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Costs and Welfare Effects of ECB`s Financial Repression Policy: Consequences for German Savers

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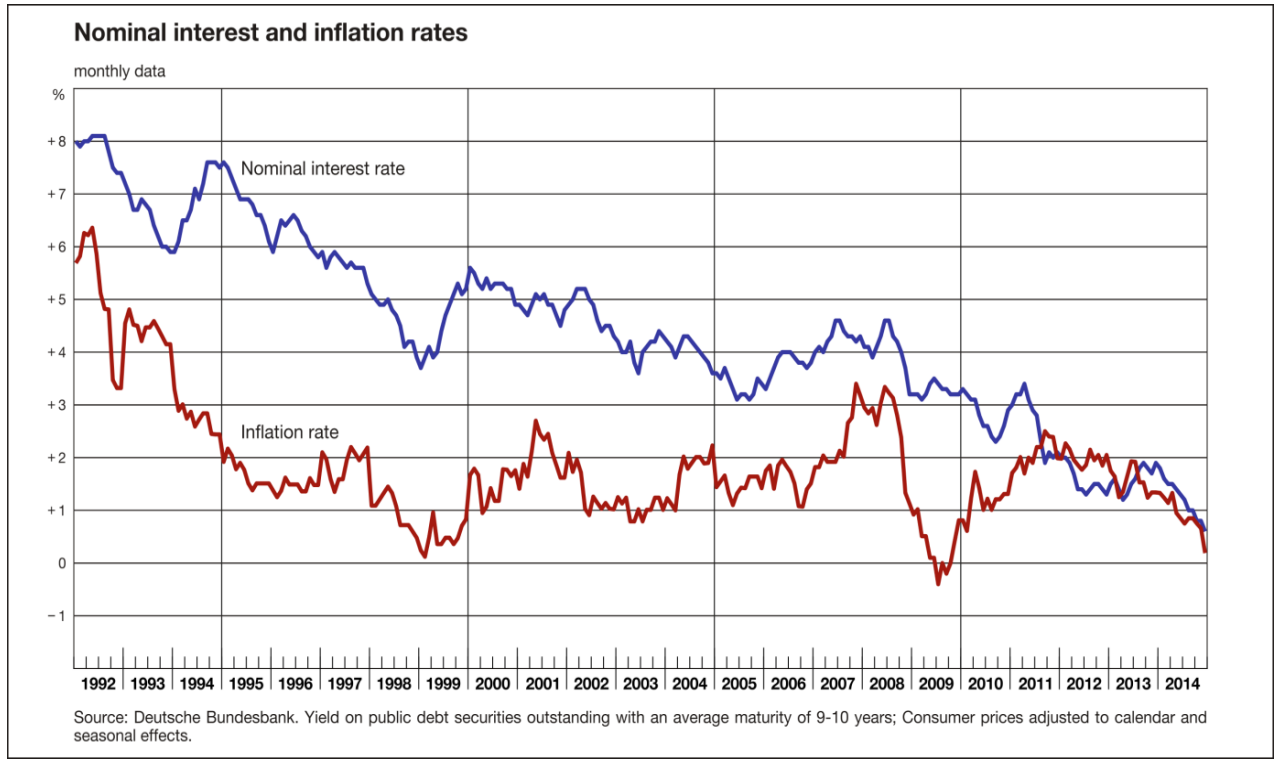
I. The Collapse of the Fisher-Effect



Main reasons for **breakdown of the (simple) Fisher-effect** around 2010 primarily due to:

1. **Excessive supply of base money** by central banks
2. **Undercapitalized banks** that cannot use excess liquidity to provide additional credit to the private sector due to regulatory standards
3. **Subdued demand for credit of the private sector** due to economic stagnation or recession.

Breakdown of the Fisher-effect creates a **special kind of financial repression tax (FRT)** which implies a **costly distortion of intertemporal consumption**

II. Real Portfolio Return and Taxes

A private household shall have financial assets worth of K_0 of which share $\beta = B_0/K_0$ is invested in interest bearing bonds B_0 and the rest in (non-interest bearing) money M_0:

$$K_0 = B_0 + M_0$$

After one period the household earns an **average real (net) interest rate (r) on its financial portfolio** to the amount of:

$$r = \frac{K_1}{K_0} - 1 = \frac{i\beta(1-\tau) - \pi}{1+\pi}$$

At a given portfolio structure β, a politically intended **reduction of the real portfolio (net) interest rate** can principally be achieved **by imposing three types of taxes on savings**:

1. Increase in the tax rate of capital yields τ ***(capital yields tax, CYT)***
2. Increase in the inflation rate π ***(inflation tax, INFT)***
3. Decrease in the nominal interest rate on bonds i ***(financial repression tax, FRT)***

III. The Fiscal View: Losses of Interest Income

Table 1: Government bond yields and inflation rates in Germany

Period		A	**B**	**C**
		1992-98	**1999-09**	**2010-14**
Nominal interest rate*	i	0,064	0,042	0,020
Inflation rate**	π	0,026	0,015	0,015
Real portfolio interest rate***	r	0,011	0,010	-0,004

Table 2: Loss of interest income due to different taxes (per year)

Period				**B**	**C**
				1999-09	**2010-14**
Types of taxes imposed		Base	**CYT**	**CYT + INFT**	**CYT + INFT + FRT**
Capital yields tax rate	τ	0	0,264	0,264	0,264
Inflation rate**	π	0	0	0,015	0,015
Nominal interest rate*	i	0,027	0,027	0,042	0,020
Real portfolio interest rate***	r	0,022	0,016	0,010	-0,003
Cumulated loss of interest income	€bn	0	**28**	**60**	**124**
			CYT	**INFT**	**FRT**
Additional loss of interest income	€bn		**28**	**32**	**64**
	ß=0.8; K = 5,000 €bn				

* Yield on public debt securities with average maturity of 9-10 years.
** Consumer prices adjusted to calendar and seasonal effects
*** Average real rate of return of portfolio after taxes.

- Since 2010 sharp drop in real portfolio interest rate (r)
- High losses of interest income
- Results in line with other calculations: Holzhausen (2013), Rösl (2014), Sinn (2014)

IV. The Other View: From Real Interest Rate to Effective Inflation Rate (1)

Price for current consumption…

$$1 + r = \frac{1 + \theta i}{1 + \pi} \qquad \theta = ß(1-\tau) < 1$$

… measured in units of future products

Real interest rate…

$$r = \frac{K_1}{K_0} - 1 = \frac{\theta i - \pi}{1 + \pi} \approx \theta i - \pi$$

… is a real accumulation rate on current savings

… is a capital tax- and inflation-adjusted nominal interest rate

Price for future consumption…

$$1 + p = \frac{1}{1 + r} = \frac{1 + \pi}{1 + \theta i}$$

… measured in units of current products (Arrow-Debreu-price)

Effective inflation rate…

$$p = \frac{K_0}{K_1} - 1 = \frac{\pi - \theta i}{1 + \theta i} \approx \pi - \theta i$$

… is a real discount rate for future consumption

… is a capital tax- and interest rate-adjusted inflation rate

IV. The Other View: From Real Interest Rate to Effective Inflation Rate (2)

Why choosing the concept of the **Effective Inflation Rate (EIR) ?**

1. It shows that the **current price for future consumption can change irrespective of the CPI-inflation rate** (current price for current consumption):

$$p = \frac{\pi - \theta i}{1 + \theta i} \approx \pi - \theta i$$

2. It is an integral part of a **proper measure of the effective purchasing power of current savings**

   According to M. Feldstein (1995) saving basically means current expenditure on future consumption, i.e., it is the product of the price level of future consumption (P_T) and the volume of future consumption (C_T):

$$S_0 = P_T \cdot C_T \quad \text{with} \quad P_T = P_0 \cdot (1 + p)^T$$

   Hence, the purchasing power of current savings is: $\frac{1}{P_T}$

V. Welfare Loss and Excess Burden in an OLG-Model (1)

A representative household maximizes its **lifetime utility** (2 period model)

$$U(C_y, C) = \ln(C_y) + \alpha \ln(C)$$

Current consumption of the presently young generation: C_y
Future consumption of the presently young generation when retired: C

Relative preference for retirement consumption: $\alpha = 0.4$
Subjective discount factor: $1-\delta = \alpha^{1/T} = 0.97$
Generation length/planning horizon of the savers (years): $T = 30$
Intertemporal elasticity of substitution: $IES = 1$

V. Welfare Loss and Excess Burden in an OLG-Model (2)

Intertemporal budget constraint: $C_y + \overbrace{PC}^{S_y} = Y$

Price level for retirement consumption: $P = (1+p)^T$

Effective Inflation Rate

Consumption and saving plans:

Consumption of young generation: $C_y = \frac{1}{1+\alpha} Y$

Savings of young generation: $S_y = \frac{\alpha}{1+\alpha} Y$

} Y

Retirement consumption: $C = \frac{\propto}{1+\propto} \frac{Y}{P} = \frac{S_y}{P}$

V. Welfare Loss and Excess Burden in an OLG-Model (3)

Area under the retirement consumption function limited by the price before (P_0) and after taxes on savings (P_X)

Loss in consumer surplus: $CS_X = \overbrace{\int_{P_0}^{P_X} C(P)dP} = \underbrace{S_y}_{\text{Tax base}} \cdot \underbrace{\ln\left(\frac{P_X}{P_0}\right)}_{\text{Effective tax rate}}$

Saved interest payments on government debt: $TX_X = (P_X - P_0)\, C(P_X)$

(Assumption: government as the only debtor)

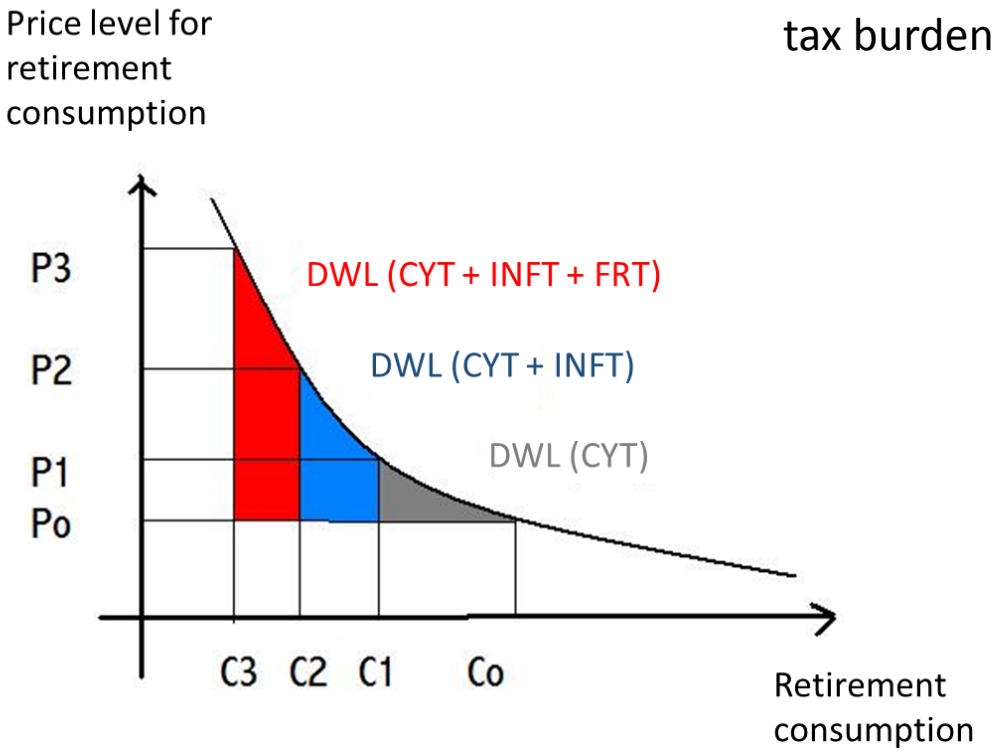
V. Welfare Loss and Excess Burden in an OLG-Model (4)

Deadweight loss:
X = 0,1,2,3

$$\mathrm{DWL_X} = CS_X - TX_X = \left[\ln(\mathrm{P_X}/\mathrm{P_0}) - \frac{\mathrm{P_X}-\mathrm{P_0}}{\mathrm{P_X}}\right] \mathrm{S_y}$$

Taxation of savings = tax burden of savers

Interest payments saved by the government



- **Deadweight loss(es)** due to tax induced distortion(s) of intertemporal allocation
- **Harberger-triangle** (in case of a single tax) becomes a **Feldstein-trapezoid** in case of multiple taxes (tax on taxes)

V. Welfare Loss and Excess Burden in an OLG-Model (5)

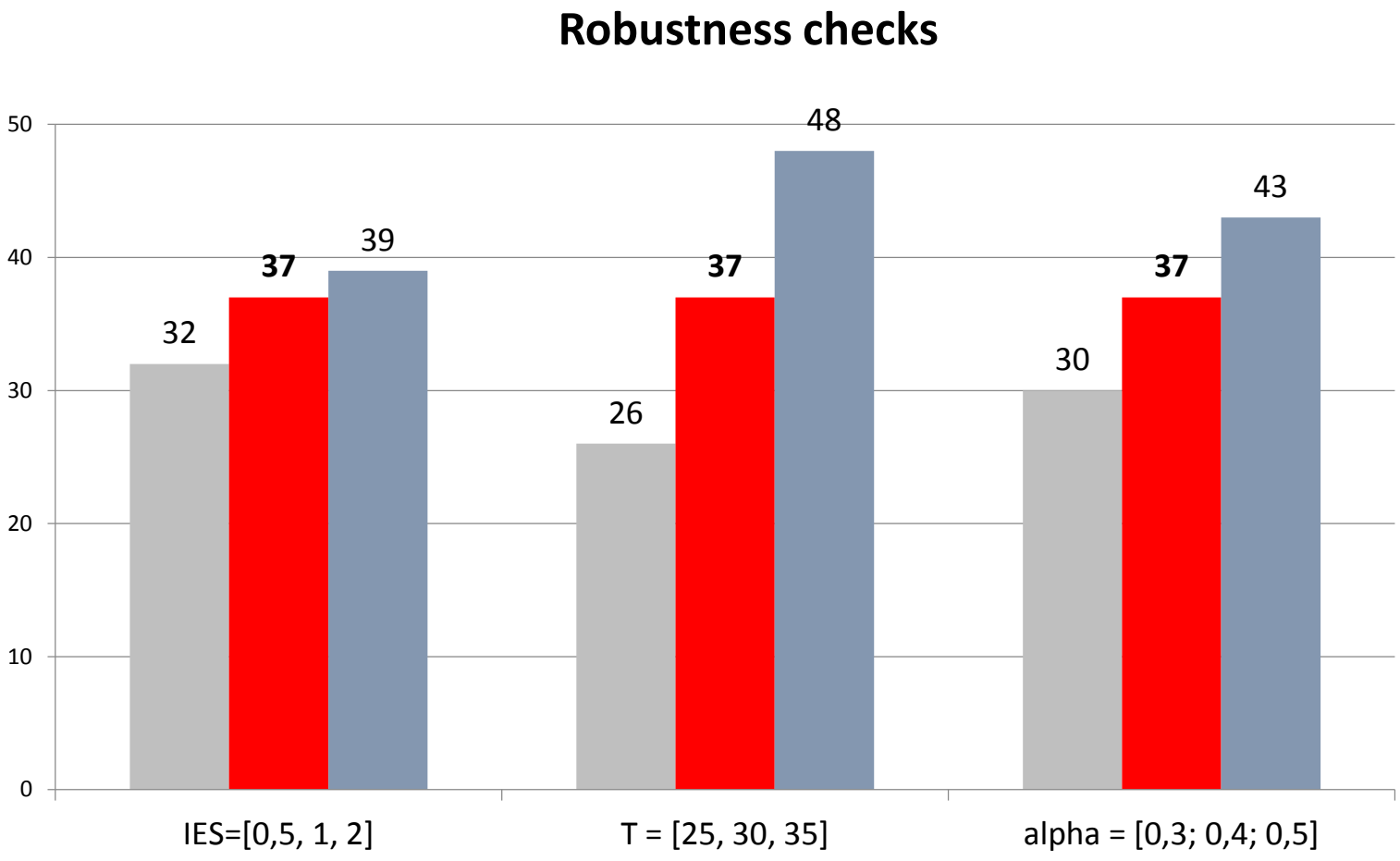
Calculations of welfare losses

Period				**B**	**C**
				1999 - 2009	2010 - 2014
Types of taxes imposed		Base	**CYT**	**CYT + INFT**	**CYT + INFT + FRT**
Loss in consumer surplus (%)	CS		4,79	10,13	14,08
Government revenue (%)	TX		4,41	8,53	11,12
Deadweight loss (%)	DWL		0,38	1,60	2,96
Deadweight loss	**€bn**	**0**	**10**	**43**	**80**
Additional deadweight loss	**€bn**		10	**33**	**37**
Marginal tax inefficiency	$\Delta\lambda$		*0,09*	*0,30*	*0,53*
	$\Delta\lambda = \Delta DWL / \Delta TX$				

"This is real money"

Lucas, J. (1994)

V. Welfare Loss and Excess Burden in an OLG-Model (6)



Calculations are robust with regard to changes in:

- IES (Intertemporal Elasticity of Substitution)
- T (generation length/ planning horizon of savers
- α (Preference for retirement consumption)

VI. Conclusions

- Since the breakdown of the Fisher-effect in 2010 the ECB de facto imposes an **additional type of tax** on savings in EMU, the **financial repression tax (FRT).**

- In the case of German savers, the **fiscal costs of FRT in terms of interest income foregone amounts to around 65 €bn annually,** more than capital yield tax and inflation tax taken together (60 €bn per year).

- The concept of the **Effective Inflation Rate** provides a link to **intertemporal allocation effects** of low interest rates **extending the fiscal view** of a mere zero sum game. It is a **more suitable measure of current inflation of future consumption compared to the traditional CPI inflation rate** that only measures current inflation of current consumption.

- The calculated **welfare losses (in terms of foregone consumer surplus) of the financial repression tax are substantial: around 40 €bn per year.** From a welfare economic point of view, financial repression is a **most expensive type of tax,** creating a marginal tax inefficiency of around 50 Cents per Euro collected.

- **OLG-model results are robust** w.r.t. parameter variations **and consistent** with other research results in this field.