Discussion on "Demographics and Inflation" by E. Bobeica, E. Lis, C. Nickel and Y. Sun

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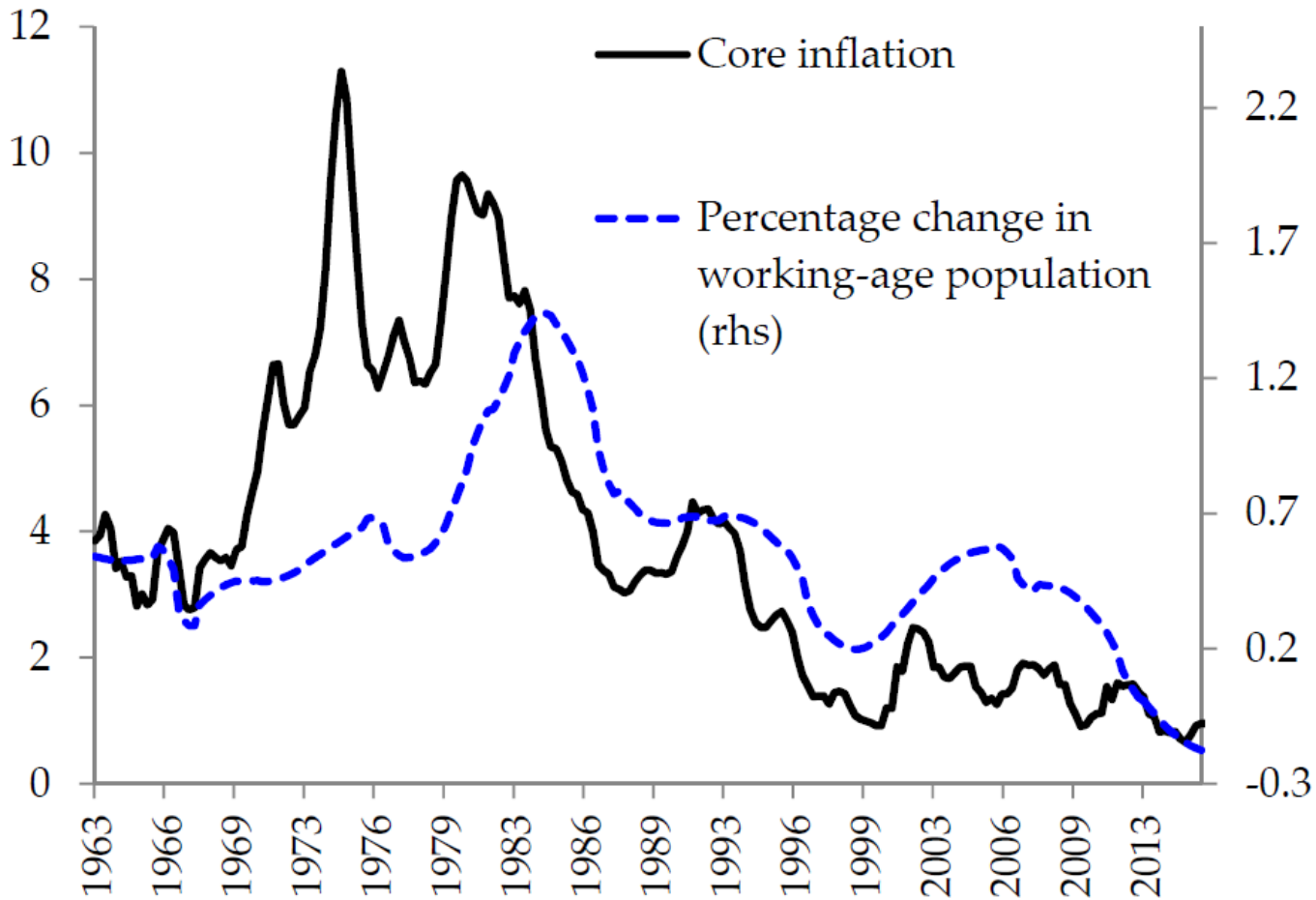
What this paper does

- It examines the **link between ageing and core inflation** in the **euro area** for the sample period 1975–2016
- It tests the existence of this **long-run relationship** by adopting a standard cointegration framework
- It investigates whether this relationship also holds for individual and large countries such as the **US and Germany**
- It draws some **policy implications**

Core inflation and working age population growth in the EA



Take-home messages

1. The paper uncovers a **positive long-run relationship** between **EA** core inflation and the growth rate of the working age population (as a share of total population)
2. This positive long-run relationship also holds for the **US and Germany**
3. This positive long-run relationship continues to be statistically significant **after including the nominal short-term interest rate**, even though it becomes weaker
4. The **ageing process for Europe** will increasingly condition the economic environment. In this context, monetary policy will have to **counteract deflationary pressures**

Comment #1: Data transformation

1. **Demographic data**: the **growth rate** of the working age population (20–64) **as a share** in total population is assumed to be I(1), implying that the corresponding working age population over total population is I(2)
2. Population time series often found to be I(2), i.e., $\frac{Pop_{(20-64)} \sim I(2)}{Pop_{(tot)} \sim I(2)}$, but then how can the ratio itself be I(2) if, say, both series share a common trend?
3. **Juselius and Takats** (2016) use the share of five-year age cohorts in the total population (**in levels rather than growth rates**) reaching different results (i.e., ageing leads to more inflation)

Comment #2: System variables

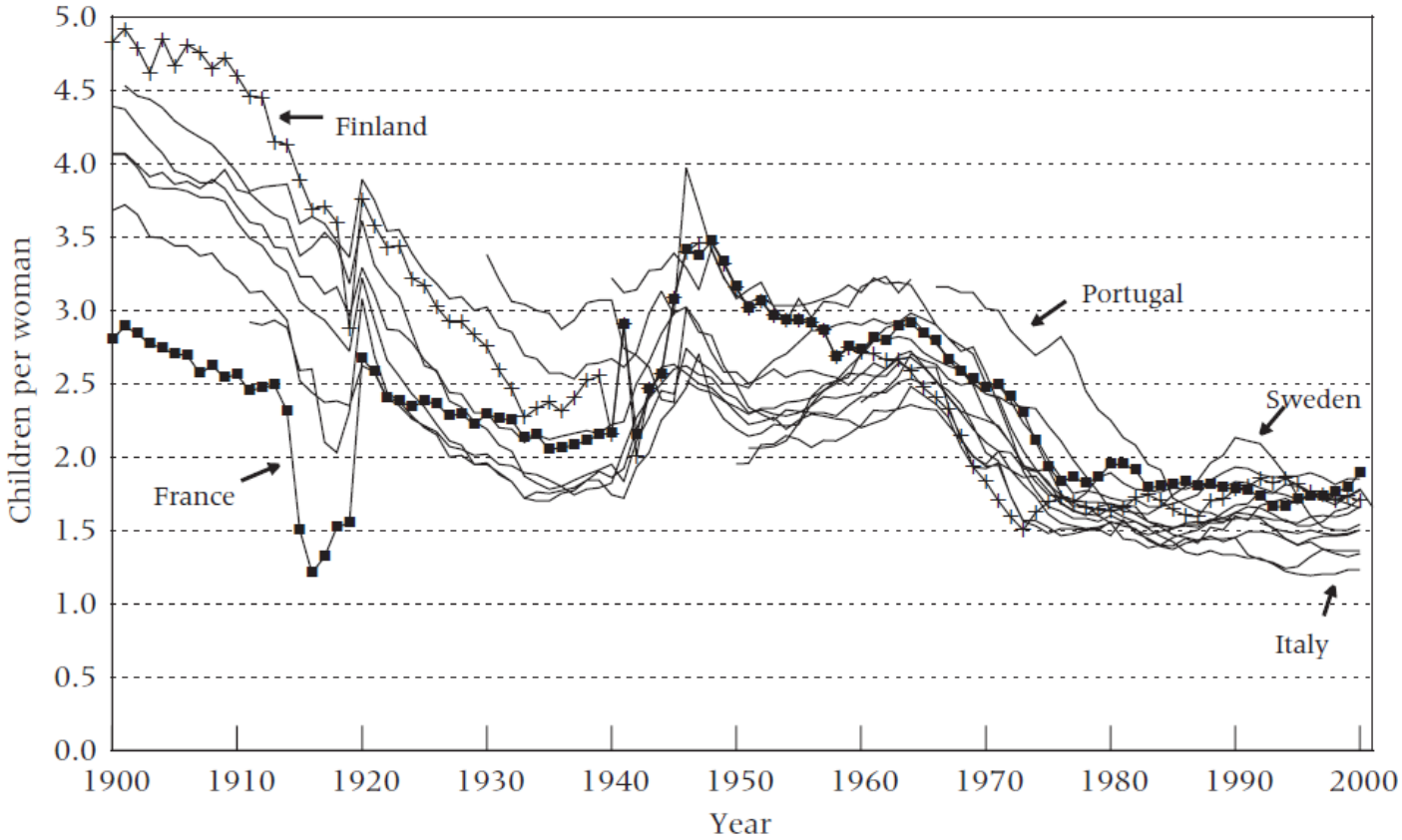
- The **vector of endogenous variables**, in a *first step*, contains the inflation rate and the growth rate of working age population
- Then, in a *second step*, the short-term interest rate is included to control for monetary policy effect (link with the Fisher hypothesis)
- Rather than proceeding in two steps, why not focusing directly on a **3-variable system** (inflation rate, growth rate of working age population, short-term interest rate)?
- Output gap? see Juselius and Takats (2015)

Comment #3: Secular stagnation and inflation differentials in the EA

- P. 6, **secular stagnation and zero lower bound**: "*A diminishing growth rate of the working age population comes hand in hand with fading inflationary pressures, if the monetary policy does not react*". But your sample period is 1975–2016, in which a zero lower bound can be observed only in the very last part
- Can **heterogeneous demographic** trends explain **inflation differentials among EA countries**, in a historical perspective?

Heterogeneous demographics in the long-run

FIGURE 6 Total fertility rate in 14 European countries, ca. 1900–2000



SOURCE: See Keilman and Pham 2004.

Minor comments

- For **Germany**, the **long-run equilibrium coefficient on demographics** is very small in magnitude (0.16) and not significant. This coefficient is highly significant and much larger both for the EA (1.57) and for the US (3.43). Could you please provide your interpretation?
- **Germany**: when does the sample start (1970 or 1975)? See Tables 6/7. Why the step dummy is in 2010 rather than in the 1980s (as for the EA)? What about German unification (1991)?

What I would like to see in the paper

- A **discussion** on **why** (step) **dummy variables** are introduced in the cointegration space (affecting the long-run equilibrium relationship) rather than in the **deterministic part** of the VAR/VECM
- More **graphical evidence** (residual diagnostics) pointing to a **step dummy in 1983** for the EA
- A plot of the **estimated cointegration relations** for the EA, Germany and the US

Final remarks

- Very **interesting contribution** on an important topic
- Empirical analysis **carefully conducted**
- I really **enjoyed** the paper...
- And I encourage the authors to keep on working on it!