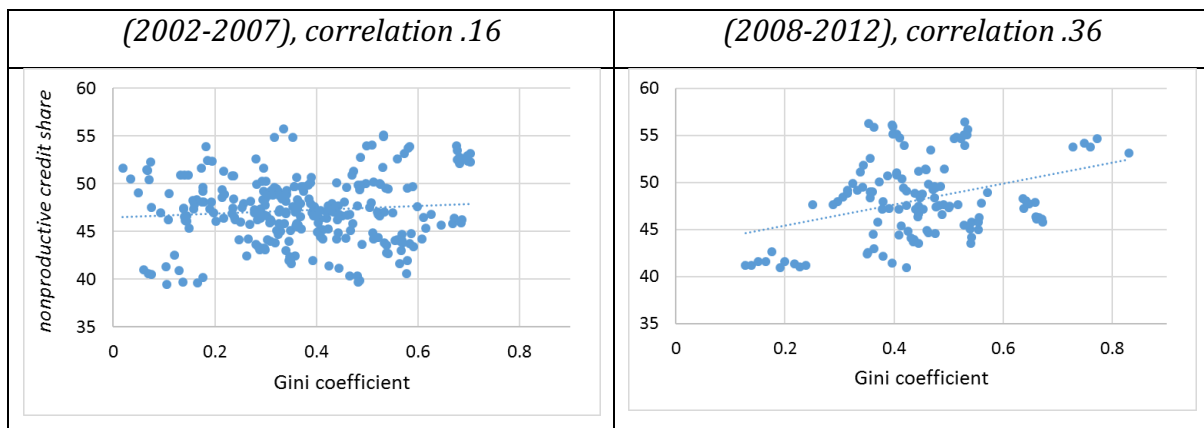
Source: Bezemer and Samarina (2018)

A debt shift with rising asset prices implies that capital ownership provides more income from capital to those who are already in the upper part of the income distribution. Changes in capital incomes account for the larger part of changes in income inequality, as Frassdorf et al (2011) show. Another mechanism by which debt shift increases inequality

relates to the fact that top income salaries are partly paid in the form of wealth titles (such as stocks) which rise in a general asset market boom. Typically, this disparity in wealth and income gains is not perceived as a problem while the boom lasts as everyone gains from it. But middle and lower incomes can only participate in a house price boom by going into mortgage debt, increasing their financial vulnerability. When the boom turns into the bust, they suffer most from the resultant negative equity. In addition, they bear the brunt of the larger damage falling asset prices inflict on the economy. For example, the effects of reduced investment and increased unemployment tends to fall more on wage-earning middle and lower incomes than on the higher incomes. Thus, debt shift increases income inequality during asset market downturns as well as asset market booms. The causes for that increase in inequality are created in the asset valuation upswings and rising leverage that precedes the downturn.

Figure 8 reports the correlations between non-productive credit as a share of all bank credit and income inequality measured by the Gini coefficient of pre-tax household income. The Gini coefficient takes value zero for perfect income equality and value one if one household earns all income in the economy. In this sample of 27 European economies, the correlation is small before 2007, and driven entirely by one country (Great Britain). But after the crisis, the correlation is large at .36 (.26 without Great Britain).. The debt shift has contributed to income inequality, once the asset market boom that it induces turns into an asset market downturn.

**Figure 9: Debt shift and inequality in Europe before and after the 2007 crisis**



*Source: data presented in Bezemer and Samarina (2018). The largest value for the nonproductive credit share is Great Britain. Non-productive credit is household mortgages plus loans to nonbank financials .*

In Bezemer and Samarina (2018), we analyze these interlinkages for 27 European economies over 1990-2012. Clearly, a number of other factors come into play in a full analysis of inequality, including financial flows and trade, education levels, government expenditure patterns, unionization and structural change. This is not a simple relationship; but accounting for these factors, we provide evidence that the debt shift has contributed to the rise in equality in Europe.

## **5. Concluding Remarks**

This paper has introduced the concept of a ‘debt shift’: the shift in the use of private debt, away from supporting production and towards facilitating asset market transactions. As the data shows, this debt shift has been ubiquitous during the last decades and in most economies. This has resulted in increases in financial fragility on the macroeconomic level, slower and more volatile growth, and greater income inequality.

These results underscore the importance of research on the allocation of private credit complementing the large body of research on the aggregate level of private credit. The distinction between productive and unproductive debt proposed in this paper is not a perfect one, and other distinctions in the use of credit will be useful. The substantial macro-economic effects of the differences in credit allocation, and of a debt shift over time, imply that this kind of research would be invaluable for deepening our understanding of the relation between private debt and economic growth, macro-financial fragility, and inequalities of income and wealth.

Further research would require central bank statistical departments to produce more detailed data on private credit. Most central banks monitor the growth of bank debt by industrial sector, but most do not make this data public. The BIS data series started in 2014, which report debt by institutional sector (firms versus households), constitutes a very large improvement in reporting standards. Credit data reported by industrial sector would be a useful next step.

Policy makers would benefit from integrating these new findings on private credit allocation into decision making. While well-functioning mortgage markets are essential, there is now much evidence that mortgages have generally become too much of a good thing. The fact that credit is also debt, and all the consequences this implies, is now widely accepted. What is not yet generally appreciated is that there is a more general distinction that needs to be made between debt used to support asset markets and debt used to support the productive sector? The uses of debt, categorized along this dimension, matter greatly to achieving policy objectives including stable income growth and financial stability.

There is no reason not to use research findings in this area for bank regulation and macro-prudential policy rules, just as is already done for capital buffers and liquidity ratios. Like capital buffers, credit allocation is not something that can be left to the market without adverse effects. Detailed and timely research and monitoring of a debt shift will assist policy makers in formulating adequate frameworks to support an allocation of credit that serves the economy's needs.

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