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Reforming housing rental market in a life-cycle model

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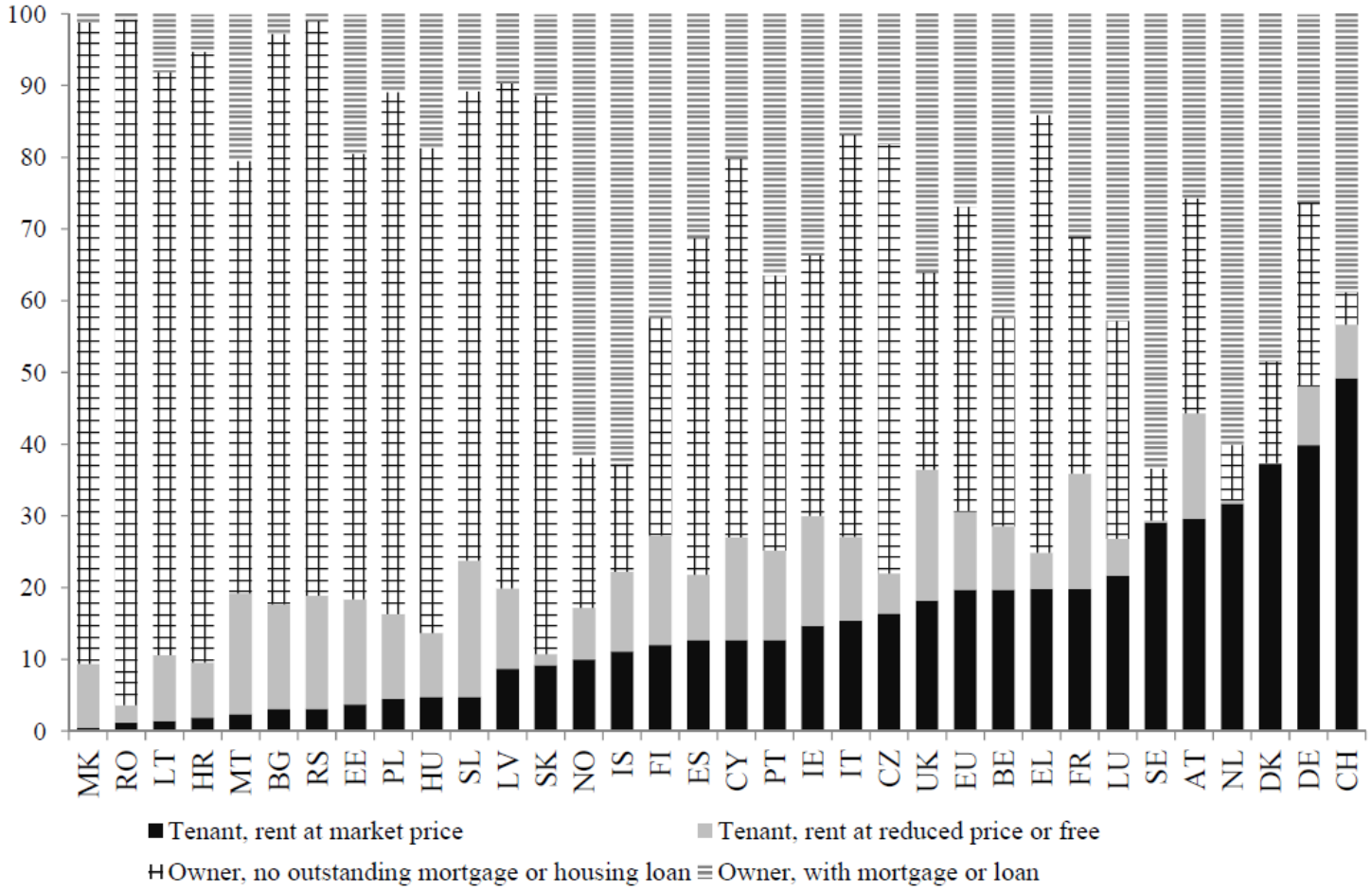
Motivation

Heterogenous tenure structure in Europe in 2015



Source: Eurostat

Why should we care about the rental market?

Arce and López-Salido (2008):
the availability of rental housing reduces the risk of a house price bubble

Cuerpo et al. (2014), Czerniak and Rubaszek (2017), Rubaszek and Rubio (2017):
rental market attenuates the reaction of the housing sector to macroeconomic shocks

Barceló (2006) and Caldera Sánchez and Andrews (2011):
availability of rental housing leads to higher residential and labor mobility

Moreover, effective rental housing gives an alternative to the mortgage market in satisfying housing needs!

Research questions and methods

Research questions:

Q1: What are the reasons of underdeveloped rental market in Poland?
Q2: What can we do develop the private rental market?

Research methods:

M1: Survey
M2: Counterfactual simulations with HA life-cycle model

The survey:

What are the reasons of underdeveloped rental market in Poland?

The survey

- **Method:**
  survey on the representative sample of 1005 persons
  (9-13 July 2016 r., IPSOS omnibus survey)

- **Aim:**
  analyze the reasons of low share of the rental market at household level
  psychological vs. economic factors

Key findings from the survey

1. **Renting in Poland is more expensive than owning**
   (bad tenant risk, fiscal policy)

2. **There is substantial disutility of renting**
   (psychological reasons to own)

3. **Flawed economic reasoning**

4. **Renting treated only as a temporary method of satisfying housing needs**

Poles prefer to own

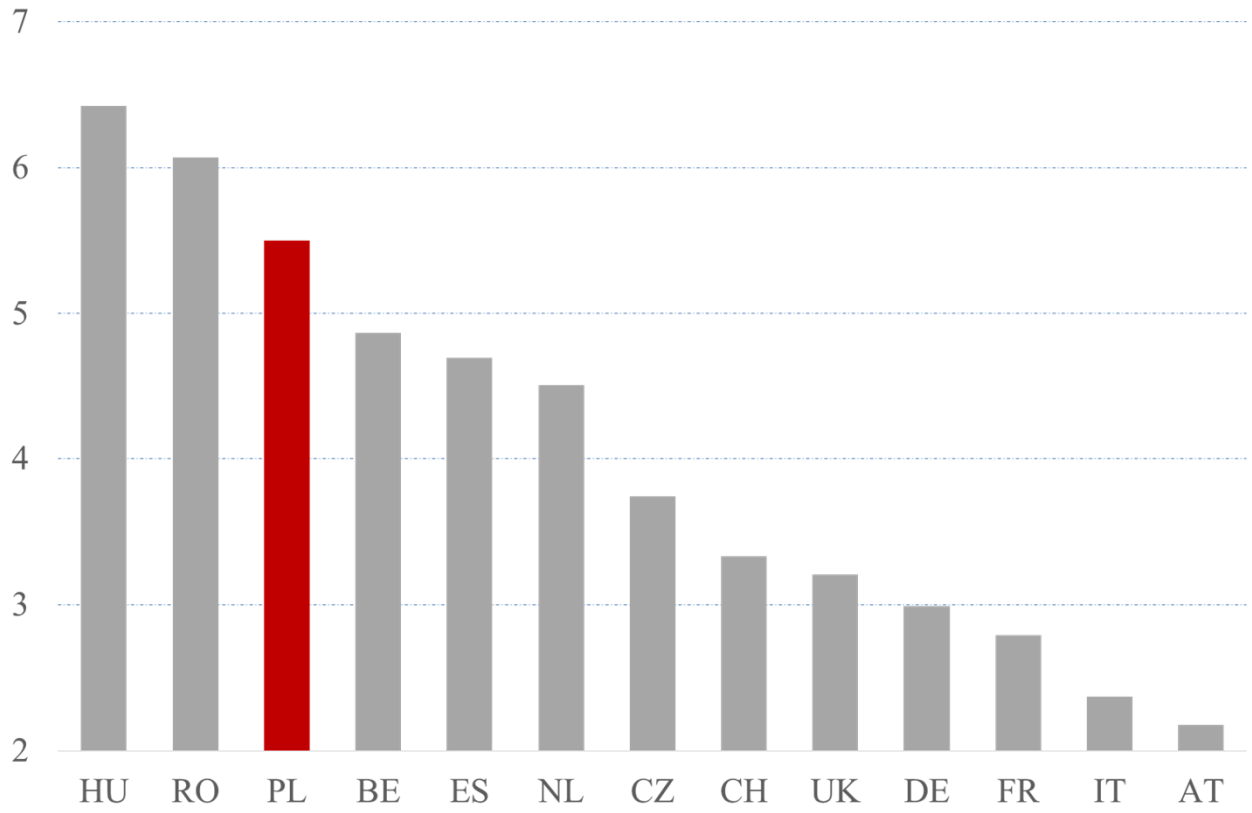
A sentence closer to your opinion:	
Buying a house makes more sense than renting it (good investment)	**80.7**
Renting makes more sense (enables flexibility and financial liquidity)	**19.3**
Do you prefer (in case of no own funds to buy home):	
Buying despite the burden of a mortgage	**52.6**
Renting	**29.7**
I prefer to buy even if it is more expensive than renting	
YES	**47.2**
NO	**24.9**

Economic factors

	owning	no opinion	renting
Risk (price fluctuations vs. rent fluctuations)	**65.6**	**22.8**	**11.6**
Monthly costs (mortgage vs. rent)	64.0	23.4	12.6
Transaction / intermediation costs	62.1	26.1	11.8
Taxes	61.0	25.3	13.7

Is renting in Poland really expensive?

Gross rental yield



Source: Global Property Guide, http://www.globalpropertyguide.com/Europe/rent-yields, downloaded on 22 August 2017.

Psychological factors

	owning	no opinion	renting
Family	**72.6**	**18.0**	**9.4**
Comfort	71.6	17.0	11.3
Freedom	71.1	16.5	12.3
Peace of mind	70.9	17.8	11.2
Social status	70.8	19.5	9.7
Attachment to housing unit	70.1	18.5	11.3
Happiness	68.8	21.1	10.1

Factors decreasing the attractiveness of investing in rental housing

	Agree	No opinion	Don't Agree
Low culture of tenants	**62.6**	**28.9**	**8.6**
Excessive rent control	50.3	37.2	12.4
Low demand	44.0	41.6	14.4
Excessive protection of tenants against eviction	40.3	43.6	16.1
Low rate of return	39.4	47.3	13.3

The model

The model

1. A theoretical framework that allows to quantify long-term effects of rental market reform. Main focus on equilibrium!

2. Hetreogenous agents, life-cycle setup

3. Calibrated to the Polish data

4. Calculate stationary equilibrium in few scenarios:
   - no reform (baseline)
   - partial reform of the rental market
   - full reform of the rental market

Model overview

- **Heterogeneous households** in terms:
  age, income, financial assets and *housing assets*
- **Idiosyncratic productivity, uncertain lifespan**
- Two types of goods: **non-durables and housing services**
- Housing can be **purchased or rented** (also living with parents)
- **Fiscal incentives** to own/rent
- **Disutility of renting**
- **Higher depreciation rate** of rented housing than owned housing

References:

Huggett (1996), Gervais (2002), Chen (2010) and Rubaszek (2012)

Key equations - utility

Utility function:

$$u(c, h_o, h_r) = \frac{(c^{\theta}(\max\{h_o, \vartheta h_r, coh\})^{1-\theta})^{1-\eta}}{1-\eta}$$

KEY PARAMETER: ϑ that measures „psychological factors” (disutility of renting)

Key equations – housing market

Mortgage market:

$$r^m = r + \psi^m \text{ and } d \leq (1-\gamma)h$$

KEY PARAMETERS: ψ^m - interest rate spread; $(1-\gamma)$ – maximum LTV

Rental price:

$$p_r = r + \delta_r$$

KEY PARAMETER: $\delta_r \geq \delta_o$ - depreciation rate of rented housing

Transaction costs:

$$\phi(h, h') = \begin{cases} \phi_1 h + \phi_2 h' & \text{if } h' \neq h \\ 0 & \text{if } h' = h \end{cases}$$

KEY PARAMETERS: ϕ_1/ϕ_2 - transaction costs of selling/buying

Key equations – taxes

Taxes that might affect housing tenure decision:

τ_a: capital income tax, so that after-tax income on financial assets is $(1-\tau_a)r$;

τ_m: mortgage subsidy, so that the effective mortgage rate is $(1-\tau_m)r^m$;

τ_o: imputed rent tax rate, so that tax on owned dwellings is $\tau_o rh$

τ_r: tax on income from rental, so that after-tax rental cost is $(1+\tau_r)p_r h$.

Comparison of owning to renting

Buying a house from savings:

$$\underbrace{(\delta_r - \delta_o)h}_{\text{maintenance}} + \underbrace{\tau_r p^r h}_{\text{rental tax}} + \underbrace{(\tau_a - \tau_o)rh}_{\text{taxation of assets}}$$

Buying a house with a mortgage:

$$\underbrace{(\delta_r - \delta_o)h}_{\text{maintenance}} + \underbrace{\tau_r p^r h}_{\text{rental tax}} + \underbrace{(\tau_m - \tau_o)rh}_{\text{taxation of assets}} - \underbrace{(1 - \tau_m)\psi^m h}_{\text{lending spread}}$$

Additional factors:

- Transaction costs
- Disutility of renting

Optimization problem

Households maximize the value function:

$$V_r(x) = \max_{c,h_r,na'} \{u(c,0,h_r) + \beta[s_j E(V(x'|x,h'=0)) + (1-s_j)u_b(beq')]\}$$

$$V_o(x) = \max_{c,h_o,na'} \{u(c,h_o,0) + \beta[s_j E(V(x'|x,h'=h_o)) + (1-s_j)u_b(beq')]\}$$

$$V(x) = \max\{V_r(x), V_o(x)\}$$

where $x = (na, h, e, j)$

Subject to income process, LTV restriction and budget constraint:

$$nw + y + (1-\tau_a)ra + tr \leq nw' + c + (1+\tau_r)p^r h_r + (\delta_o + \tau_o r)h + (1-\tau_m)r^m d + \phi(h,h')$$

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Aggregation

$$\text{Effective labor: } L = \int z(x)d\lambda$$

$$\text{Consumption: } C = \int c(x)d\lambda$$

$$\text{Financial assets: } A' = \int_{na' \geq 0} na'(x)d\lambda$$

$$\text{Financial debt: } D' = \int_{na' < 0} na'(x)d\lambda$$

$$\text{Housing assets (owners): } H_o = \int h_o(x)d\lambda$$

$$\text{Housing assets (landlords): } H_r = \int h_r(x)d\lambda$$

$$\text{Transaction costs: } \Phi = \int \phi(h, h_o(x))d\lambda$$

$$\text{Pensions: } Pen = \int_{j > \tilde{J}} pen(x)d\lambda$$

$$\text{Bequests: } Beq = \int (1 - s_j)beq(x)d\lambda$$

Equilibrium

General equilibrium condition, i.e. imperfect financial markets:

$$r = r^* - \xi \frac{B}{Y}$$

Markets clear:

$$A' = K' + D' + H_r(1 - p_r) + B'$$

$$H' = H_o + H_r$$

$$Y = C + \delta K' + \delta_o H_o + \delta_r H_r + \Phi + \psi^m D' - rB'$$

Budget is balanced:

$$Pen + G + tr = Beq + \tau_w wL + \tau_a rA' - \tau_m r^m D' + \tau_o rH_o + \tau_r p^r H_r$$

Distribution $\lambda(x)$ is time-invariant

Fit of the model to the data

Variable	Model	Data	Source
Real interest rate (%)	3.8	3.9	1998-2016 average, Eurostat
Rent over housing price (%)	6.3	6	2007-2015 average, Laszek et al. (2016)
Av. size of owned house (sq. meter)	51.2	63.7	Population and Housing Census 2011, CSO
Frac. of homeowners (%)	84.3	83.5	2014, Eurostat SILC
Frac. of private market tenants (%)	9.6	4.3	2014, Eurostat SILC
Share of mortgage debt in GDP (%)	40.2	37.2	end of 2016, Eurostat (total household debt)

Reforms

Three kinds of reforms that might affect housing tenure decision:

Reform 1: Professionalization of renting services:

disutility of renting ϑ declines from 0.85 to 0.95

Reform 2: Better protection of landlords against bad tenants:

depreciation rate δ_r declines to δ_o

Reform 3: Neutral taxes:

taxes on renting τ_r go to 0 and removal of mortgage rate subsidy $\tau_m = 0$

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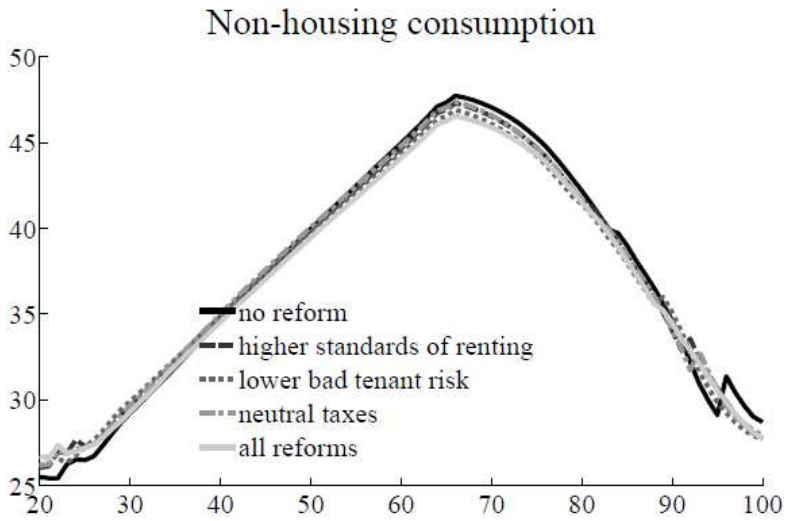
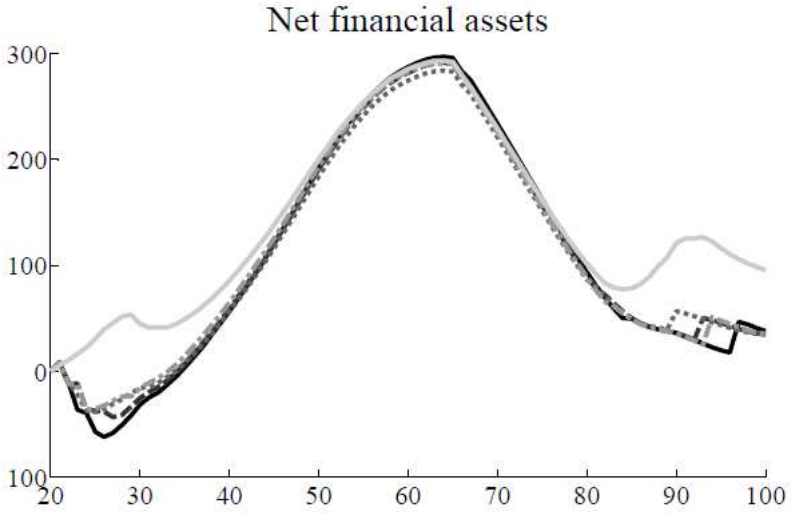
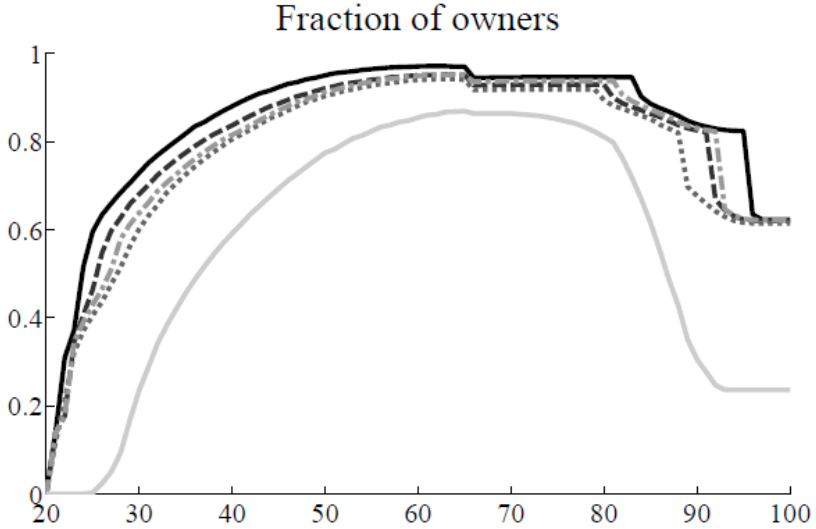
Reforms

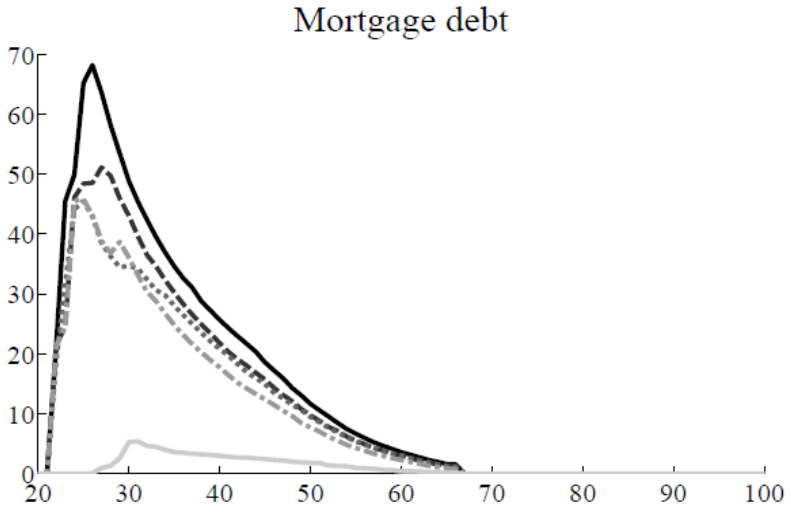
Scenario	Benchmark	reform 1	reform 2	reform 3	Full reform
Description	no reform	higher standards	bad tenant risk	tax reform	three together
Model parameters assumptions					
Disutility of renting (ϑ)	0.850	0.950	0.850	0.850	0.950
Depreciation rate of rented apartment (δ_r)	0.025	0.025	0.015	0.025	0.015
Tax deduction on mortgage rate (τ_m)	0.100	0.100	0.100	0	0
Tax on income from renting (τ_r)	0.085	0.085	0.085	0	0
Disadvantage of renting (% of house value per year)					
Buying from savings (see eq. 13)	2.1	2.0	1.0	1.7	0.7
Buying with mortgage (see eq. 14)	0.4	0.3	-0.7	-0.5	-1.5
Housing tenure structure among households (HH)					
Frac. of homeowners (%)	84.3	80.7	77.8	79.6	60.4
Frac. of tenants (%)	9.6	12.7	17.4	14.2	35.4
Frac. of HH 'living with parents'(%)	6.1	6.5	4.8	6.1	4.3
Living conditions					
Av. size of occupied house (sq.m.)	48.0	47.8	47.4	47.8	47.6
Av. size of owned house size (sq.m.)	51.2	52.0	52.6	52.4	56.0
Av. size of rented house size (sq.m.)	20.0	20.2	20.8	20.4	32.4
Life-cycle statistics					
Av. age of first house purchase	28.0	29.1	30.6	30.1	37.9
Frac. of HH buying house over lifespan (%)	96.6	95.4	94.3	95.7	87.1
Mortgage market					
Frac. of HH with debt (%)	20.0	17.8	16.4	16.0	4.6
Av. debt per homeowner (PLN, th)	138	145	153	148	187
Share of mortgage debt in GDP (%)	40.2	37.2	36.2	34.4	12.5

Reforms


Non-housing consumption
no reform
higher standards of renting
lower bad tenant risk
neutral taxes
all reforms


Net financial assets


Fraction of owners


Mortgage debt

Reforms - welfare

Scenario		reform 1	reform 2	reform 3	Full reform
Productivity (e)	share	higher standards	bad tenant risk	tax reform	three together
		in thousand PLN: ω_1			
0.37	13.6	11.2	13.4	7.0	27.8
0.56	22.2	10.8	12.6	6.1	26.3
0.86	28.4	7.5	8.1	2.4	19.2
1.32	22.2	4.0	3.7	-0.5	10.4
2.03	13.6	1.8	2.1	-0.5	4.1
		% of expected lifespan income: ω_2			
0.37	13.6	0.94	1.12	0.61	2.22
0.56	22.2	0.74	0.87	0.42	1.79
0.86	28.4	0.43	0.46	0.14	1.09
1.32	22.2	0.17	0.16	-0.02	0.44
2.03	13.6	0.05	0.06	-0.02	0.12

Notes: Welfare gains for the youngest cohort in comparison to the benchmark economy.

Policy implications

Key findings

1. It is **possible to increase the rental market share** by:
   - Reducing the „disutility of renting”
   - Changing regulations (bad tenant risk)
   - Changing taxation

2. There are **interactions among the reforms**: higher effect of 3 reforms together

3. The reform of the housing market allows to reduce private sector debt (**substitute for macroprudential policy**)

4. The reform is **welfare improving**, especially for poorer part of the society

Policy implications

Developing the private rental market in Poland can be achieved by:

1. stimulating professionalization of renting services (institutional investors)

2. protecting landlords against „bad tenants”, but at the same time protecting „good tenants” against eviction and excessive rent increases (long-term rental)

3. changing fiscal incentives (removing taxes on rents, introducing subsidies)

Thank you for attention