Assessing the short-term impact of pension reforms on older workers' participation rates

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Alfonso Arpaia - Kamil Dybczak – Fabiana Pierini

DGECFIN
European Commission

Motivation

1. Substantial labour market improvements
2. Older workers, especially women, have been the most dynamic component
3. A rising number of countries have enacted pension reforms
4. What is the impact of these reforms on participation rates? Any difference between men and women or age groups?
5. We look at short-term effects

Structure of this presentation

1. Present some stylised facts
2. Overview of pension reforms since 1997
3. (preliminary) assessment

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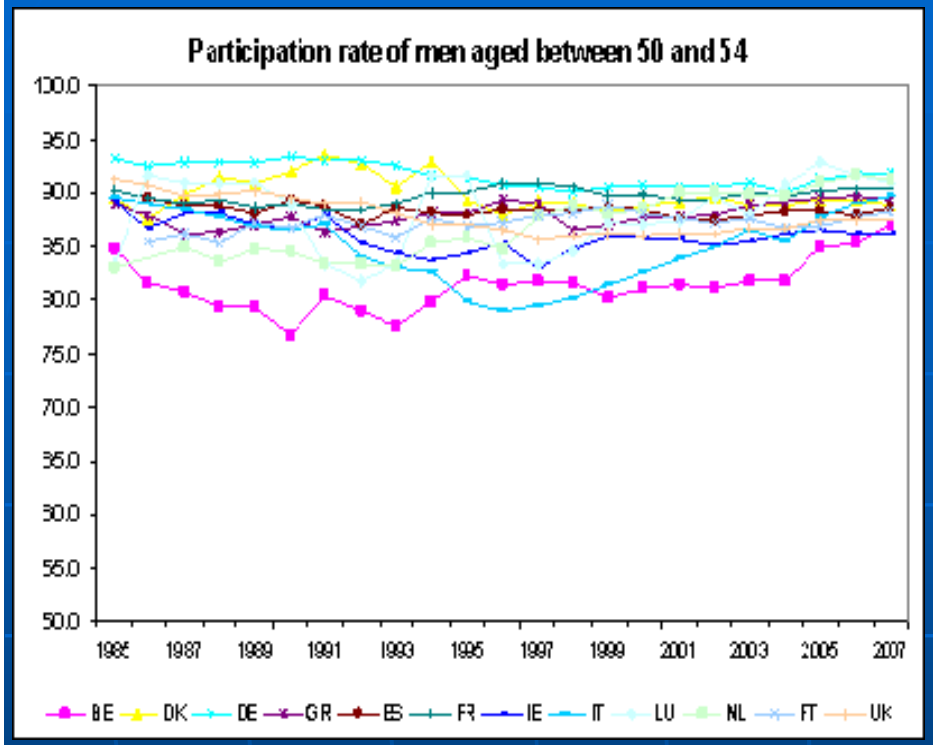
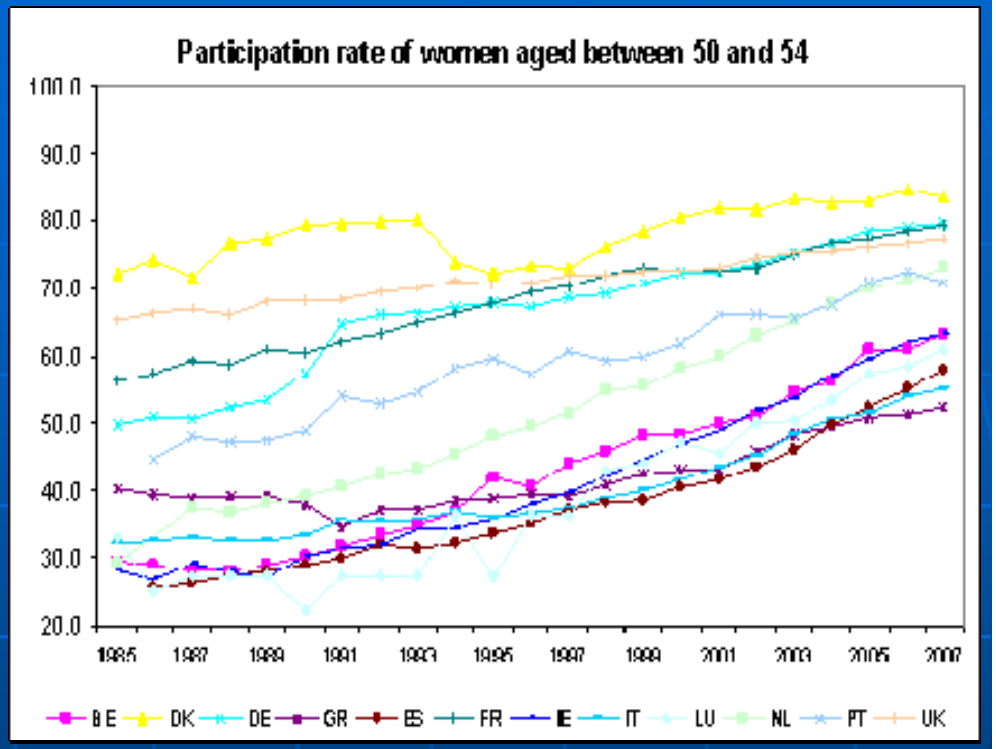
Some stylised facts

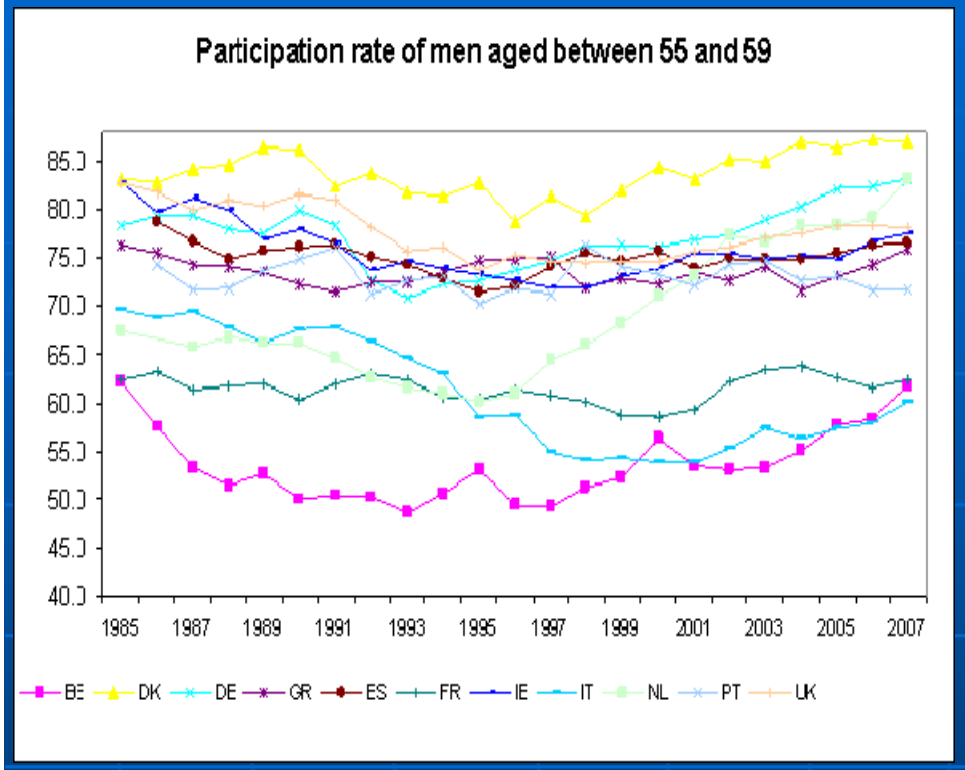
Stylised facts I: difference btw men and women often unnoticed

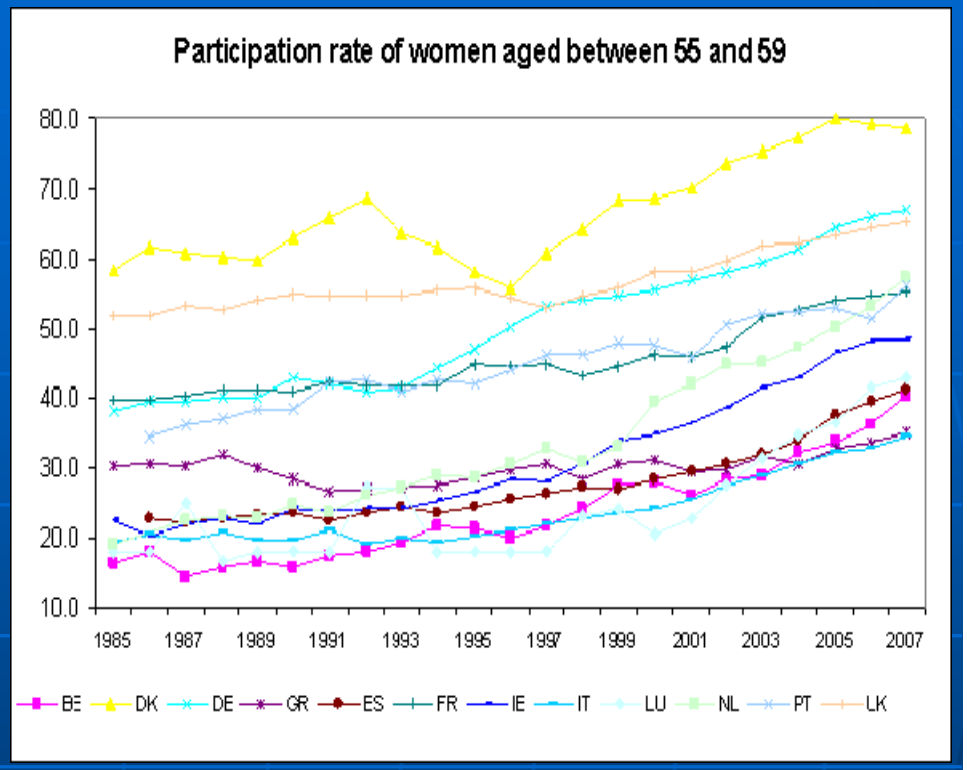




- Participation rate 50-54:
  - Stable or slightly improving for men
  - Steadily rising for women

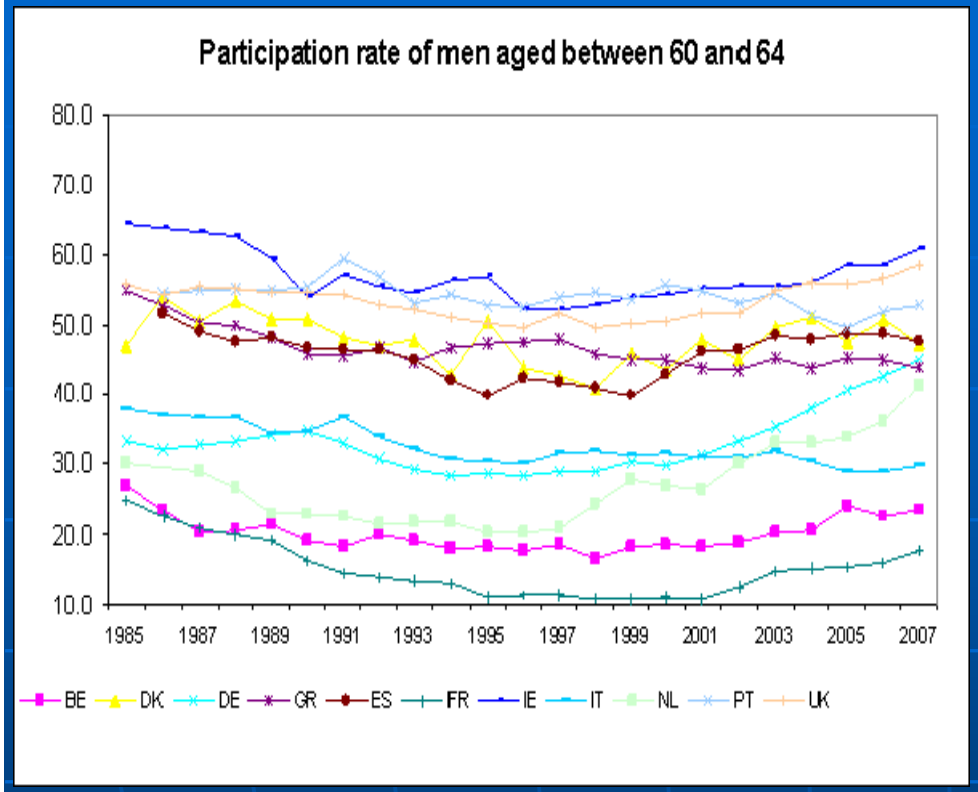
Stylised facts I: difference btw men and women often unnoticed

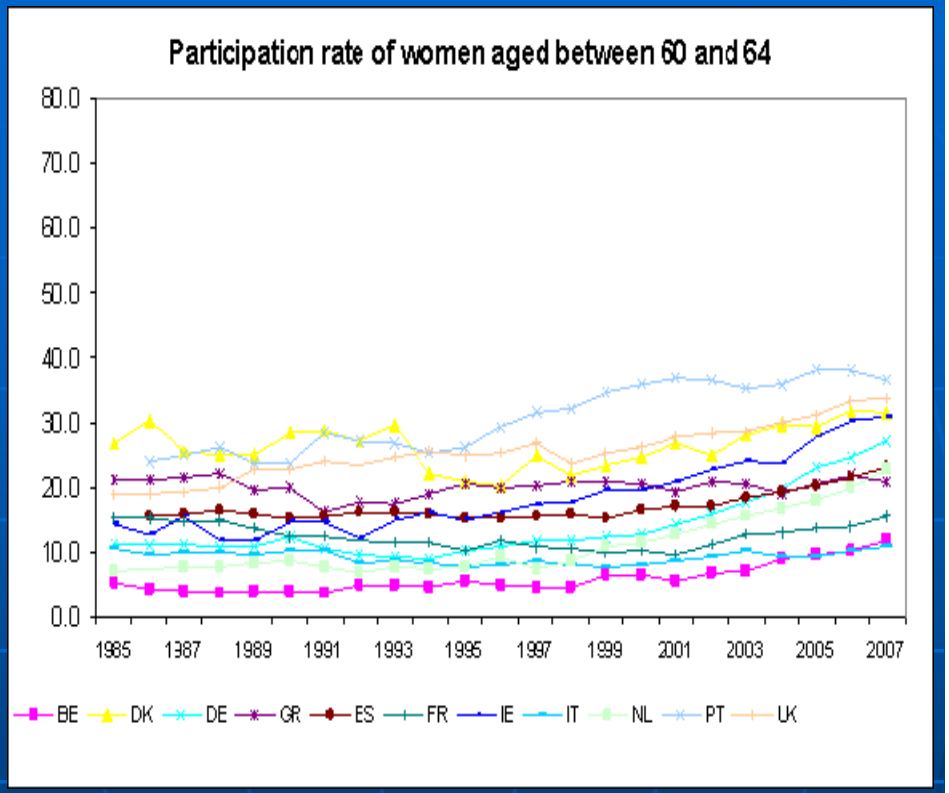




- Participation rate 55-59:
  - U shaped for men
  - Steadily rising for women

Stylised facts I: difference btw men and women often unnoticed



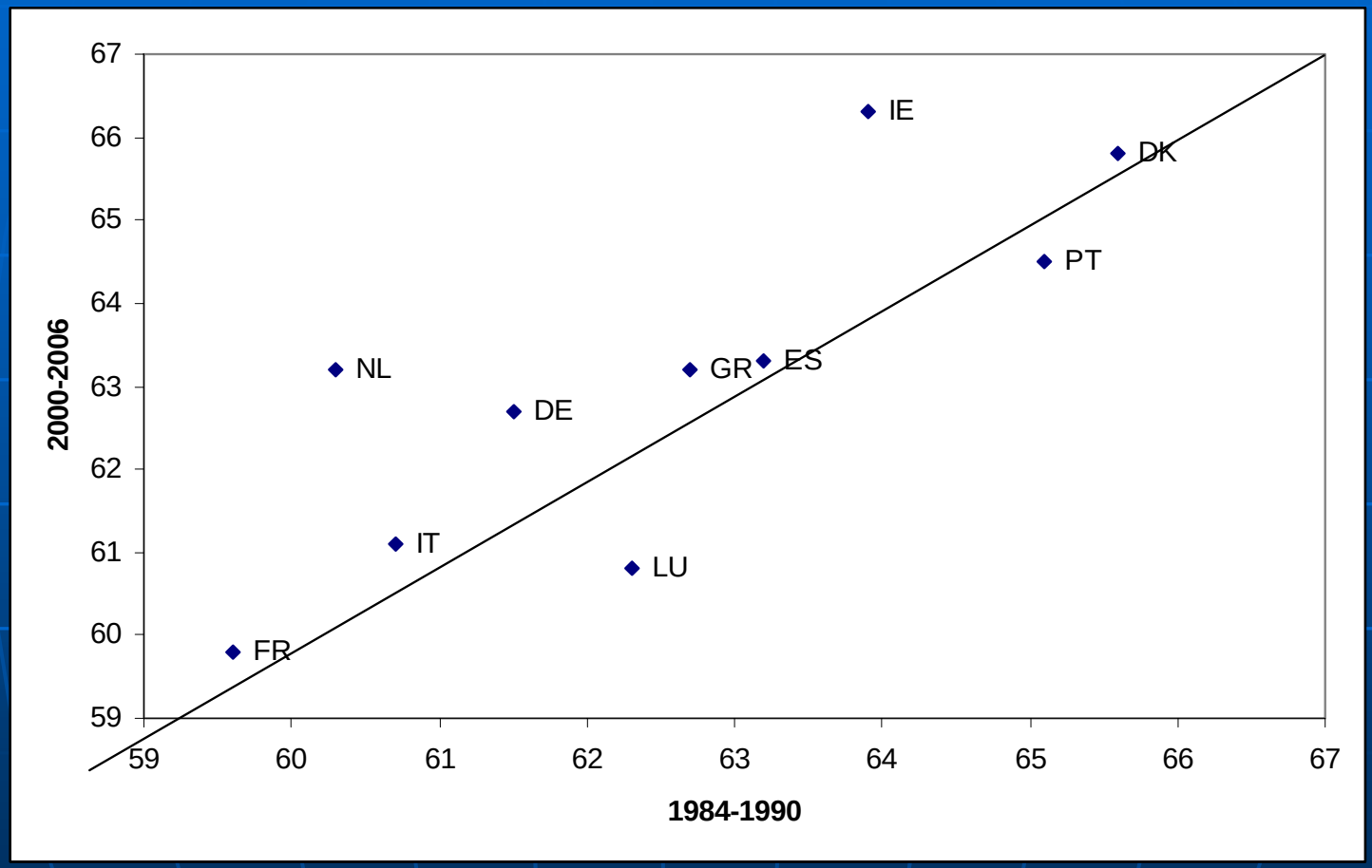


- Participation rate 60-64:
  - U shaped for men;
  - strong increase for NL and I (more recent)
  - Steadily rising for women

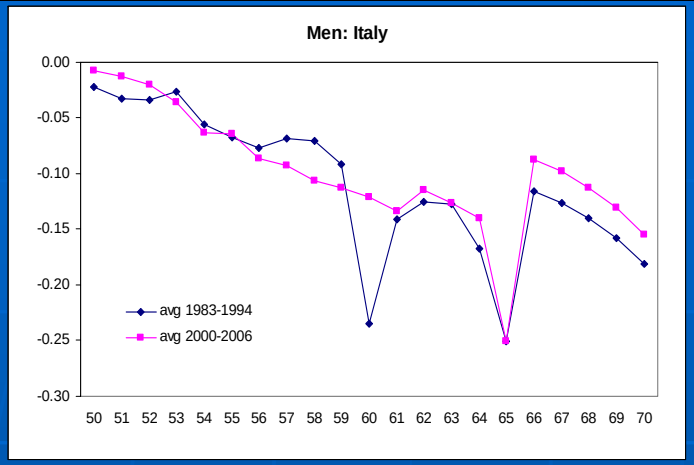
Stylised I

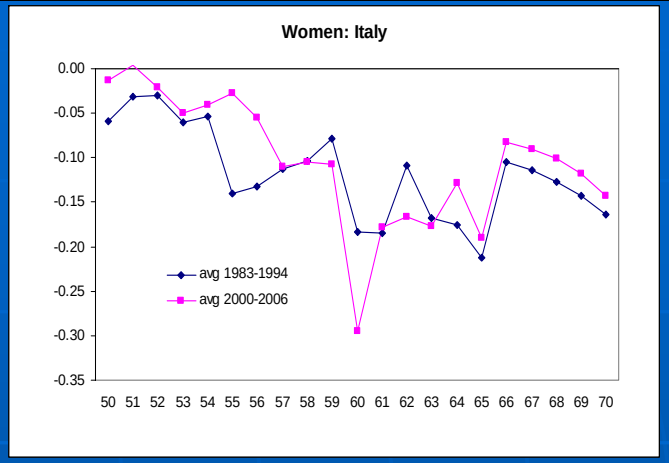
- Major modifications in female participation, especially at age between 50-54
- Without these changes participation rate would have stagnated.
- As consequence of differentiated patterns by sex the average exit age has changed only to a minor extent

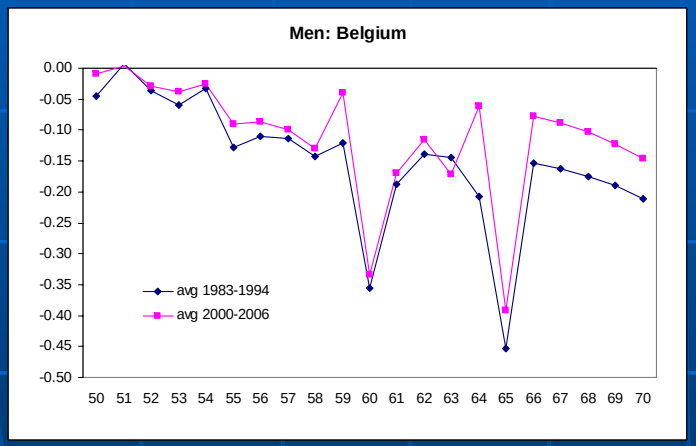
Average exit age

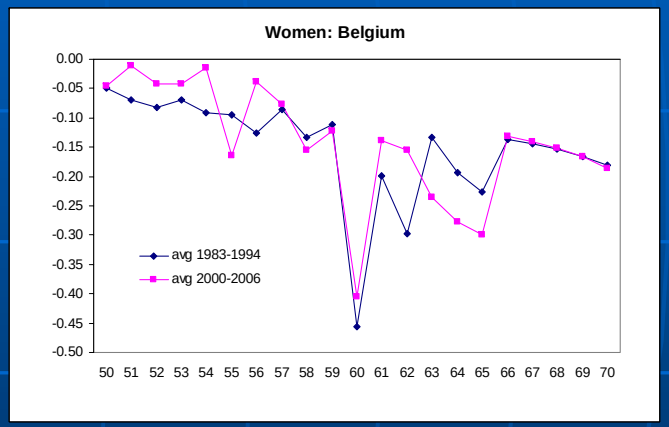


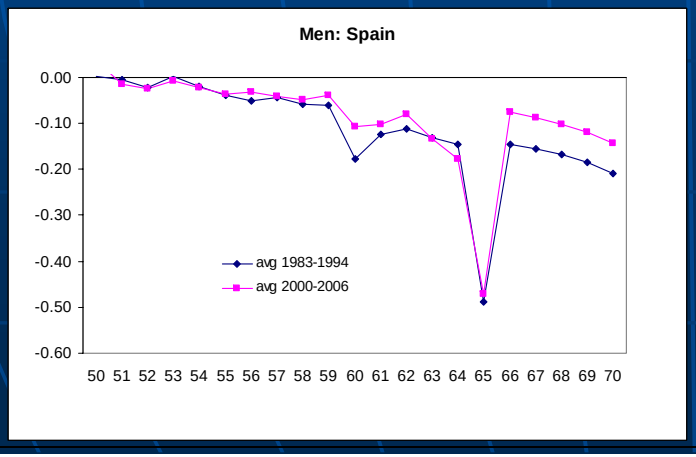
Stylised fact II: spikes in the exit probability

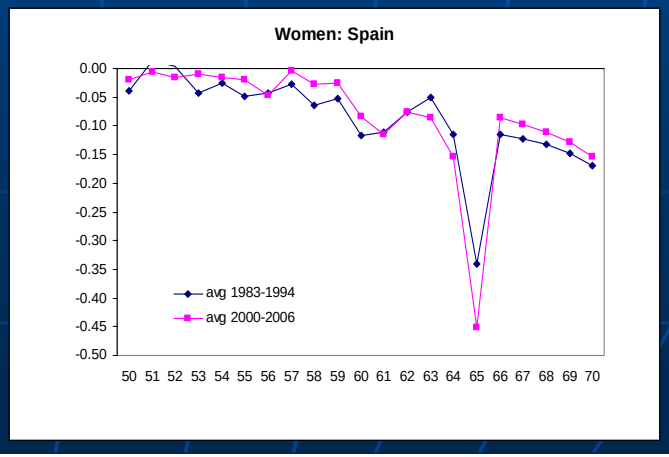




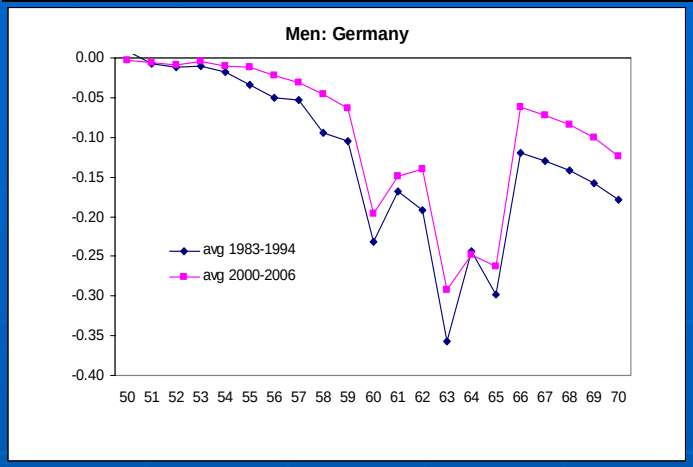


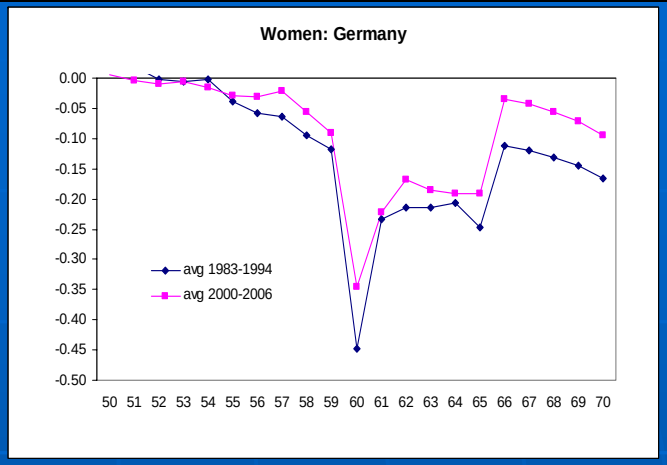


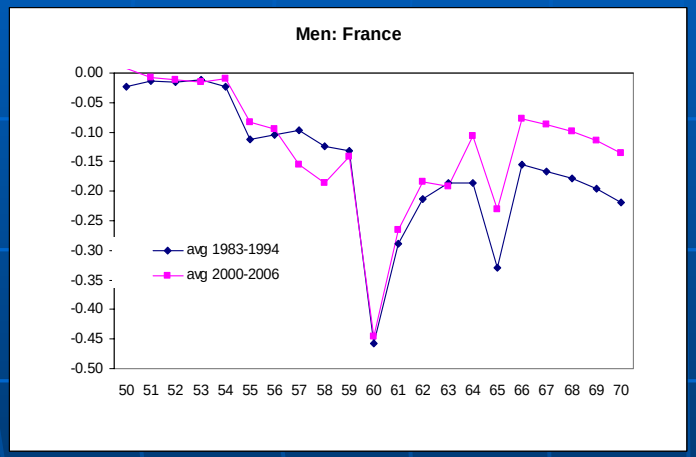


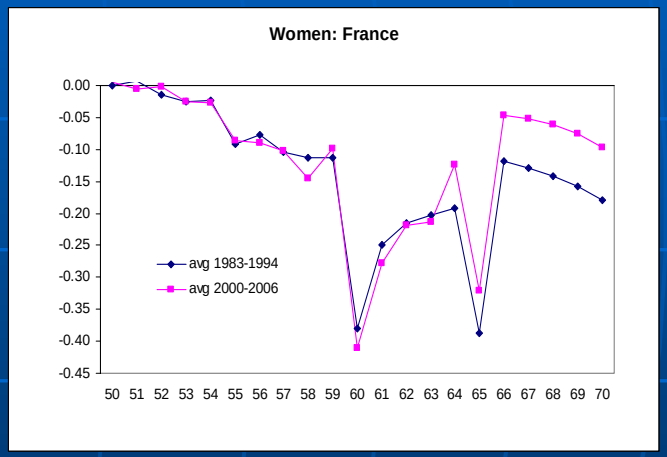


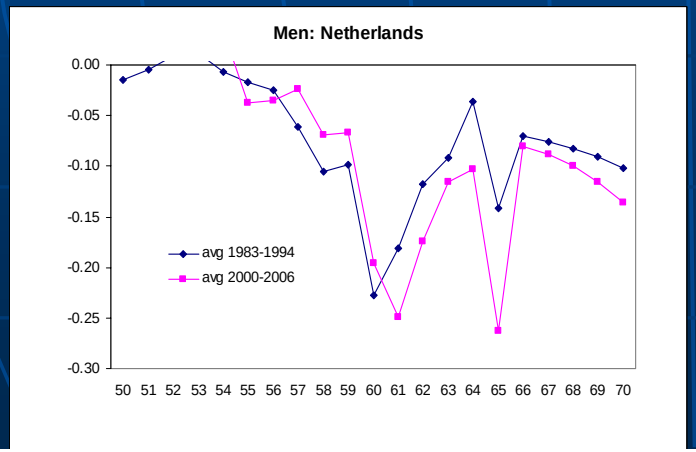
Stylised fact II: spikes in the exit probability

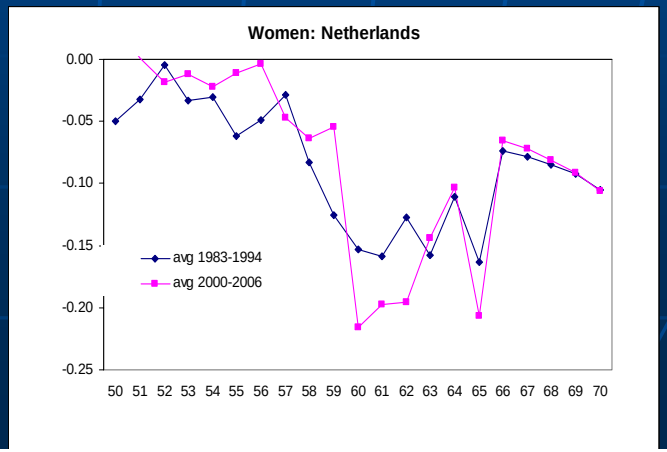












Stylised II

- Spikes can be observed at about the statutory retirement age and at the early retirement age
- Difference in the exit probability btw men and women due to different statutory retirement ages
- Changes in the profile for the recent years
  - Decline in the exit probability in several countries
  - Even so, at 60 there is an increase in the exit probability
  - Early exit remains in B, I, NL and DE (to a less extent)

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Explantation of the main trends

Explanations of the main trends

- trend in real earnings
- System of incentives built in the pension system
- Rule to access to pension (early age for retirement and statutory retirement age), public health and long-term care
- Low statutory retirement age
- Unintended (?) effects deriving form the interaction between different welfare benefits (early retirements schemes and special unemployment benefits for older workers)
- Work histories and accumulation of financial wealth

The retirement decision influenced

- **lifetime streams of earnings, pensions and other sources of income**
- **Option of continued work keeping the option to retire later**
- **Thus, changes in the pension formula modify retirement decision**
- **Shift from DB to DC**

Different measures undertaken in the EU

- Parametric reforms: stricter eligibility conditions (e.g. statutory and mininum retirement age), less generous benefits, stronger actuarial links between benefits and contributions (e.g. extending the period over which earnings are taken into account for calculation of benefits)
- Systemic reforms: from DB to NDC or introduction of statutory funded pension schemes
- Changes in taxation of contributions and benefits
- Changes in pension coverage
- Development of mandatory/voluntary second and third pension schemes
- Demographic adjustment of pension to future changes in life expectancy
- Reducing the generosity/abolishing early retirement
- Rewarding deferred retirement
- Flexible working arrangements

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A preliminary econometric assessment

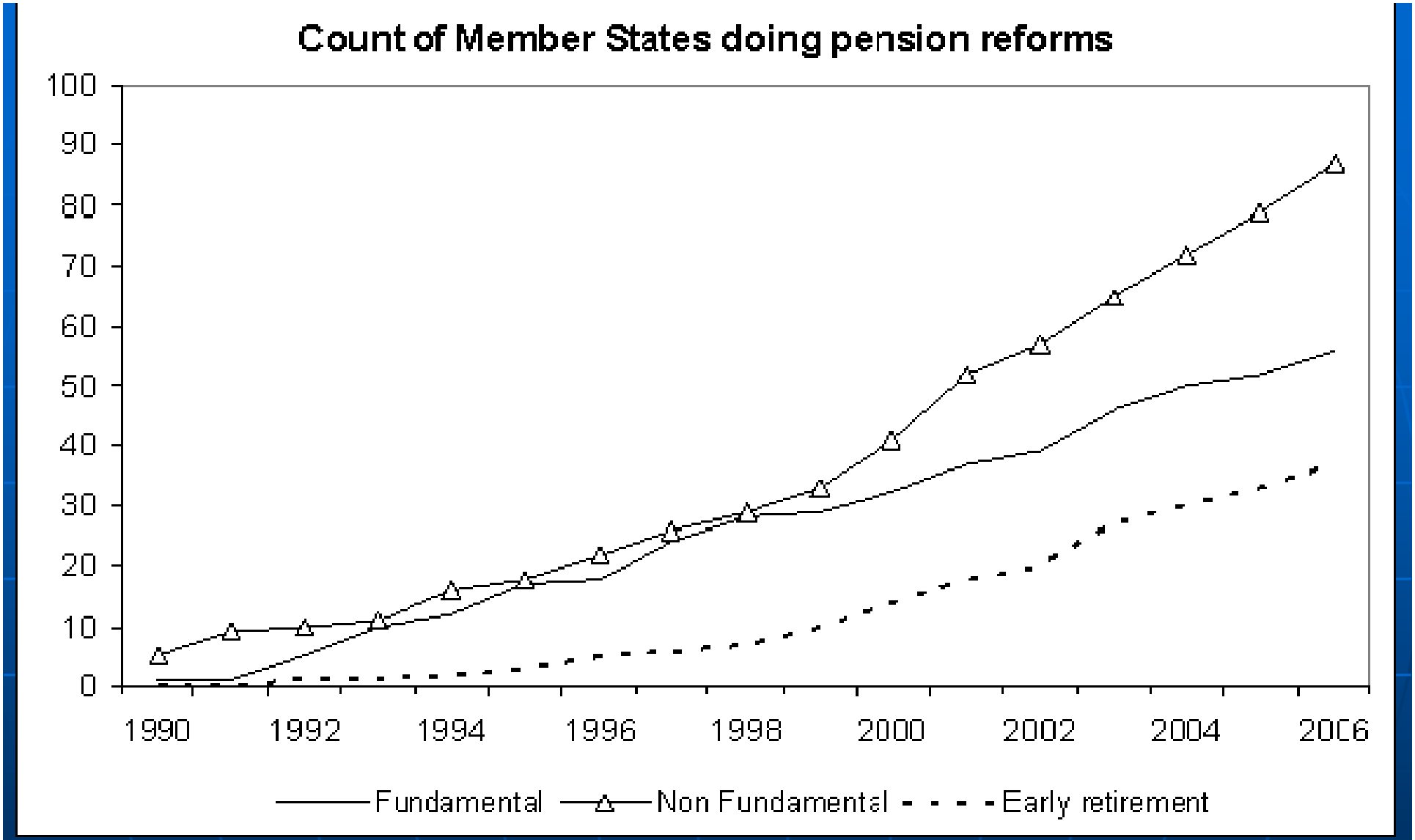
- **Variation in policy over time and across countries useful to assess the short-term effects of pension reforms**
- **The chronology of pension reforms can be used for making before-after comparison**
- **Sources (LABREF (2000-2007); MISSOC; OECD; FRDB)**
- **We classify pension reforms in 3 categories**
  - **Fundamental:**
    - **Reforms changing the way of financing of pensions (e.g. from DB to DC) or eligibility conditions; usually gradually phased-in**
  - **Non-Fundamental:**
    - **all others parametric reforms nor in Fundamental or in Early Retirement , (e.g. change tax regime, indexation rules)**
  - **Early retirement**

	Year of pension/ early retirement reform		
Country	**Fundamental pension reform**	**Non fundamental pension reform**	**Abolishing/ tightening access to early retirement***
Austria	1993, 2000, 2003, 2004	1990, 1995, 2001	1996, 2003
Belgium	1994, 1997	1990, 1991, 1996, 2000, 2003, 2004, 2005	2001 (1), 2005
Bulgaria	2001, 2003	2002, 2004, 2005, 2006	
Cyprus	2005		
Czech	**1995,** 2003	1994, 1999, 2001, 2005	2001, 2003 (1)
Denmark		1991, 1996, 2000, 2001, 2003, 2004	1998, 1999, 2000, 2006
Estonia	1993, 1998, 2001	1992, 2002	
Finland	1993, 1997, 2003, 2004	1991, 1992, 1995, 1996, 2000, 2001, 2002, 2006?,	1994, 1996, 2000, 2001, 2002 (2), 2003, 2004 (1)
France	1993, 2003	1991, 1994, 1998, 2001, 2006	2002 (1), 2003 (ONE)
Germany	1992, 1997, 2001, 2006		1992, 2004
Greece	1990, 1992	1997, 1998, 2000, 2003, 2004	
Hungary	1997		
Ireland	2003	1990, 2006	2003
Italy	1992, 1995, 2004	1993, 1994, 1997, 1998, 2000, 2002, 2005, 2006	1997
Latvia	1995, 1997, 2001	1994, 2000, 2004	2005
Lithuania	1994, 2001, 2002	2003	
Luxembourg		2003	
Malta	2006		
Netherlands	1995	1990, 1997, 2006	1995, 2004
Poland	1998		2000, 2001 (1)
Portugal	1993, 1998, 2000, 2005	1997, 2001, 2006	1999, 2003 (2), 2005 (1), 2006 (1)
Romania	2000	2003, 2004	
Slovakia	2003	1996, 2001, 2005, 2006	2003 (1), 2006 (ONE)
Slovenia	1996, 1999	2000, 2001	1999
Spain	1997, 2006	1999, 2001, 2002, 2003, 2004, 2005	2006 (ONE)
Sweden	1992, 1998, 2002	1994, 1999, 2000, 2001	2000
United Kingdom	1995, 2004, 2006	1999, 2001, 2003, 2005	

Sources: LABREF (years 2000-2007); FRDB Database; OECD "Pensions at glance 2007"; JR on Adequate and sustainable pensions 2 US Social Security Administration Monthly Updates (www.socialsecurity.gov/policy/docs); Various literature (notably from R. Disney,

Legenda:
Fundamental pension reforms' include all reforms containing changes in the eligibility conditions (age, contribution lenght or formula, etc.).
Also reforms abolishing or reducing the generosity/ restricting the access to early retirement schemes are considered fundamental.
One same year is reported twice in the table only if enacted reforms affect both the eligility conditions for old age pension and early retirement s
Only reforms "decreasing the generosity" of the system are included in the table (are excluded for instance those measures increasing the leve

** (1): impementation after 1 year; (2): implementation after 2 years; (ONE): Only New Entrants*

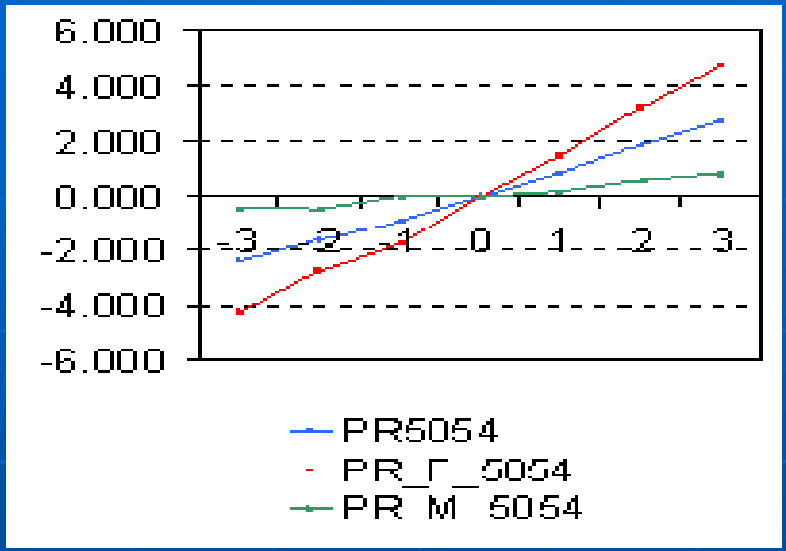


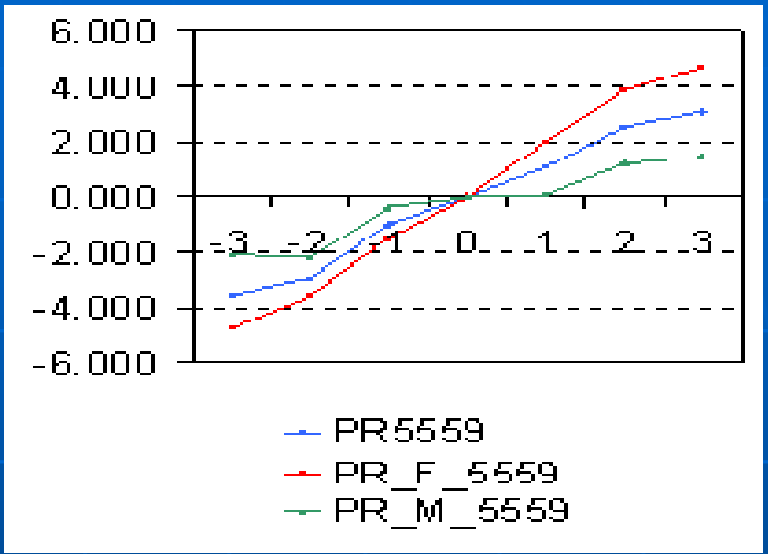
- **An increasing number of countries introduced fundamental reforms**
- **From 2000 non fundamental reforms are more frequent**
- **As of 2006 nearly all country did a pension reform**

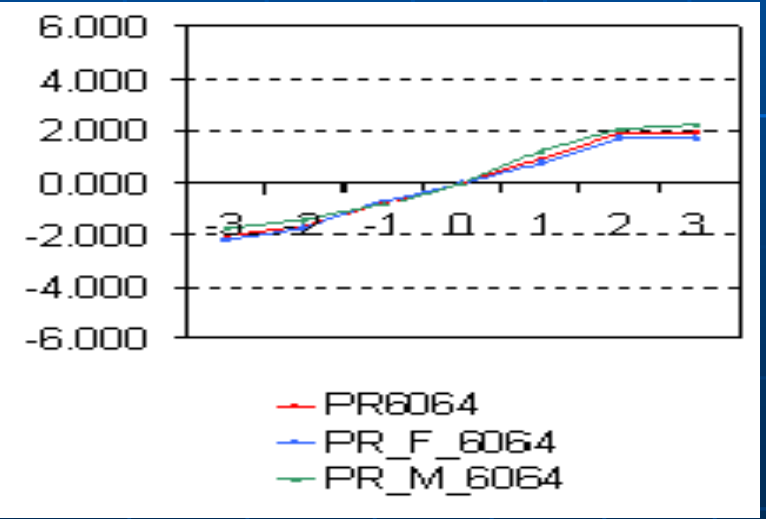
	No reforms' years	Reforms' years	z-test: same mean changes
Participation rate 50-54	0.5	0.9	1.9
Participation rate 55-59	0.7	0.9	0.6
Participation rate 60-64	0.3	0.9	2.4

Source: Authors calculations on LABREF database; the difference between the participation rates of the no-reforms and reforms years is statistically different from zero at 5% of confidence when the value of the z-test is above 2

Participation rate before and after pension reforms
Cumulative changes wrt year of reform







3 years after early retirement reform:

- total PR rises due to women
- PR of women aged 55-59 accelerates
- PR 60-64 rises sharply

$$PR_{ist} = \alpha_s + \mu_t + \beta\, SEX_{is} + \gamma\, ER_{st} + \delta\, FUN_{st} + \eta\, NONFUND_{st} + \phi\, SEX_{is} * ER_{st} +$$

$$\varphi\, SEX_{is} * FUN_{st} + \lambda\, SEX_{is} * NONFUND_{st} + \varepsilon_{ist}$$

PR: participation rate

SEX dummy 1 for women and 0 for men

ER dummy 1 if early retirement reform in country i at time t and 0 otherwise

FUND dummy 1 if fundamental reform in country i at time t and 0 otherwise

NONFUND dummy 1 if non-fundamental reform in country i at time t and 0 otherwise

We verify if response varies according to

- combinations of age groups
- gender types
- and reforms categories

Our priors are

- Reforms of different types have different implementation lags
- Old cohorts likely unaffected
- Women have more career interruptions, shorter periods of contribution. Thus more reactive to a change in the parameters and the eligibility conditions

Table 1 – Effect of different pension reforms on the participation rate of the 50-54 age group

	EU27			EMU			NON EMU		
	coef.	t-stat		coef.	t-stat		coef.	t-stat	
Fundamental	0.31	0.21		0.43	0.27		1.18	1.14	
Fundamental (-1)	0.01	0.00		-0.16	-0.10		0.58	0.56	
Fundamental (-2)	-0.77	-0.44		-0.15	-0.07		-1.93	-2.32	**
Fundamental (-3)	-0.75	-0.44		0.36	0.20		-2.92	-2.78	**
Non Fundamental	1.36	0.78		4.69	2.13	*	1.69	1.52	
Non Fundamental (-1)	1.34	0.79		4.83	2.56	**	1.48	1.34	
Non Fundamental (-2)	0.80	0.47		3.19	1.40		0.66	0.69	
Non Fundamental (-3)	-0.53	-0.31		0.54	0.23		0.19	0.16	
Early Retirement	-0.82	-0.45		-2.42	-1.25		0.11	0.10	
Early Retirement (-1)	-0.71	-0.45		-1.82	-0.80		0.08	0.14	
Early Retirement (-2)	-2.24	-1.21		-4.41	-1.78	*	-0.32	-0.34	
Early Retirement (-3)	-2.77	-1.45		-6.08	-2.21	**	0.34	0.33	
Women	-36.28	-7.37	***	-42.86	-8.11	***	-14.14	-5.09	***
Women Fundamental	0.58	0.25		-0.29	-0.11		0.92	0.58	
Women Fundamental (-1)	1.30	0.52		1.23	0.48		1.00	0.57	
Women Fundamental (-2)	3.39	1.23		4.25	1.25		2.50	4.36	***
Women Fundamental (-3)	3.02	1.08		2.78	0.95		4.49	4.49	***
Women Non Fundamental	-1.62	-0.55		-3.51	-1.11		-0.61	-0.39	
Women Non Fundamental (-1)	-2.08	-0.77		-5.28	-2.19	**	-0.55	-0.37	
Women Non Fundamental (-2)	-0.76	-0.27		-2.14	-0.80		0.29	0.21	
Women Non Fundamental (-3)	0.21	0.08		0.65	0.20		0.92	0.46	
Women Early Retirement	4.57	1.58		9.68	2.81	**	0.22	0.10	
Women Early Retirement (-1)	5.10	1.88	*	10.26	2.94	**	0.06	0.05	
Women Early Retirement (-2)	6.45	2.35	**	12.17	3.79	***	1.26	0.84	
Women Early Retirement (-3)	6.63	2.28	**	13.27	4.13	***	0.27	0.13	
Constant	86.38	39.85	***	86.06	28.31	***	87.35	90.27	***
No of obs	601			358			243		
No of groups	27			15			12		
No of periods	17			17			17		
R2	0.51			0.73			0.30		
Gender Specific Time Dummy	YES			YES			YES		
Country fixed effects	YES			YES			YES		

Table 1 – Effect of different pension reforms on the participation rates of the 55-59 age group

	EU27			EMU			NON EMU		
	coef.	t-stat		coef.	t-stat		coef.	t-stat	
Fundamental	-0.21	-0.17		-1.60	-1.54		1.55	1.01	
Fundamental (-1)	-0.76	-0.60		-2.36	-2.31	**	2.30	1.06	
Fundamental (-2)	-1.03	-0.84		-2.68	-2.84	**	-0.32	-0.18	
Fundamental (-3)	-1.39	-0.94		-2.78	-1.64		-1.48	-0.57	
Non Fundamental	-0.34	-0.28		-1.04	-0.73		0.99	0.90	
Non Fundamental (-1)	-0.64	-0.58		0.42	0.50		0.24	0.19	
Non Fundamental (-2)	-1.61	-1.46		-0.32	-0.31		-1.87	-1.52	
Non Fundamental (-3)	-1.30	-1.09		-1.91	-1.32		-0.44	-0.36	
Early Retirement	-0.18	-0.12		-3.27	-3.21	***	2.64	1.06	
Early Retirement (-1)	-1.55	-1.39		-4.47	-3.69	***	-0.53	-0.27	
Early Retirement (-2)	-0.83	-0.75		-2.14	-1.55		1.38	0.94	
Early Retirement (-3)	-1.09	-0.71		-2.16	-1.31		1.33	0.65	
Women	-37.15	-10.44	***	-41.31	-12.05	***	-20.97	-12.51	***
Women Fundamental	0.38	0.19		1.59	0.88		-0.38	-0.16	
Women Fundamental (-1)	2.08	1.04		2.97	1.83	*	0.39	0.12	
Women Fundamental (-2)	2.70	1.38		5.31	3.42	***	0.38	0.14	
Women Fundamental (-3)	3.50	1.50		4.50	2.10	*	3.46	0.98	
Women Non Fundamental	-0.38	-0.19		0.36	0.16		-0.28	-0.16	
Women Non Fundamental (-1)	0.72	0.36		-1.44	-0.83		1.91	0.91	
Women Non Fundamental (-2)	2.07	0.95		0.03	0.02		4.03	1.45	
Women Non Fundamental (-3)	1.06	0.47		1.42	0.63		1.54	0.48	
Women Early Retirement	0.67	0.26		6.21	3.44	***	-4.00	-0.72	
Women Early Retirement (-1)	2.35	1.29		7.32	3.75	***	0.57	0.16	
Women Early Retirement (-2)	1.52	0.79		4.10	2.43	**	-0.46	-0.17	
Women Early Retirement (-3)	0.33	0.12		2.42	1.20		-3.33	-0.90	
Constant	70.25	31.28	***	68.77	32.15	***	67.86	35.48	***
No of obs	601			351			250		
No of groups	27			15			12		
No of periods	17			17			17		
R2	0.50			0.59			0.35		
Time Dummy Gender Specific	YES			YES			YES		
Country fixed effects	YES			YES			YES		

1 – Effect of different pension reforms on the participation rates of the 60-64 age group

60 – 64

	EU27			EMU			NON EMU		
	coef.	t-stat		coef.	t-stat		coef.	t-stat	
Fundamental	0.84	1.07		0.41	0.51		2.66	1.27	
Fundamental (-1)	0.80	0.83		0.46	0.49		2.45	0.87	
Fundamental (-2)	-0.79	-0.67		-1.59	-1.04		0.29	0.14	
Fundamental (-3)	0.08	0.08		-0.52	-0.48		-0.05	-0.02	
Non Fundamental	-0.41	-0.34		-0.62	-0.37		-0.01	-0.01	
Non Fundamental (-1)	0.09	0.08		1.55	1.33		-0.18	-0.11	
Non Fundamental (-2)	-1.25	-1.27		-0.97	-1.19		-1.00	-0.60	
Non Fundamental (-3)	-2.25	-2.02	**	-3.09	-2.09	*	-1.50	-0.97	
Early Retirement	-2.71	-2.73	***	-4.73	-3.70	***	-0.99	-0.78	
Early Retirement (-1)	-2.32	-2.45	**	-4.44	-3.12	***	0.49	0.51	
Early Retirement (-2)	-2.02	-2.11	**	-3.35	-1.82	*	-0.75	-0.51	
Early Retirement (-3)	-2.47	-1.84	*	-5.19	-5.25	***	1.37	0.65	
Women	-22.70	-7.47	***	-24.38	-5.93	***	-24.12	-15.00	***
Women Fundamental	-0.35	-0.38		0.80	0.63		-3.92	-2.41	**
Women Fundamental (-1)	-0.05	-0.05		0.28	0.21		-1.80	-0.66	
Women Fundamental (-2)	2.36	1.87	*	3.98	2.05	*	-0.74	-0.38	
Women Fundamental (-3)	1.59	1.28		2.67	1.68		0.79	0.29	
Women Non Fundamental	-0.27	-0.17		1.46	0.60		-2.35	-1.56	
Women Non Fundamental (-1)	-1.11	-0.85		-1.95	-1.09		-1.22	-0.81	
Women Non Fundamental (-2)	0.99	0.78		1.08	0.68		0.34	0.22	
Women Non Fundamental (-3)	2.11	1.44		3.37	1.91	*	1.82	0.92	
Women Early Retirement	3.11	2.22	**	6.40	3.99	***	0.75	0.28	
Women Early Retirement (-1)	2.98	2.09	**	6.87	3.40	***	-1.90	-1.32	
Women Early Retirement (-2)	2.82	2.16	**	5.52	2.52	**	1.62	0.92	
Women Early Retirement (-3)	2.47	1.50		6.31	3.84	***	-2.92	-1.46	
Constant	36.22	24.21	***	34.41	17.50	***	39.81	20.99	***
No of obs	595			345			250		
No of groups	27			15			12		
No of periods	17			17			17		
R2	0.34			0.47			0.23		
Time Dummy	YES			YES			YES		
Country fixed effects	YES			YES			YES		

Short-run effects

FUNDAMENTAL

	EMU		NON-EMU	
	men	women	men	women
PR5054	:	:	-	+
PR5559	-	+	:	:
PR6064	:	+	:	-

NON-FUNDAMENTAL

	EMU		NON-EMU	
	men	women	men	women
PR5054	+	-	:	:
PR5559	:	:	:	:
PR6064	-	+	:	:

Short-run effects

	EARLY RETIREMENT			
	EMU		NON-EMU	
	men	women	men	women
PR5054	-	+	:	:
PR5559	-	+	:	:
PR6064	-	+	:	:

CONCLUSIONS

- **Rich variation in policy interventions across time and countries to assess short-term effects of pension reforms**
- **Before-after analysis suggest different impact on participation rate of men and women**
  - **Tightening access to early retirement have positive effect on female component but negative on male**
  - **Reform that change way of financing have unintended effect on men**
  - **Reforms modifying certain parameters may have positively contributed to the increase in male participation rate**

Thank you