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Intergenerational Transmission of Inflation Aversion: Theory and Evidence

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Motivation: is low inflation here to stay?

- **‘How did we arrive there?’** question
 - evolution of *monetary institutions*: more independent and more focused on price stability (e.g., Crowe and Meade, 2007)
 - *globalization* as a weight on inflationary pressures (e.g., Rogoff, 2003)
- **‘Where do we go from here?’** question
 - *inflation preferences* fundamental in shaping a nation’s inflation prospects
 - hence, we investigate the evolution of *inflation aversion*
- explanations for **inflation aversion**
 - the ‘inflation culture hypothesis’ (Hayo, 1998)
 - related to inequality and uncertainty aversions (De Jong, 2002)
 - sensitive to the business cycle (Scheve, 2004)
 - originating in an individual’s relative position in society (Jayadev, 2006)

Approach: endogenizing inflation aversion

- economics usually assumes **preferences as ‘priors’**
 - which are *endowed* to agents
 - and do *not* change
- yet, preferences as shaped by **evolutionary forces** in society
 - Becker (1996): economics of *endogenous* preferences
 - Bisin and Verdier (2000, 2001): develop a formal OLG set-up with evolving preferences to examine the provision of *public goods*
 - Sáez-Martí and Sjögren (2008): apply this set-up to the transmission of *cultural traits*
- **our contribution**
 - *extend* the Bisin-Verdier set-up to study theoretically and empirically
 - the *evolution* of inflation aversion preferences
 - as *evidenced* in the world-wide trend to central bank independence (CBI) and lower inflation

Theory: preference types

- a **generation** consists of a *continuum* of individuals
 - each living for *two* periods and having *one* offspring
 - so that the population is *constant*
 - and the size of the *mature* generation is normalized to one
- **two types** of *preferences*, *a* and *b*, defined on
 - a *private* good, *c*
 - and a *public* good, *g*, interpreted as CBI
- becoming mature, all individuals receive **identical endowment**, ω
- the **degree of CBI** is decided in each period
 - by *majority voting* in parliament
 - through *proportional representation* of the adult generation

- **utility**

$$u^i(c, g) = u(c) + \gamma^i v(g), \quad \text{with } i \in \{a, b\} \text{ and } \gamma^a > \gamma^b > 0$$

Theory: optimal degree of central bank independence

- **optimization** problem of type i at time t

$$\max_g u^i(c, g) = \max_g u(\varpi - g) + \gamma^i v(g)$$
$$\frac{\partial u^i(c, g)}{\partial g} = \frac{\partial [u(\varpi - g) + \gamma^i v(g)]}{\partial g} = 0 \Leftrightarrow u'(\varpi - g) = \gamma^i v'(g)$$

- implicitly defines the social cost $g_t(\varpi, \gamma^i)$ giving i 's **preferred degree of CBI** in t

$$V^i(\varpi) \equiv \arg \max_g u(\varpi - g) + \gamma^i v(g)$$
$$= u[\varpi - g_t(\varpi, \gamma^i)] + \gamma^i v[g_t(\varpi, \gamma^i)]$$

- because of *optimality* of $g_t(\varpi, \gamma^i)$ and *positivity* of $\gamma^i > 0$

$$V^i(\varpi) > u^i(\varpi)$$
$$\gamma^i = \frac{u'(\varpi - g)}{v'(g)} > 0$$

Theory: dynamics of preference transmission

- **transition probabilities**

$$P_t^{aa} = \tau^a + (1 - \tau^a)q_t^a$$

$$P_t^{ab} = (1 - \tau^a)(1 - q_t^a)$$

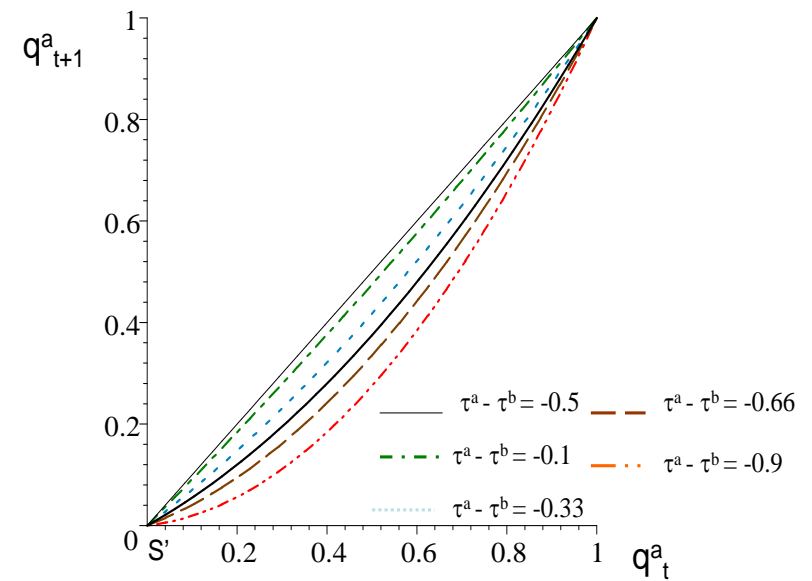
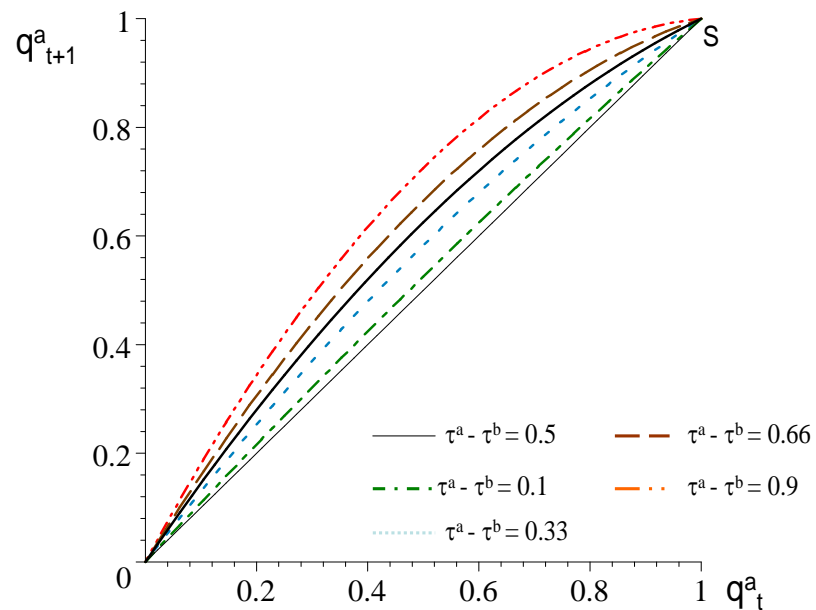
$$P_t^{bb} = \tau^b + (1 - \tau^b)q_t^b = \tau^b + (1 - \tau^b)(1 - q_t^a)$$

$$P_t^{ba} = (1 - \tau^b)(1 - q_t^b) = (1 - \tau^b)q_t^a$$

- **evolution of preferences**

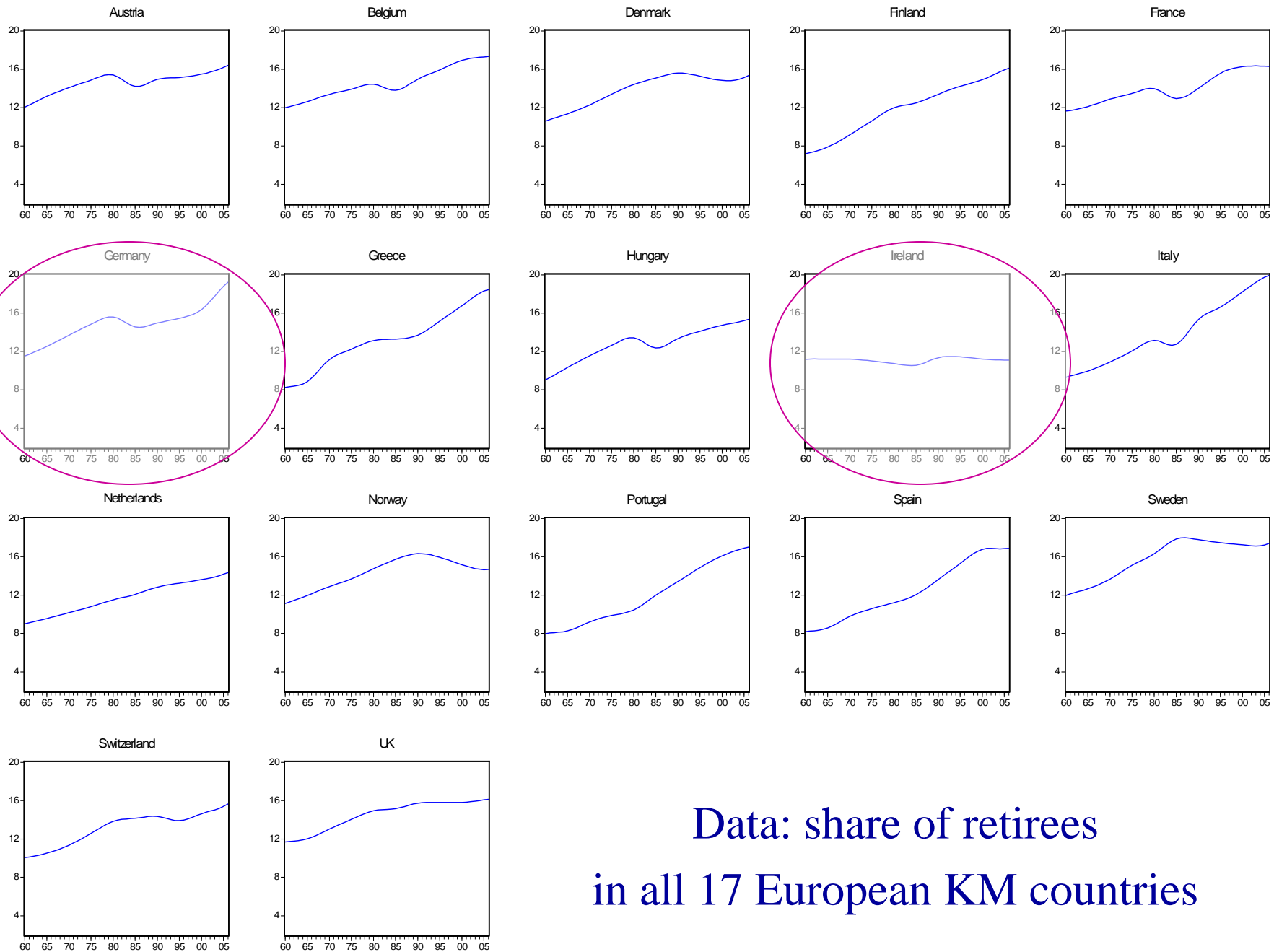
$$\begin{aligned} q_{t+1}^a &= q_t^a P_t^{aa} + q_t^b P_t^{ba} \\ &= q_t^a P_t^{aa} + (1 - q_t^a) P_t^{ba} \\ &= [1 + (1 - q_t^a)(\tau^a - \tau^b)] q_t^a \\ &= (1 + \rho_t^a) q_t^a \end{aligned}$$

Theory: convergence to preference type

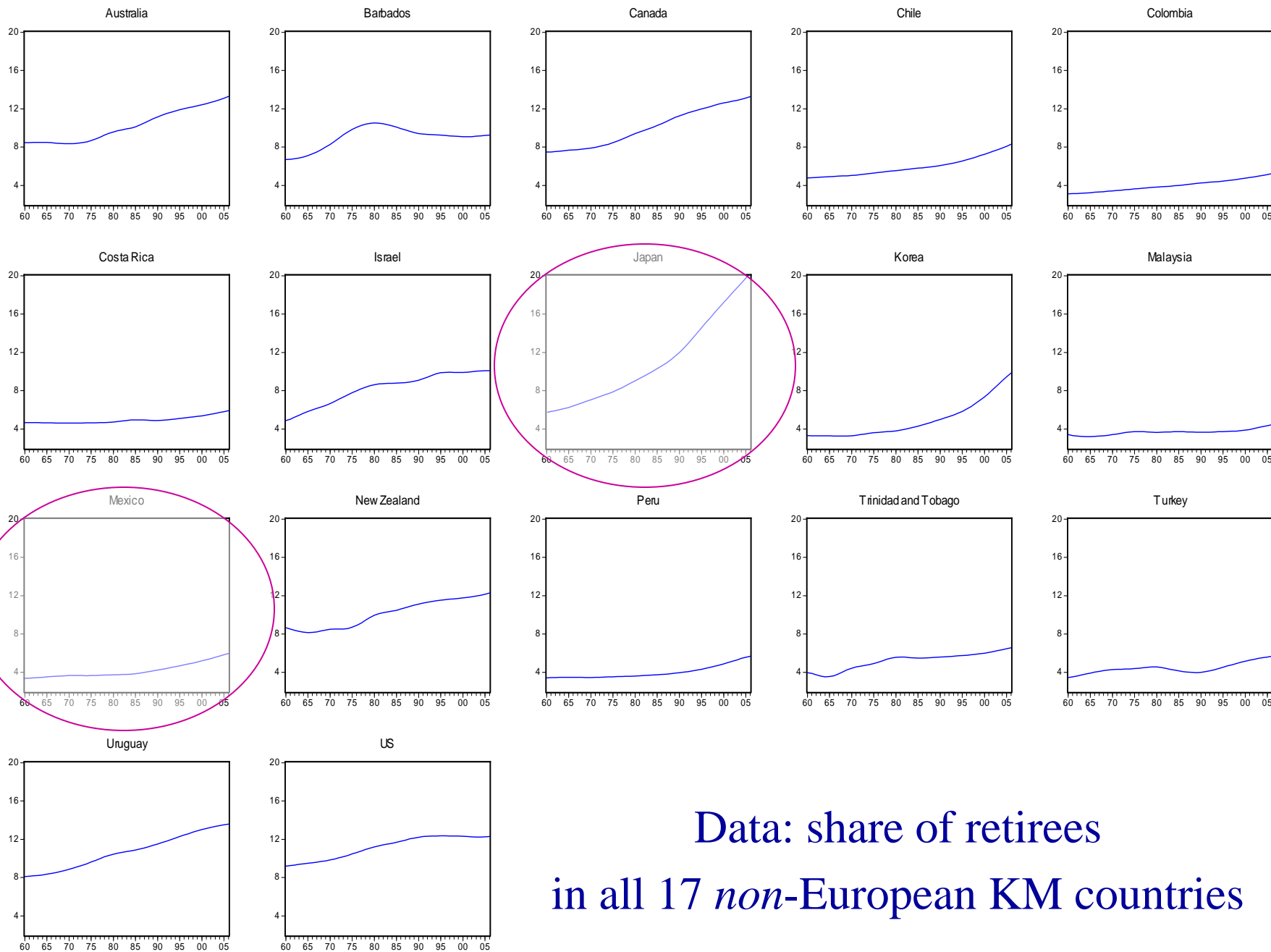


Empirical implementation: inflation aversion, demography and income inequality

- **our 1st measure of inflation aversion**
 - is the **index** constructed by Krause and Méndez (2005) and applied in Krause and Méndez (2008) for 34 countries over a period of 24 years
 - the KM index describes a **policymaker's (relative) preferences** as the weight she puts on inflation stabilization in an objective function that is optimized under the constraint of an ad-hoc economic environment
 - it is **derived** as a function of deeper model parameters **and computed** by substituting each parameter with its 2nd-order VAR estimate
- **we use a 2nd, differently defined, measure of inflation aversion**
 - now for the **(relative) inflation aversion of a country's population** at large
 - it is the **percentage of respondents to a question** in the International Social Survey Program (ISSP) who would prefer to keep down inflation rather than unemployment, and is employed, e.g., in Jayadev (2006)
 - the ISSP, conducted in 1996 by the Inter-university Consortium for Political and Social Research, studies the preferences regarding the role of government of more than 30,000 individuals in 27 countries through over 200 questions



Data: share of retirees
in all 17 European KM countries

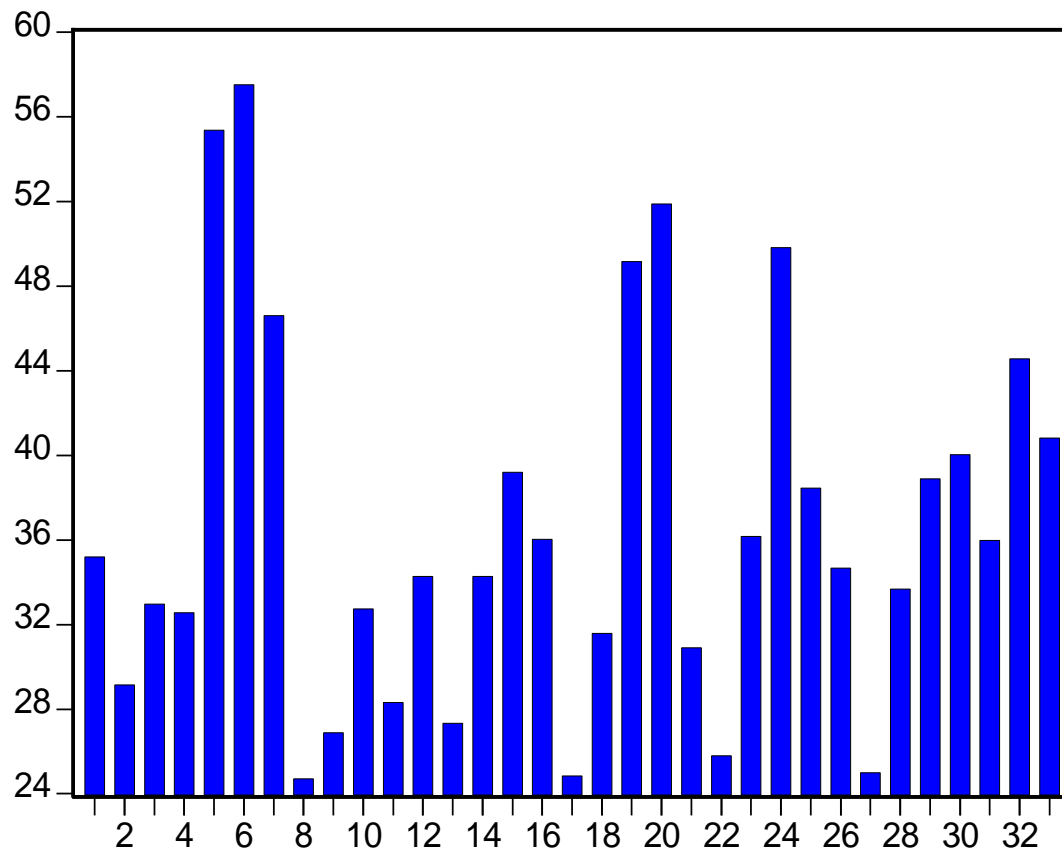


Data: share of retirees
in all 17 *non-European* KM countries

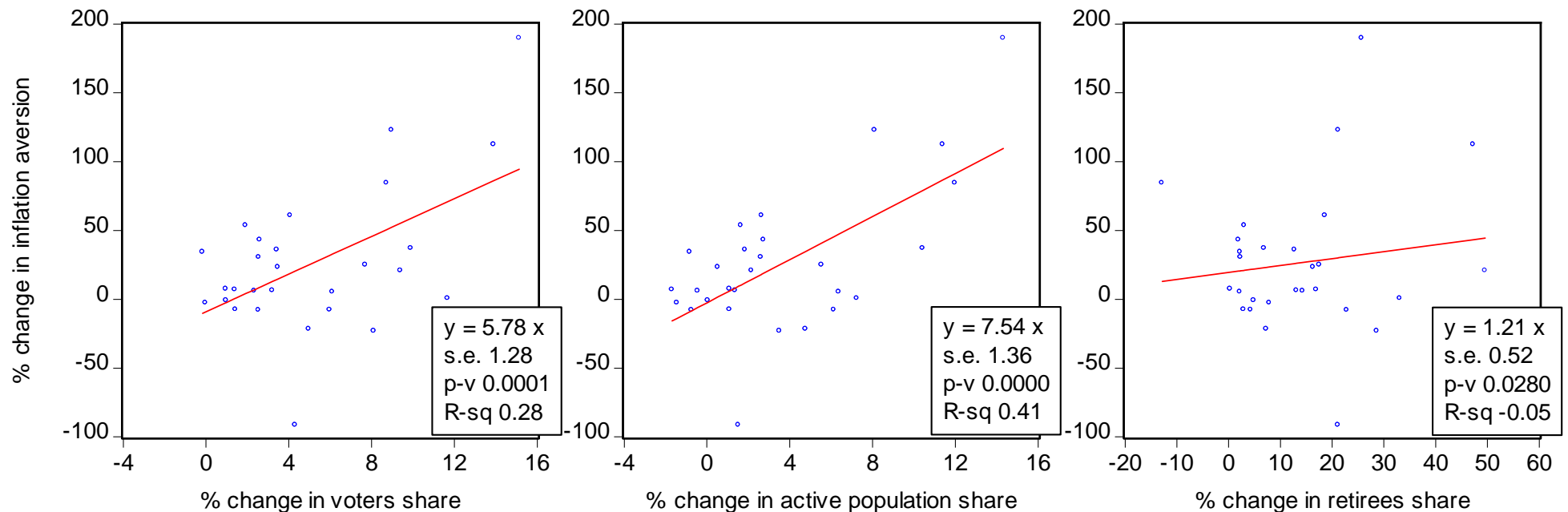
Data: Gini index for 33 countries in the KM sample

Excluding Barbados for lack of data:

1=Australia (1994), 2=Austria (2000),
3=Belgium (2000), 4=Canada (2000),
5=Chile (2000), 6=Colombia (2000),
7=Costa Rica (2000), 8=Denmark (1997),
9=Finland (2000), 10=France (1995),
11=Germany (2000), 12=Greece (2000),
13=Hungary (2000), 14=Ireland (2000),
15=Israel (2001), 16=Italy (2000),
17=Japan (1993), 18=Korea (1998),
19=Malaysia (1997), 20=Mexico (2000),
21=Netherlands (1999), 22=Norway (2000),
23=New Zealand (1997), 24=Peru (2000),
25=Portugal (1997), 26=Spain (2000),
27=Sweden (2000), 28=Switzerland (2000),
29=Trinidad and Tobago (1992), 30=Turkey (2000),
31=UK (1999), 32=Uruguay (2000), 33=US (2000)



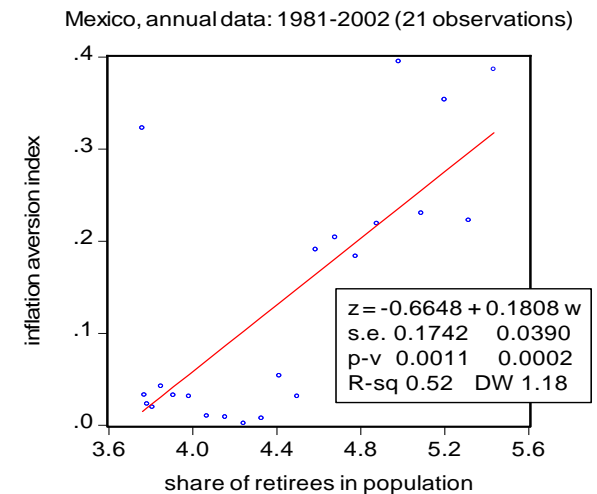
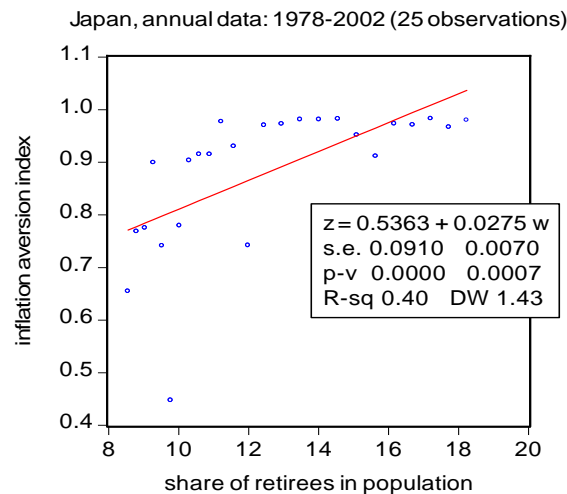
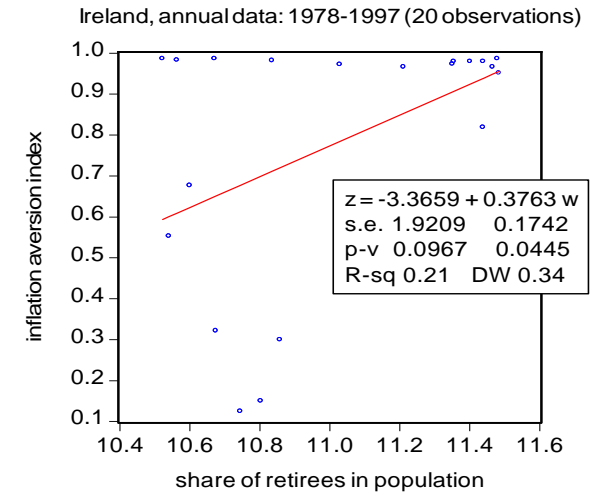
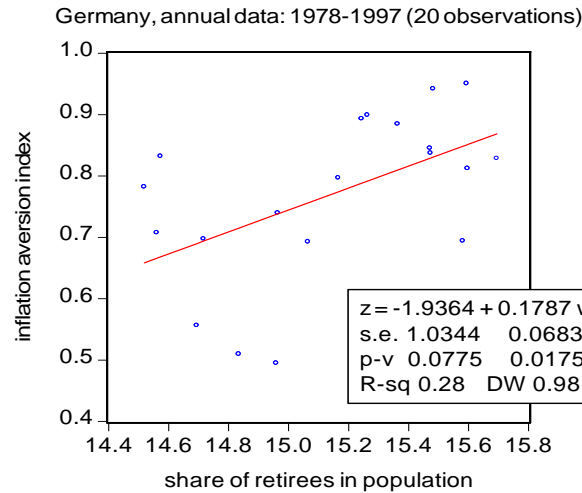
Evidence on inflation aversion and **demography**: *cross-section* analysis on a generation time-span in the KM sample



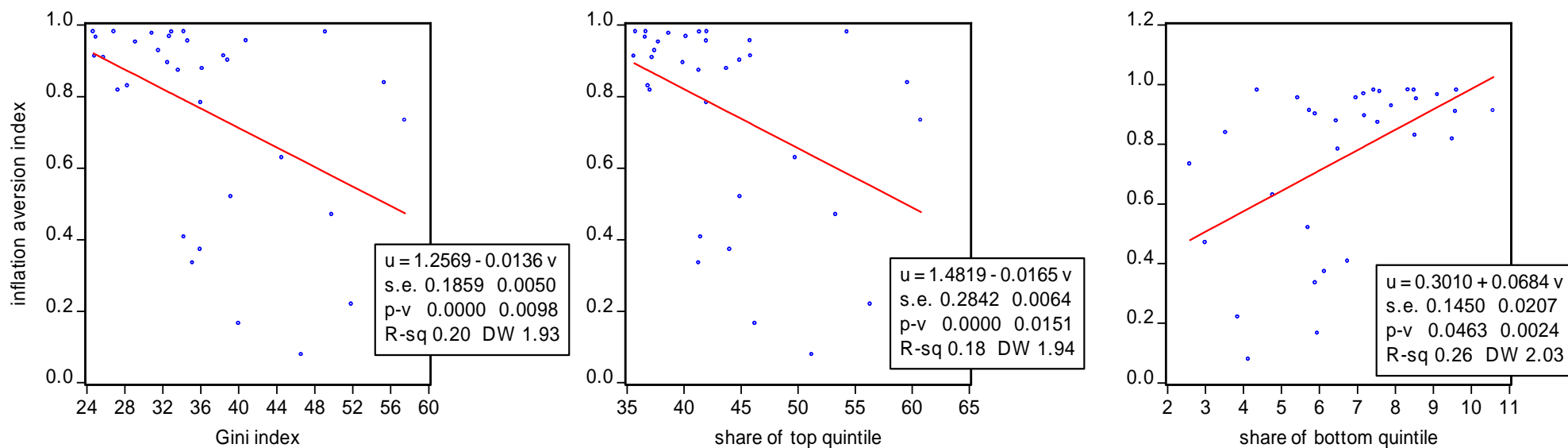
$$d \ln \mathbf{y}(97/82) = \alpha_0 + \alpha_1 d \ln \mathbf{x}(97/82) + \alpha_2 [\ln] \mathbf{x}(82) + \varepsilon$$

Evidence on inflation aversion and **demography**: *time-series* analysis on selected (4) countries in the KM sample

$$z_t^i = \beta_0^i + \beta_1^i w_t^i + \beta_2^i z_{t-1}^i + \epsilon_t^i$$

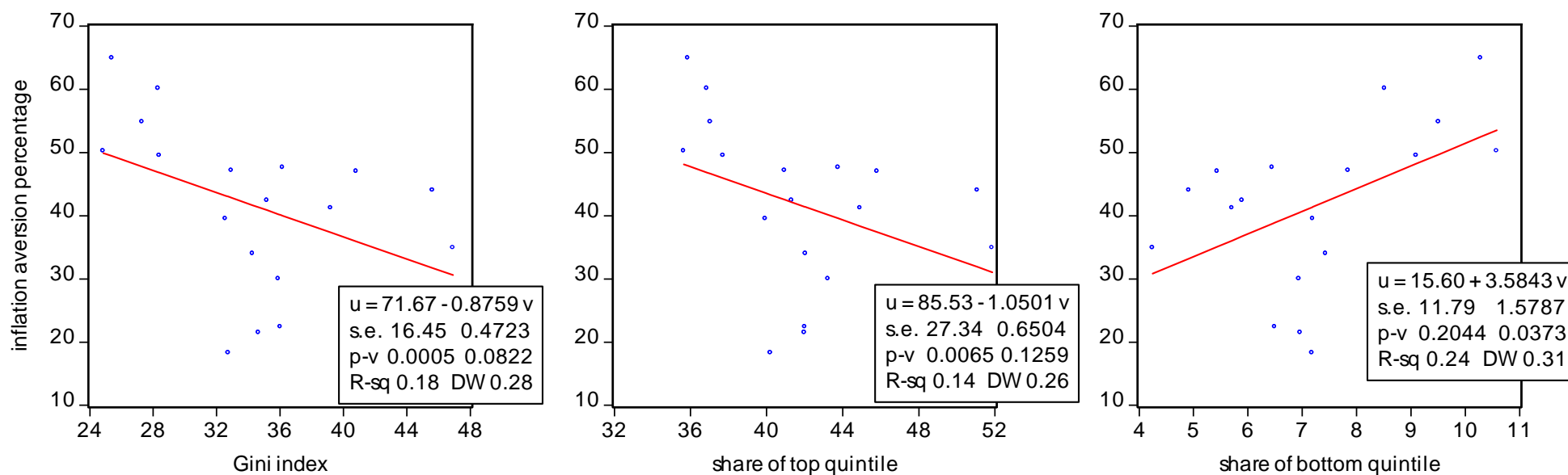


Evidence on inflation aversion and **inequality**: cross-section analysis on the *KM* measure (33 countries)



$$u(\text{circa } 96 - 97) = \gamma_0 + \gamma_1 v(\text{circa } 00) + \eta$$

Evidence on inflation aversion and **inequality**: cross-section analysis on the *ISSP* measure (18 countries)



$$u(\text{circa } 96 - 97) = \gamma_0 + \gamma_1 v(\text{circa } 00) + \eta$$

Summary of results

- in the **theoretical framework**, we show
 - how the stability of a society's degree of inflation aversion
 - depends on the *strength* and *speed* of changes in the population structure
- in the **empirical applications**, using different measures of inflation aversion and different cross-section samples, we find that
 - **the proportion of retirees is strongly associated with a society's inflation aversion**, *both* in a *cross-section* and a *time-series* aspect
 - we attribute this relation to the retirees' preferences, as they have all the incentives to support low inflation, in order to protect their accumulated wealth
 - that **the poorest have the highest inflation aversion**, in 2 cross-sections
 - due to the lack of protection of their few assets and revenues from inflation

Concluding comments

- our empirical findings point to the **mutually reinforcing effects** of *global aging* and a *trend toward more egalitarian societies*
 - *both* implying an increased role for **the social-welfare state**
 - *under this scenario* stronger inflation aversion and, consequently, lower actual inflation is here to stay for some time
- **if, however**, transmission of cultural and social values in favor of equality and social protection is *threatened*
 - e.g., by social security burdens and *public debt unsustainability*
 - population aging and income inequality dynamics **may not act in the same direction** to keep low inflation down for long
 - **finally, if** demographic trends *reverse* in the future, these will **act together again** with higher inequality **but** now *toward lower* inflation aversion