

Creating zombies and disinflation – A *cul de sac* for accommodative monetary policy

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I. Prevailing critiques of ultra-accommodative monetary policy

Following the global financial crisis of 2007-09, central banks of the developed economies adopted a highly accommodative monetary policy stance and experimented with unconventional tools such as large-scale asset purchases or quantitative easing, long-term liquidity provision, and recently, negative interest rates. These policies have been subject to several criticisms, as in many economies where such accommodation was undertaken, inflation and growth outcomes have been far short of the purported policy effects.

Prevailing critiques of ultra-accommodative monetary policy include (not exhaustively so): creating financial instability by enhancing risk-taking incentives or a search-for-yield in the financial sector; subsidizing corporate leverage and shareholder payouts rather than inducing a spurt in real investments; lowering bank profitability and weakening the transmission of monetary policy to bank borrowers; and, in the absence of significant trickle-down effects, altering the redistribution of wealth between savers and borrowers.

These are all compelling concerns.¹ However, today I wish to offer an even more striking critique *that ultra-accommodative monetary policy might have worked against its own objectives of restoring inflation and growth.*

II. Can accommodative monetary policy lead to disinflation?

In my joint work with Matteo Crosignani, Tim Eisert and Christian Eufinger (Acharya et al., 2019b), we propose that accommodative monetary policy can in fact lead to disinflation via a “zombie credit channel.” This channel suggests that in an environment with a weakly-capitalized banking (in general, financial) sector, accommodative monetary policy can lead lenders to extend cheap credit to their impaired borrowers, a phenomenon known as “loan ever-greening.”² By preventing the default of non-viable companies, loan ever-greening creates excess capacity in the economy, and thereby, a disinflationary pressure.

¹ See, for example, Acharya and Plantin (2016, 2019), on the first two concerns; Brunnermeier and Koby (2018) and Brunnermeier and Sannikov (2013) on the latter two concerns; and Rajan (2013) for an early critique.

² See Kane (1989) for evidence of zombie lending during the Savings and Loans debacle and bailout in the United States; Peek and Rosengren (2005), Caballero et al. (2008) and Giannetti and Simonov (2013) for Japan, and Acharya et al. (2019a) for Europe.

In other words, *accommodative monetary policy in the presence of a weak financial sector creates zombies and disinflation, working precisely against its mandated objective of raising inflation when it is below the target levels. By preventing the entry of more efficient firms that can replace the zombies, such accommodation also lowers the economy's productivity, thereby also defeating its secondary (possibly also mandated) objective of supporting growth.*

These effects then lead to a *cul de sac* problem for accommodative monetary policy: a central bank – that overlooks the fact that its own monetary policy causes or contributes to the zombification of the economy with associated disinflationary forces – doubles down and accommodates even more, potentially with unconventional tools, when future inflation and growth prints continue to turn out weak; this way, the central bank ends up being essentially trapped by its own past errors or miscalculations in having been ultra-accommodative.

Let me make this case with Europe as an illustrative example.

III. The case of Europe

Ten years after the global financial crisis, Europe's economic growth and inflation rate remain depressed. This recent evidence bears a striking resemblance to Japan's "lost decades" in the aftermath of its banking and real estate crisis in the early 1990s. Similar to the Bank of Japan's crisis response, the European Central Bank (ECB) adopted the canonical theory of *demand-side* stimulus effect, implementing lower interest rates (and massive quantitative easing programs) to encourage more investment and consumption, hoping that this will lead to a surge in inflation.

The ultra-accommodative central bank policies in Europe, together with a search-for-yield behavior and zombie lending by undercapitalized banks, collectively pushed borrowing costs for European firms (and sovereigns) to record lows, even for the risky ones. In particular, since 2012 the average yield on European corporate junk bonds has dropped by roughly two-thirds (with some junk bonds even trading at sub-zero yields), while the ECB's cost-of-borrowing indicator for corporate loans more than halved.[1]

However, despite this intended effect of a significant drop in firms' funding costs, inflation in the Eurozone has not picked up as expected. In ECB Chairman Mario Draghi's own words,

"[A]lthough we have seen the successful transmission of monetary policy to the financing conditions, and from financing conditions to GDP and employment, the final legs of the transmission process to wages and inflation have been slower than we expected. Wage growth is now strengthening as slack in the labor market diminishes. But the pass-through from wages to prices remains weak."[2]

This broken transmission from monetary policy to consumer prices has come to be known as Europe's "missing inflation puzzle" (see, e.g., Constâncio, 2015). Acharya et al. (2019b) help resolve this puzzle by documenting and highlighting that ultra-accommodative monetary policy in Europe has also had unintended consequences in the form of

- (i) creating zombie firms (more generally, zombie borrowers including sovereigns), and, thereby
- (ii) creating disinflation.

III.1 Creating zombie firms

A systematically undercapitalized banking system that obtains cheap liquidity, e.g., through accommodative monetary policy, inevitably causes a loan ever-greening, or zombie lending, problem. This implies that

- Undercapitalized banks with ample liquidity have an incentive to roll over loans to existing impaired borrowers at highly advantageous or super-subsidized loan rates, rather than make fresh loans to healthier borrowers.
- In turn, the cheap zombie loans provide impaired borrowers enough liquidity to meet their payments on outstanding loans, allowing banks to avoid a rise in loan defaults and postpone the recognition of deteriorating asset quality and capital erosion in an accounting or regulatory sense (but not in an economic sense, as reflected in the low market-to-book ratios of equity of undercapitalized banks).

A vivid example of the severity of such zombification of the European economy is the evolution of the fraction of firms that were not able to meet their current interest expenses out of their operating cash flow, yet received debt financing with an interest rate of on average less than 1%. As shown in Figure 1a, the fraction of these zombie firms increased between 2012 and 2016 by roughly 2pp from 4.5% to 6.5%, starting with the ECB's extensive accommodation via liquidity facilities against hitherto ineligible risky collateral and the promise to do *whatever it takes* in the form of outright monetary transactions (OMT) to purchase risky sovereign debt.

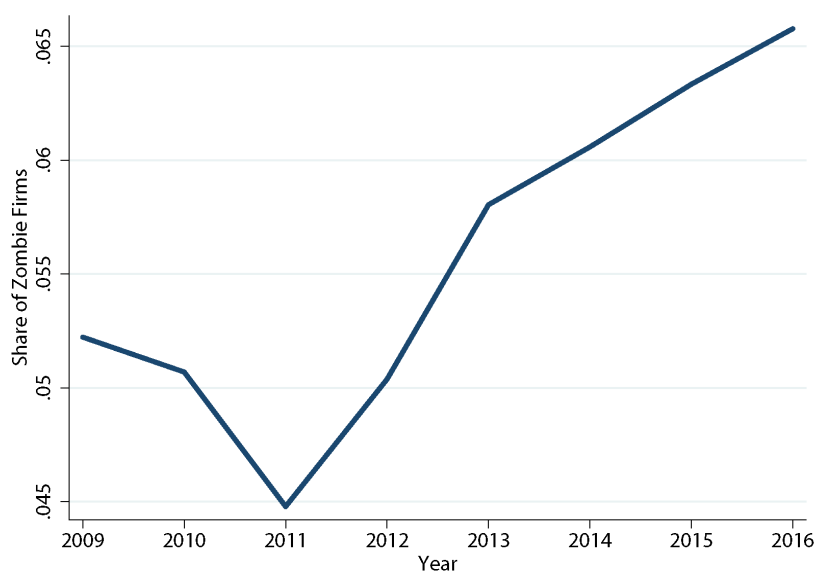


Figure 1a. Zombie Growth. This figure shows the asset-weighted share of zombie firms on the left axis. A firm is classified as a zombie if it is low-quality (i.e., above median leverage and below median interest coverage ratio) and receives subsidized credit (interest expenses/debt smaller than that of the highest quality firms in a given year). Source: Acharya et al. (2019b).

Figure 1b shows that the performance of such zombie firms remained poor (cash reserves fell, leverage rose, employment growth stagnated, and investment fell) relative to other firms, even after the zombie firms received super-subsidized credit from undercapitalized banks, confirming that these firms were dealing with fundamental economic or solvency problems.

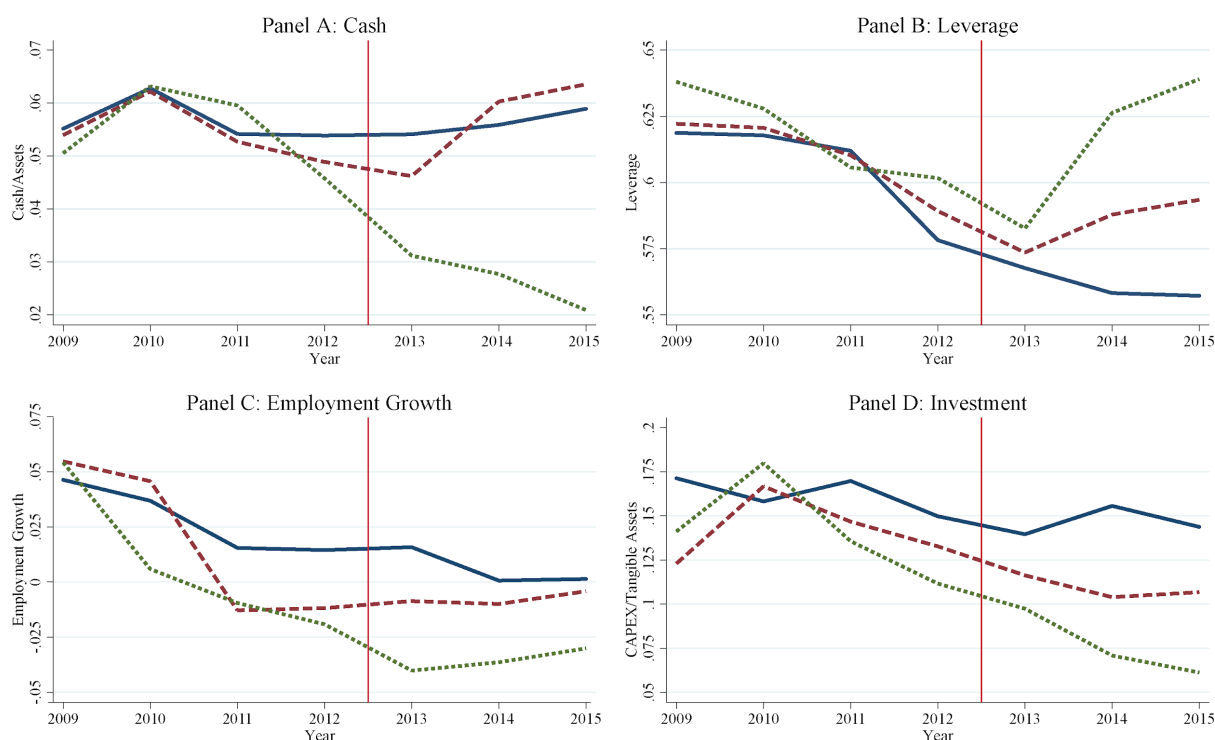


Figure 1b. Zombie Performance. Panel A shows the evolution of cash holdings as a fraction of total assets, Panel B the evolution of leverage as a fraction of total assets, Panel C the evolution of employment growth rates, while Panel D shows the evolution of capital expenditures as a fraction of tangible assets. Borrowers are split into three groups: High-IC ratio firms (blue solid line), low-IC ratio non-zombie firms (red dashed line), and zombie firms (green dotted line). A firm is classified as high-IC (low-IC) ratio firm if its 2009-2011 median IC ratio is above (below) the country-specific 2009-2011 median interest coverage ratio. The vertical line marks the OMT announcement period in 2012Q3. Source: Acharya et al. (2019a)

III.2 Creating disinflation

The glut of cheap credit and liquidity following the ECB's ultra-accommodative monetary policy appears to have thus prevented a *creative destruction* or normal competitive dynamics in which impaired unproductive firms are driven out of the market or at least significantly lose their market share to existing healthy firms and efficient new entrants.³

Did the resulting excess production capacity in European industries that witnessed a proliferation of zombie firms put downward pressure on producer prices, and, ultimately, depress consumer price inflation levels?

Yes, according to Acharya et al. (2019b). The authors use a new inflation and firm-level data set that covers 1.1 million firms in 11 European countries across 65 industries during the period of 2010 to 2017. The analysis highlights that the rise of zombie firms and the reversal of the

³ For example, in its 2016 annual study of European defaulted non-financial corporate debt, Standard & Poors reports that default rate decreased from roughly 6.5% at the end of 2012 to almost 1% by the end of 2015.

inflation dynamics coincide with the time when the ECB reduced the deposit facility rate to zero and launched massive accommodative policy measures (see Figure 2a).

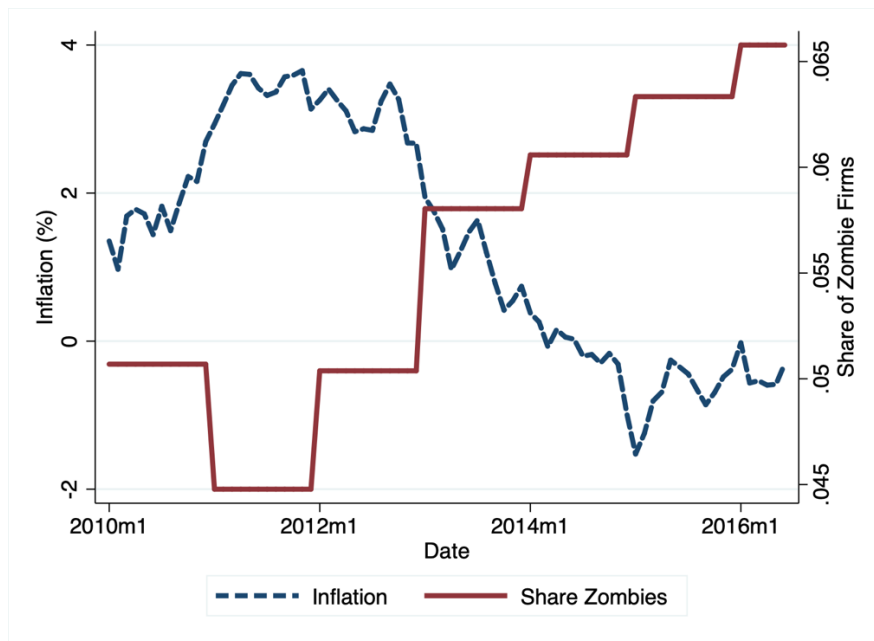


Figure 2a. Zombie Credit and Inflation. This figure shows the year-over-year (yoy) growth of the Consumer Price Index (CPI) on the left axis and the asset-weighted share of zombie firms on the right axis. A firm is classified as zombie if it is low-quality (i.e., above median leverage and below median interest coverage ratio) and receives subsidized credit (interest expenses/debt smaller than that of the highest quality firms in a given year). *Source: Acharya et al. (2019b)*

In the cross-section of industries and countries, Acharya et al. (2019b) show that industry-country pairs, or “markets”, with a larger increase in the fraction of zombie firms had initially a higher CPI growth (see Figure 2b). However, starting in mid-2012, these zombie markets experienced a stronger decline in CPI growth compared to markets with a less pronounced increase in the share of zombie firms.

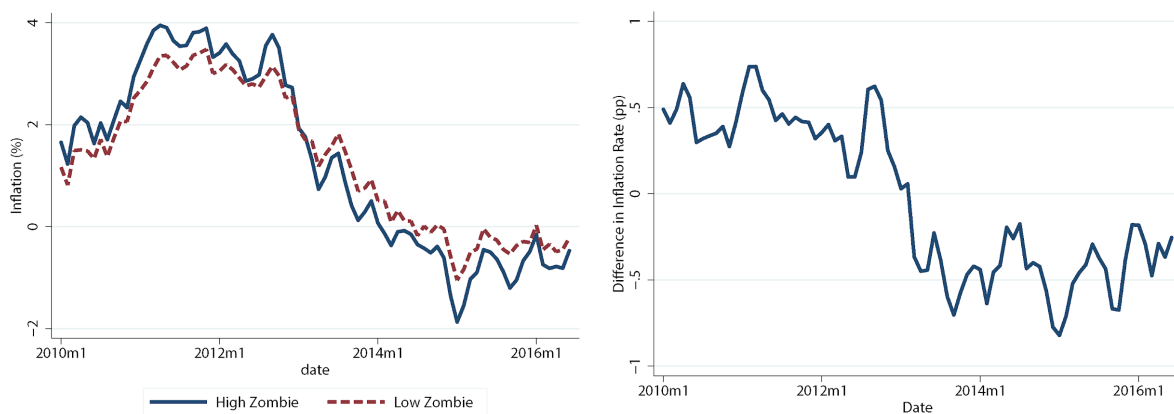


Figure 2b. Inflation. The left figure shows inflation (yoy CPI growth) at monthly frequency for markets that saw an above median increase in the asset-weighted share of zombie firms between 2009 and 2014 (High Zombie Growth) and firms with a below median growth in the share of zombie firms (Low Zombie Growth). The right figure shows the difference between the CPI growth of High vs Low Zombie Growth industries. *Source: Acharya et al. (2019b)*

In line with other predictions of the impact of the zombie credit channel, zombie markets experienced:

- fewer firm defaults,
- higher aggregate sales growth,
- a higher number of active firms,
- lower average markups, and
- lower inflation

than markets with a smaller increase in the prevalence of zombie firms. Observing a positive correlation between zombie growth and sales growth helps rule out that the effect of zombie growth on inflation is purely driven by lower demand in markets with a greater fraction of zombie firms.

Moreover, Acharya et al. (2019b) show that markets that experienced a larger rise in the fraction of zombie firms subsequently have

- lower average investment,
- lower productivity, as well as
- higher input costs (i.e., material and labor costs)

than markets with a lower rise in the zombie firm fraction.

The negative correlation of the extent of zombification with investment and productivity again confirms that cheap credit is extended to actual zombie firms and not to firms that are only temporarily weak. More firms competing for the same factor inputs drives up their price, which explains the positive correlation between the rise in zombie firms and input costs.⁴

III.3 Spillovers to healthy firms

Finally, Acharya et al. (2019b) document that the increased presence of zombie firms in a market had negative spillover effects on healthy firms in that market. In particular, healthy firms competing with a higher share of zombie firms have lower markups, investment and sales growth, as well as higher input costs, compared with healthy firms competing with a lower share of zombie firms. These correlations are consistent with healthy firms trying to prevent a drop in their market share and capacity utilization by setting product prices more aggressively.

III.4 Summary of the European experience

These results draw attention to the often-neglected impact of *supply-side* financial frictions on inflation. Specifically, the findings highlight that while monetary and macro-prudential policies can be important to achieve macroeconomic and financial stability, closely monitoring their interaction with financial frictions at the micro level and teasing out their precise transmission to the real economy are equally important. Otherwise, financial frictions can lead to unintended macroeconomic consequences of accommodative central bank policy, such as the ones

⁴ Moreover, the negative correlations between the extent of zombification and inflation as well as markups primarily occur in non-tradable industries, where local credit conditions are likely to be particularly important.

illustrated above for Europe, where supply-side effects due to the zombie credit channel appear to have counteracted – in some cases, even swamped – the intended *demand-side* effects on inflation.

In line with this argument, former central bankers in Europe have published a memorandum on October 4th 2019, criticizing that the highly accommodative monetary policy of the ECB has contributed to a zombification of the economy.[3] However, while these central bankers argue that there was never a threat of a disinflationary spiral, Acharya et al. (2019b) highlight that the ultra-accommodative monetary policy, by fostering the growth of zombie firms, contributed to disinflation and might have prevented inflation from reaching its target faster.

To be fair, the various accommodative policy measures undertaken by the ECB prevented a breakup of the Eurozone and thereby achieved one of the central bank's key mandated goals of ensuring stability of the value of its single currency, *viz.*, the euro. However, the lack of financial stability and the unfortunate coincidence that parts of the Eurozone economy were over-indebted have led to several unintended consequences preventing an effective translation into higher inflation and stronger productivity or growth. The success of the ultra-accommodative monetary policy for the stability of the euro might thus have been a Pyrrhic victory in terms of macroeconomic outcomes for the Eurozone.

IV. Implications for monetary policy

It is hard not to entertain the thought that post the global financial crisis and then the sovereign debt crisis, Europe is following the path of Japan, where low interest rates and failure of banks to foreclose on unprofitable and highly indebted companies contributed to two decades of weak growth and inflation. A crucial issue relevant to understanding their paths to “lost decade(s)” is the fact that regulatory and fiscal authorities in both Japan and Europe were not coordinated or determined to adequately recapitalize their banking systems.

For accommodative monetary policy to be effective in times of a weakening financial sector, it should be accompanied by a targeted bank (in general, financial sector) recapitalization. A prime example for such a targeted recapitalization was in the United States where the Troubled Asset Relief Program (TARP) and the effective stress test of banks in the form of Supervisory Capital Assessment Program (SCAP) followed the failure of Lehman Brothers and coincided with the extra-ordinary easing of monetary policy by the Federal Reserve. The targeted recapitalization of the financial sector contributed to a faster recovery of the U.S. economy. Indeed, after a brief deflationary period, the U.S. inflation rate climbed back to around 2% in early 2010. Conversely, except for a few brief periods, the inflation rate in Japan has been close to zero since the mid-1990s. Similarly, the Euro area inflation rate has been declining since the start of the loose monetary policy in 2012 and has remained below 1% in the period from 2014 to 2017.

These international comparisons highlight that ultra-accommodative monetary policy can and should be used primarily to buy time during periods of financial crises or vulnerability to resolve the underlying fundamental problems (e.g., under-capitalization of the financial sector or heightened uncertainty around the sustainability of sovereign debt). However, if these problems are not addressed, then accommodative monetary policy can lose its positive impact on the real economy, allow kicking the can down the road by other authorities as they delay

the required fixes to resolve the overhang of legacy debt, and prolong the time the economy takes to recover to a healthy state.

Worse, by creating zombies and disinflation, accommodative monetary policy can work precisely against its stated and assumed objectives of generating inflation and growth; by so doing, accommodative monetary policy ends up being a dead end for central banks that ignore its impact on inflation via supply-side dynamics; such central banks adopt instead a tick-box exercise where weak inflation and growth almost automatically induce an accommodative policy response that weakens inflation and growth further via the zombie credit channel; and then the cycle repeats itself...

A central bank can do whatever it takes and for as long as it takes, but if it is a drive into a *cul de sac*, it is better to pause and reverse course, sooner rather than later.

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[2] See Mario Draghi’s speech “*Twenty Years of the ECB’s monetary policy*” at the ECB Forum on Central Banking in Sintra on June 18, 2019. The speech is available at www.ecb.europa.eu.

[3] Source: <https://www.bloomberg.com/news/articles/2019-10-04/memorandum-on-ecb-monetary-policy-by-issing-stark-schlesinger>

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