On the role of safe asset shortages in secular stagnation

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The secular decline in real interest rates over the last two decades indicates a growing shortage of safe assets – a shortage that became acute during the Global Crisis. Given the still-depressed levels of real rates and the sluggish investment recovery, this chapter conjectures that the shortage of safe assets will remain a structural drag on the economy, undermining financial stability and straining monetary policy during contractions. Under these conditions, an additional important aspect of public infrastructure investment is the government's ability to issue safe debt against such projects.

Introduction

In recent years a confluence of factors – ranging from the rise of international reserve holdings to institutional mandates, regulation, and demographic factors – has led to a steady rise in the demand for safe assets. The supply of safe assets has not been able to keep pace. The unmistakable signature of the growing shortage of safe assets at any given (safe) real interest rate is the secular downward trend in equilibrium real interest rates for more than two decades (see Figure 1).

Figure 1   US real interest rates
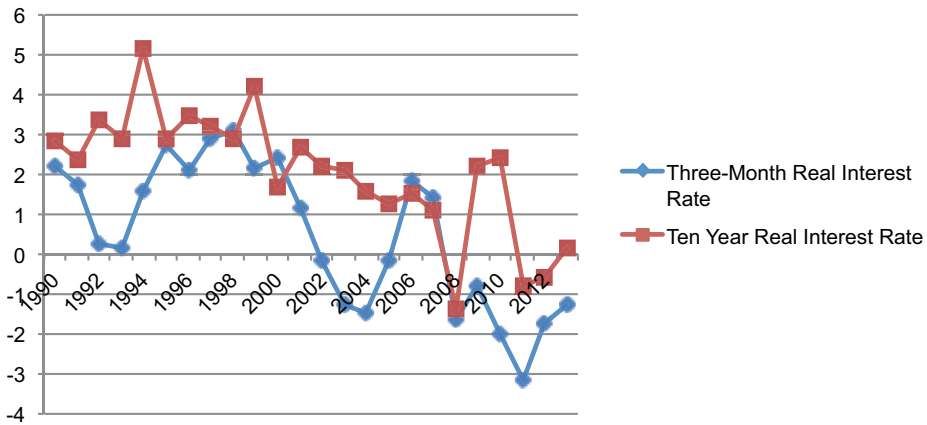
The steady rise in the demand for safe assets over this period was behind a wide variety of macroeconomic phenomena such as the global savings glut, the so-called Greenspan conundrum of the mid-2000s, and their contemporaneous global imbalances.[1] It was also a powerful macroeconomic force driving the financial engineering required to create safe asset tranches from subprime mortgages before the Global Crisis (e.g. Caballero 2009).

What was already a significant phenomenon before the Subprime Crisis turned into an acute shortage at the onset of the Global Crisis, pushing real interest rates down to new lows. While it is difficult to pin down a specific definition of safe assets, there have been several recent attempts to measure the impact of the crisis on the supply of safe assets. For instance, a 2012 study by Barclays concludes that the world supply of safe assets collapsed from 37% of world GDP in 2007 to about 18% by 2011. This contraction was primarily driven by the sudden reassessment of the riskiness of US residential mortgages and European periphery sovereign debt (see Table 1).[2]

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1   We developed some of these arguments in Caballero et al. (2006, 2008).
2   See also IMF (2014).

Table 1   Strong decline of safe assets from 2007 to 2011

	USD bn		% of world GDP	
	2007	2011	2007	2011
US Federal government debt held by the public	5,136	10,692	9.2%	15.8%
Held by the Federal Reserve	736	1,700	1.3%	2.5%
Held by private investors	4,401	8,992	7.9%	13.3%
GSE obligations	2,910	~~2,023~~	5.2%	~~3.0%~~
Agency- and GSE-backed mortgage pools	4,464	~~6,283~~	8.0%	~~9.3%~~
Private-issue ABS	3,901	~~1,277~~	7.0%	~~1.9%~~
German and French government debt	2,492	3,270	4.5%	4.8%
Italian and Spanish government debt	2,380	~~3,143~~	4.3%	~~4.7%~~
Safe assets	20,548	12,262	36.9%	18.1%

Note: Numbers are struck through as they are believed to have lost their 'safe-haven' status after 2007
Source: 2012 Barclays Equity Gilt Study.

As the economy recovered, the safe asset shortage and some of its consequences abated. However, it is our conjecture, partly based on the still depressed levels of real interest rates among the major economies and the sluggish investment recovery, that this shortage remains a latent factor that could re-emerge in full force during the next severe downturn. It is in this sense that our discussion connects to the 'secular stagnation' theme of this eBook.

There is a benign view of safe asset shortages. Increases in the demand for safe assets and decreases in the supply of safe assets push down the natural real interest rate. This virtuous mechanism equilibrates the safe asset market as long as central banks accommodate this decline in natural real interest rates by lowering nominal interest rates. But this adjustment breaks down when nominal interest rates hit the zero lower bound. At this tipping point, perverse mechanisms swing into action, resulting in economic recessions.

Safety traps

In a recent paper (Caballero and Farhi 2014), we take the view that a safe asset is one that is expected to preserve its economic value following bad macroeconomic shocks. We provide a simple model to illustrate how a chronic shortage of safe assets can push the economy up against the zero lower bound and weaken the effectiveness of some of the standard market mechanisms and policy responses that could stimulate a depressed economy. We refer to this situation as a 'safety trap', to emphasise both its similarity and its difference with conventional liquidity trap analyses.

Both safety and liquidity traps involve severe asset shortages, zero nominal interest rates, wealth destruction, deficits in aggregate demand, and recessions. But the distinguishing feature of safety traps is that they are shortages of a particular kind of assets: *safe assets.*

This distinction is important because the corresponding financial bottleneck is harder to fix. It is extremely difficult for the corporate and financial sector of a shell-shocked economy to produce such assets. Moreover, as we will discuss below, policies aimed at stimulating aggregate demand by boosting generic wealth, such as forward guidance, have less traction than in conventional liquidity traps. By the same token, potential market mediated solutions, such as the emergence of speculative bubbles, are also less effective.

Safe public debt and unconventional monetary policy

Safe public debt (and 'helicopter' money) plays a central role in a safe asset shortage episode, as typically the government owns a disproportionate share of the capacity to create safe assets. As long as the economy is at the zero lower bound, public debt can be increased at no fiscal cost. However, taxes are eventually needed to pay down the debt

when interest rates become positive again.[3] One way or another, safe assets created by the government are backed by taxes. These taxes might crowd out private safe assets – a Ricardian equivalence of sorts – but this full offset is unlikely to occur in the aftermath of a financial crisis when the securitisation capacities of the economy (understood to be the physical, institutional, legal, and reputational resources that are required to isolate safe financial assets from risky real assets) have been impaired.[4]

The key concept then is that of fiscal capacity *during future times of distress*. How much public debt can the government credibly commit to honouring *should a major macroeconomic shock take place in the future?* As long as the government has the spare fiscal capacity (in this extreme event sense) to back safe asset production, it can increase the supply of safe assets by issuing public debt. This reduces the root imbalance in financial markets and stimulates the economy.

The proceeds of the extra public debt issuance can be rebated to consumers. An attractive alternative is for the government (through the treasury or the central bank) to buy risky assets, which, for a given fiscal capacity, allows the government to issue more safe public debt. QE1 in the US, LTRO and TLRTO in Europe, as well as many other lender-of-last-resort central bank interventions, can be broadly characterised as swapping private risky assets for safe public debt. These unconventional monetary policies alleviate the shortage of safe assets and stimulate the economy.

Another popular unconventional monetary policy tool at the zero lower bound is forward guidance, which is most commonly understood as a commitment to low interest rates in the future *when the economy has recovered*.[5] It turns out that forward guidance is of limited effectiveness during safety traps. While low interest rates do increase asset values, wealth, and hence aggregate demand and output *once the economy recovers*,

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3   The same argument applies for helicopter money. The government needs to raise taxes to buy back part of the money stock when nominal interest rates become positive in order to stabilise the economy.

4   In fact, an intriguing post-crisis development is that the money multiplier M2/M0 has declined substantially. Part of this decline is probably due to increased banking regulation and capital requirements, raising the possibility that the post-crisis equilibrium will require a higher amount of M0 (Chatterjee and Wynne 2014).

5   An alternative strategy at the zero lower bound is 'unconventional fiscal policy', which uses time-varying taxes to reduce real interest rates (Correia et al. 2013).

the anticipation of a potential upward effect of low future interest rates on asset values has no effect on asset prices today, and therefore fails to increase the value of risky assets, wealth, aggregate demand and output in a safety trap, simply because it does not increase the value of safe assets. The reason stems from our working definition of a safe asset as an asset that preserves its value during future distress, not just during a potential recovery. Any future increase in the value of risky assets in a state of recovery that is not accompanied by an equivalent increase in a state of distress is mostly dissipated in a rise in risk premia.[6]

In practice, the dividing line between safe and risky assets is of course not as stark. As a result, forward guidance always increases the value of some assets and provides some stimulus. During the most severe phase of a crisis, the safe category is reduced to the absolute safest assets. All excluded assets decrease in value, and forward guidance is least effective. Asset values recover as the flight to safety eases, and forward guidance regains some kick.[7]

Bubbles

Low interest rate environments are known to be prone to speculative episodes and the emergence of financial bubbles. In a conventional liquidity trap environment, financial bubbles increase wealth and asset values, alleviate the shortage of assets, and stimulate the economy. Financial bubbles that are large enough can even increase the natural interest rate above zero and altogether eliminate the liquidity trap. But the stimulus is

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6   In a liquidity trap, forward guidance stimulates aggregate demand through the combination of a wealth effect and a substitution effect via inflation and lower real interest rates (e.g. Krugman 1998, Eggertsson and Woodford 2003, Werning 2012). The strength of the substitution effect increases with the slope of the Phillips curve – which lately appears to be very flat – and hence with the flexibility of prices or wages. At the limit where inflation is independent of the output gap (when prices or wages are entirely rigid), the substitution effect disappears and only the wealth effect remains. Comparing a safety trap to a liquidity trap, we have argued in the main text that the wealth effect is muted. For this reason and because of the reduced incentive for forward-looking agents to increase their prices or wages in anticipation of higher output when the economy recovers (because these states are more heavily discounted), the substitution effect is also weakened.

7   Following this logic, one can account for the rise in risky financial assets (equity, in particular) during the US recovery from the crisis. Importantly, Hall (2014) argues that risk premia applicable to capital formation have remained high, contributing to the sluggish recovery.

temporary: the economy returns to the zero lower bound as soon as the bubble bursts, echoing some arguments in Summers' (2013) rekindling of the 'secular stagnation' concept. A financial bubble can therefore arise as an imperfect market solution to a shortage of financial assets. The solution is no panacea because it is temporary and comes with risks to financial stability.[8]

The cost-benefit ratio of financial bubbles worsens in safety traps, as the expansionary effects of financial bubbles are weakened. Because bubbles are risky, they do little to increase the supply of safe assets and, hence, to alleviate the shortage of safe assets that plagues the economy. They mostly end up crowding out other private risky assets, leaving wealth, demand, and output largely unchanged.

The mechanism

To gain a better understanding of the basic mechanics of safety traps, it is useful to think about an economy with two types of agents: *neutrals* and *Knightians*. Neutrals are risk-neutral; Knightians are infinitely risk-averse. Real assets come in the form of Lucas trees, which are claims to a risky dividend that can increase or decrease with some probability. The securitisation capacity of the economy determines the fraction of these real assets that can be securitised into risky and safe financial assets (financial assets that stay constant in value when the economy is hit by a shock). In equilibrium, Knightians hold the safe assets, while neutrals hold the risky assets.

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8   In Caballero et al. (2006), we outline how 'speculative growth' paths that look like temporary bubbles associated with investment booms could arise endogenously and take the economy to a different equilibrium with a higher capital stock and higher output. Along these paths, potential output increases but natural interest rates decrease, which could eventually trigger liquidity-trap- and safety-trap-like mechanisms and result in output below its increased potential level.

Figure 2   Supply and demand for safe assets as a function of the real interest rate
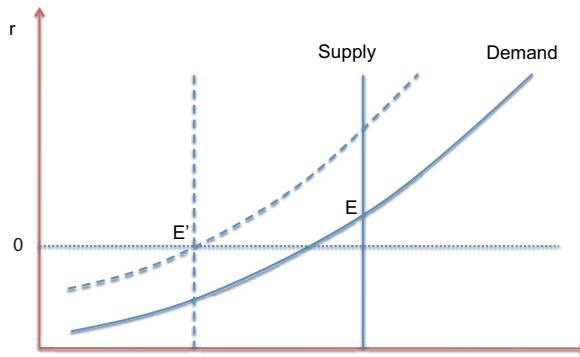
Notes: The initial equilibrium is at point E. The dashed lines illustrate how an exogenous reduction in the supply of safe assets pushes the economy against the zero lower bound. Equilibrium is restored at point E' by an endogenous reduction in the demand for safe assets associated with a recession.

Figure 2 represents equilibrium in the safe asset market. The demand for safe assets (Knightian wealth) increases with the real interest rate because a high real interest rate increases the growth rate of safe wealth. Higher precautionary savings, mandates and regulation forcing higher holding of safe assets, and increased demand for reserves from emerging markets would shift this curve to the right. For simplicity, the supply of safe assets is assumed to be independent of the real interest rate (this is not essential to the argument). Heightened perceptions of macroeconomic risk, impairments to the securitisation capacity of the economy, and tighter regulation restricting the private creation of safe assets would shift this curve to the left. The initial equilibrium is at point E with a positive real interest rate.

Now consider a decrease in the supply of safe assets (the argument is similar for an increase in the demand for safe assets), captured by an *exogenous* leftward shift in the supply curve. Equilibrium in the safe asset market is restored by a reduction in real interest rates. With strong price or wage rigidities, this adjustment can only occur through a reduction in nominal interest rates.[9] When nominal interest rates reach the zero lower bound, further reductions cannot take place. At zero nominal interest

9   This remains true if prices or wages are sticky but not entirely rigid as long as the central bank adheres to a constant inflation target.

rates, there is excess demand for safe assets and excess supply of goods (insufficient aggregate demand). Because of the deficit in aggregate demand, output and income decrease, further reducing aggregate demand, and so on, generating a recession. The recession lowers Knightian wealth at any given real interest rate, *endogenously* shifting the demand curve for safe assets to the left. Equilibrium in the safe asset market is restored when the reduction in Knightian wealth matches the initial reduction in the supply of safe assets at point E'.[10] In parallel, risk premia adjust to clear the market for risky assets at a lower level of neutral wealth and a lower value of risky assets. This perverse equilibrating mechanism is the essence of a safety trap.

In this simple model, when the economy falls into a safety trap, output is entirely determined by equilibrium in the safe asset market. Output can only be stimulated by reducing the demand for safe assets or by increasing their supply. This is exactly what issuing safe public debt or swapping private risky assets for safe public debt accomplishes. By contrast, forward guidance and financial bubbles have no effect on the supply of or demand for safe assets. Hence they have no effect on output, and even no effect on the value of neutral wealth or the value of risky assets. Instead, they move risk premia. Obviously, these stark results are unlikely to hold in such extreme form in practice. But they provide a sharp illustration of some important limits to the effectiveness of the corresponding mechanisms.

Implications for the supply side of the economy and for financial market incentives

In the core of this chapter, we focused on the aggregate demand-side problem caused by a chronic shortage of safe assets, but surely there are important supply-side implications of this deficit as well.

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10 To the extent that prices and wages are sticky but not entirely rigid, inflation might decline, increasing real interest rates, requiring a further endogenous decline in the demand for safe assets, and creating a deeper recession. This logic applies as long as the central bank is unwilling or unable to increase its inflation target above the opposite of the (negative) natural real interest rate – a solution that, if feasible, would altogether eliminate the safety trap but would come with its own side-effects and limitations.

On one hand, safe asset shortages shape corporations' capital costs and create incentives to cut back on risky investment and to either accumulate cash, return money to investors through equity buybacks and dividend payments, or substitute towards safer or easier-to-securitise forms of investment, sacrificing output for safe asset production.

On the other hand, safe asset shortages also create strong incentives for the financial system to engage in subprime-like forms of financial engineering, which can be thought as the process of extracting a 'safe' tranche from inherently risky loans backed by systemically exposed real estate collateral. And as the recent crisis demonstrated, this process can go to extremes, leading to waves of 'fake' safe asset creation, followed by sudden and violent episodes of collective realisation of their actual riskiness.

Conclusion

Absent major financial innovations or changes in economic agents' and institutions' preferences and mandates, the shortage of safe assets is likely to worsen over time, perhaps as a latent factor during booms only to re-emerge in full force during contractions. It is our conjecture that the shortage of safe assets will remain a structural drag, pushing down real interest rates, putting pressure on the financial system, and straining monetary policy during contractions.

Absent these changes, there is a significant need for policy intervention. Other chapters in this eBook will surely address the potential role of public infrastructure investment. From our point of view, an additional important aspect of such policy is the government's ability to issue safe debt against such projects.[11]

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11 In this sense one could imagine a situation where the real investment could in part be undertaken by the private sector, catalysed by public support in the creation of the debt associated to such investment. See Caballero and Kurlat (2009) for a proposal of public private partnerships in financial asset creation.

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