

Discussion of

Zombie Credit and (Dis-)Inflation: Evidence from Europe

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October 2019
Monetary Economics and Reality
Helsinki

introduction

Zombies come with stagnation and “low for long” policies

- increased forbearance: Peek-Rosengren (2005), Caballero-Hoshi-Kashyap (2008)
- credit policies: Giannetti-Smonov (2013), Acharya-Eisert-Eufinger-Hirsch (2019)
- negative spillovers on non-zombie firms: Schivardi-Sette-Tabellini (2017), Blattner-Farinha-Rebelo (2019)

This paper: zombies responsible for lack of inflation in Europe

- via: increased within-industry competition

timely



layout

- brief review of key concepts
- comments along the way to make the analysis stronger
 - comparing inflation across industries
 - descriptive statistics on the industry disaggregation would be helpful
 - how to interpret in a standard GE setting

Overall, this is a good paper with lot of details and careful analysis.
Highly recommend reading.

review

A firm is a *zombie* if meets following criteria:

- $\frac{\text{EBIT}}{\text{interest expense}} < \text{median (industry-country)}$
- Leverage ratio $> \text{median (industry-country)}$
- $\frac{\text{interest expense}}{\text{total interest bearing debt}} < \text{AAA firms' avg interest rate}$

relatively standard in the literature

(yoy) CPI growth at industry-country level

- aggregated to industry from product level (five digit) data

some concerns on Eurostat CPI

some standard concerns

- outlet closing may be a problem in high zombie share × non-tradable industry
- presence of imported products in CPI - might matter for tradable vs non-tradable industries
- outlet bias [Aghion, Bergeaud, Boppart, Klenow, Li (2019, AER)]
- entry and exit of products [Feenstra (1994)]

how to compare across industries?

If variations in zombies change firm dynamics across industries (or within industry across countries):

simple aggregation of prices may miss quality changes

some suggestions

Provide some robustness to how the inflation (PPI + CPI) are combined.

- if not using already, could use Harmonized Index of Consumer Prices from Eurostat [details](#)
- robustness to use of Laspeyres/Paasche/Fisher
- exact price index to account for product quality changes

rough approximation: use firm-level data to construct market shares at the industry level to adjust for quality ala Feenstra (1994)

Serves two purposes

- quantify the extent of inflation mis-measurement in Euro area combining BvD with Eurostat
- robustness

exact price index under CES-DS structure: illustration

rate of increase in product variety matters for welfare

$$C_t = \left(\int_0^{N_t} [q_t(j)c_t(j)]^{\frac{\sigma-1}{\sigma}} dj \right)^{\frac{\sigma}{\sigma-1}}; \quad \sigma > 1$$

$q_t(j)$ is quality of variety j and N_t is # of active varieties. The aggregate price index is given by:

$$P_t = \left(\int_0^{N_t} \left[\frac{p_t(j)}{q_t(j)} \right]^{1-\sigma} dj \right)^{\frac{1}{1-\sigma}}$$

Feenstra (1994): true inflation for subset l_t is

$$\pi_t = \hat{\pi}_t - \frac{1}{\sigma - 1} \log \left(\frac{S_{l,t-1}}{S_{l,t}} \right)$$

increase in market share $S_{l,t}$ implies that relative price must be falling. The bias is larger when σ is smaller.

For endogenous markups $\mu(N_t)$, Feenstra and Weinstein (2017, JPE) derive price indices with symmetric translog preferences (see also Diewert (1976), Bergin and Feenstra (2001), Bilbiie Ghironi and Melitz (2008, 2012), Jaravel (2018))

Q2: which sectors

descriptive stats on share of zombies by industry in the inflation-linked data would be useful

- show what industries remain in the inflation-linked data and their zombie share
- contribution of these industries to aggregate inflation?

to get a sense of aggregate effects

Note: Industries with higher share of zombies show lower CPI growth *relative to* control group

zombie firms: which sectors? 1

Table 1. Share of capital sunk in zombie firms by industry; average and standard deviation across countries

Industry	Nace Rev.2 codes	2003–7		2008–12	
		Average (%)	Standard deviation (%)	Average (%)	Standard deviation (%)
Manufacture of food products, beverages, and tobacco products	10–12	7	3	8	4
Manufacture of textiles, wearing apparel, leather, and related products	13–15	12	6	11	4
Manufacture of wood and paper products; printing and reproduction of recorded media	16–18	9	5	12	5
Manufacture of coke and refined petroleum products	19	19	25	36	30
Manufacture of chemicals and chemical products	20	6	4	7	4
Manufacture of basic pharmaceutical products and pharmaceutical preparations	21	5	6	5	5
Manufacture of rubber and plastics products, and other non-metallic mineral products	22–23	6	6	12	6
Manufacture of basic metals and fabricated metal products, except machinery and equipment	24–25	5	2	10	6
Manufacture of computer, electronic, and optical products	26	9	5	9	2
Manufacture of electrical equipment	27	8	4	7	5

Source: Adalat McGowan, Andrews and Millot 2018, OECD

zombie firms: which sectors? 2

Manufacture of electrical equipment	27	8	4	7	5
Manufacture of machinery and equipment n.e.c.	28	6	6	7	4
Manufacture of transport equipment	29-30	8	8	13	10
Other manufacturing; repair and installation of machinery and equipment	31-33	6	3	8	3
Electricity, gas, steam, and air conditioning supply	35	5	8	5	3
Water supply; sewerage, waste management, and remediation	36-39	12	13	12	9
Construction	41-43	7	4	9	7
Wholesale and retail trade; repair of motor vehicles and motorcycles	45-47	6	2	8	3
Transportation and storage	49-53	10	6	13	6
Accommodation and food service activities	55-56	10	5	13	8
Publishing, audiovisual, and broadcasting activities	58-60	8	5	12	6
Telecommunications	61	10	12	13	10
IT and other information services	62-63	8	8	5	4
Real-estate activities	68	9	7	10	7
Leg., accounting, manag., architecture, engineering activities, technical testing, and analysis	69-71	11	7	14	12
Scientific research and development	72	11	9	16	9
Other professional, scientific, and technical activities	73-75	10	9	12	11
Administrative and support service activities	77-82	8	4	10	6

Source: Adalat McGowan, Andrews and Millot 2018, OECD

zombie firms, competition and inflation

OECD: manufacturing and services seem to be most affected by zombie shares

- is there a differential effect for mfg and services?
- use external financial dependence as a robustness for zombie share (Acharya et al 2019)?

some more micro points

In the model, higher # of surviving firms implies

- # of entrants fall
- higher quality of entrants

Is it possible to identify entrants? firm age perhaps?

Complementary hypotheses: liquidity squeeze channel (Gilchrist Schoenle
Sim Zakrajsek 2017, AER)

- if increased zombie share is interpreted as increase in financial capacity, then GSSZ predict disinflation as well
- paradox of financial strength

Price data for multi-product firms serving multiple industries could help separate

macro picture

dis-inflation effects begin mid-2012 when ECB lowered deposit rate to zero

- ACEE present a policy tradeoff: industrial policy vs aggregate demand management
- ACEE: more zombies, more industry sales growth → ~~textbook AD~~
 - corollary of textbook AD story: non-tradable likely to suffer more from demand contraction, so expect more disinflation
 - what is the effect on sales growth for non-zombie firms in non-tradable industries?

a key question: how long lived are the Zombies? (Scylla and Charybdis)

- temporary: negative markup shocks under constrained policy
- persistent: persistently lower aggregate productivity

macro effects with temporary zombies: Scylla

NK models with negative markup shocks (with some simplifying assumptions)

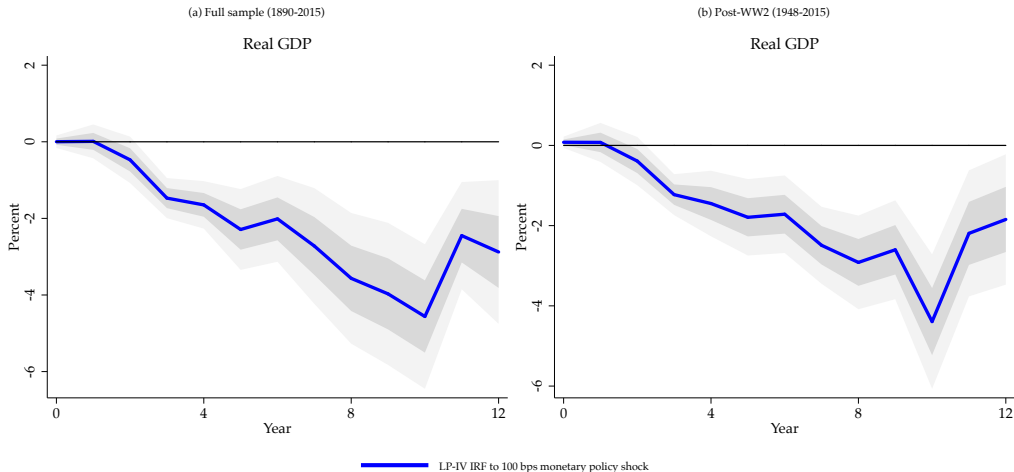
- \downarrow markup $\rightarrow \pi_t$. Inflation targeting CB lowers policy rate, and generates output boom (Galí 2016, Ch 5)
- At the ZLB or currency unions, this can generate perverse effects (Eggertsson (2012, AER), Eggertsson Ferrero Raffo (2014, JME), Galí Monacelli (2016, AER))
- temporary reduction in markups in the non-tradable sector generates deflationary effects + policy constrained at the ZLB \Rightarrow reduction in output
- if firm entry were to decline along with reduction in markups then contractionary effects likely exacerbated (see Cacciatore Duval Fiori Ghironi (2017, WP))
- if markups promote innovation incentives, even longer run effects (Garga and Singh 2016)

Charbydis: persistent effects on GDP (+ self-promotion)

Jordá-Singh-Taylor (2019): *The long-run effects of monetary policy*

Data: 17 advanced economies 1890-2015

Use trilemma to identify monetary policy shocks for open pegs



conclusion

The stagnation in Euro and Japan opened up interesting questions for us

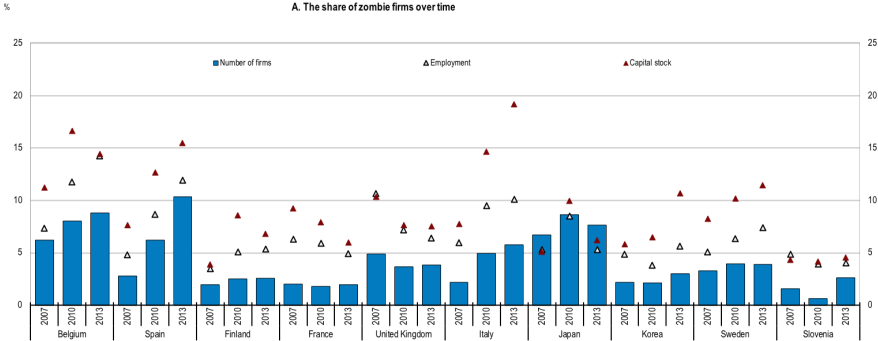
- This paper: low interest rates encourage zombies to thrive and increase competition
- increased congestion → negative spillovers on healthy firms
- policy transmission interacts with institutional setup to generate perverse effects of aggregate demand management
- quantify mis-measurement, and “back of the envelope” aggregation

in my great and unmatched wisdom ...

ACEE offer horror w/o comic relief, but worth watching (reading)

appendix

some trends



Source: Adalat McGowan, Andrews and Millot (2017)

euro inflation

**Euro area annual inflation and its main components (%),
September 2009 - September 2019 (estimated)**

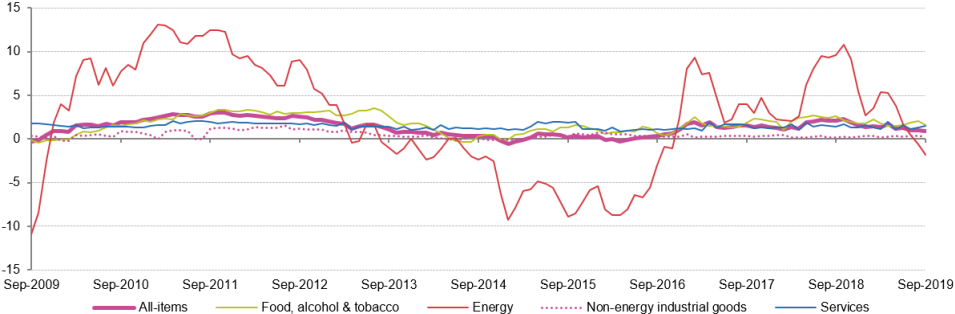
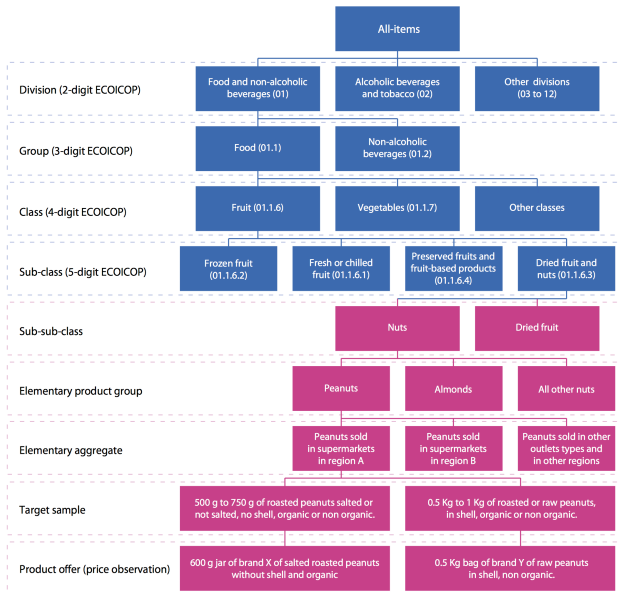
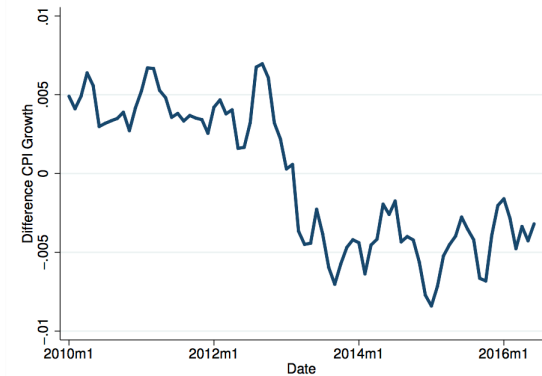
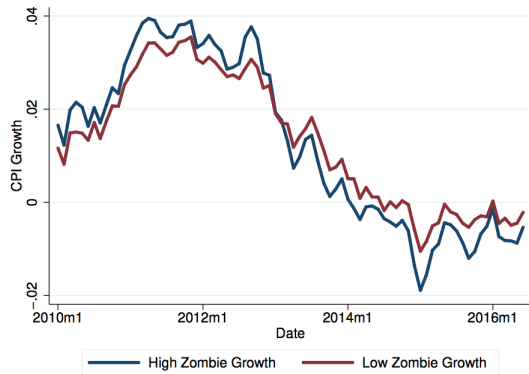


Chart 3.1: Classification structure for the various levels of aggregation of an HICP





Source: Figure 3 from ACEE 2019 (this paper)

details on Eurostat CPI

Harmonized Index of Consumer Prices (HICP)

- household final domestic consumption expenditure aggregated to COICOP - 5 digit product group
- Laspeyres-type chain-linked index with weights calculated annually
- purchaser prices including taxes and discounts
- “measure of *pure price change*”

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