

Asymmetry and non-linearity in discouraged and added worker effects

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Main goal of the project

- To revisit the relationship between labour force participation and business cycle indicators to check if there is a cyclical pattern of changes in the participation rate in the labour market in Poland.
 - To account for simultaneous presence of both effects.
 - To account for asymmetry and time volatility (age, sex, within and between business cycles, by size and persistence of the effects, by potential non-linearities).

Motivation & Contribution

- Certain cyclical properties of the labour force participation rates reflect discouraged or added worker effects.
 - The discouraged worker effect is more commonly observed.
 - The added worker effect has mainly been observed among female and older workers (Benati 2001; Euwals et al. 2011; Filatrou and Reynes 2012).

Motivation & Contribution

- Majority of the previous studies on these effects assumed that they were symmetrical and linear.
 - Exceptions: Congregado et al. (2011, 2014), Darby et al. (1998), O'Brien (2011), Altavilla et al. (2005), Fuchs and Weber (2013), Gałęcka-Burdziak and Pater (2016).
- Our goal is to address these issues by testing whether the prevalence of either effect is:
 - state-dependent (threshold analysis) or
 - business cycle phase-dependent (STR), and
 - whether the transitions between effects are smooth and gradual or instantaneous and abrupt.

Motivation & Contribution

- To study workers who are marginally attached to the labour market in a country that suffers from insufficient effective labour supply.
 - Poland, 1995-2016, quarterly LFS, labour force participation rates broken down by age and sex.
- To formulate policy recommendations that might be implemented and would improve the chances that entries of the marginally attached workers be successful and permanent.

Modelling procedure

- Cyclical components
- Linear model
- Non-linearity in the relationship between the cyclical component of the labour force participation rate and the cyclical component of the rate of unemployment (cyclical unemployment)
 - Threshold estimation
 - Switching parameters
 - Time-varying parameters

Results – threshold analysis (Hansen 2000)

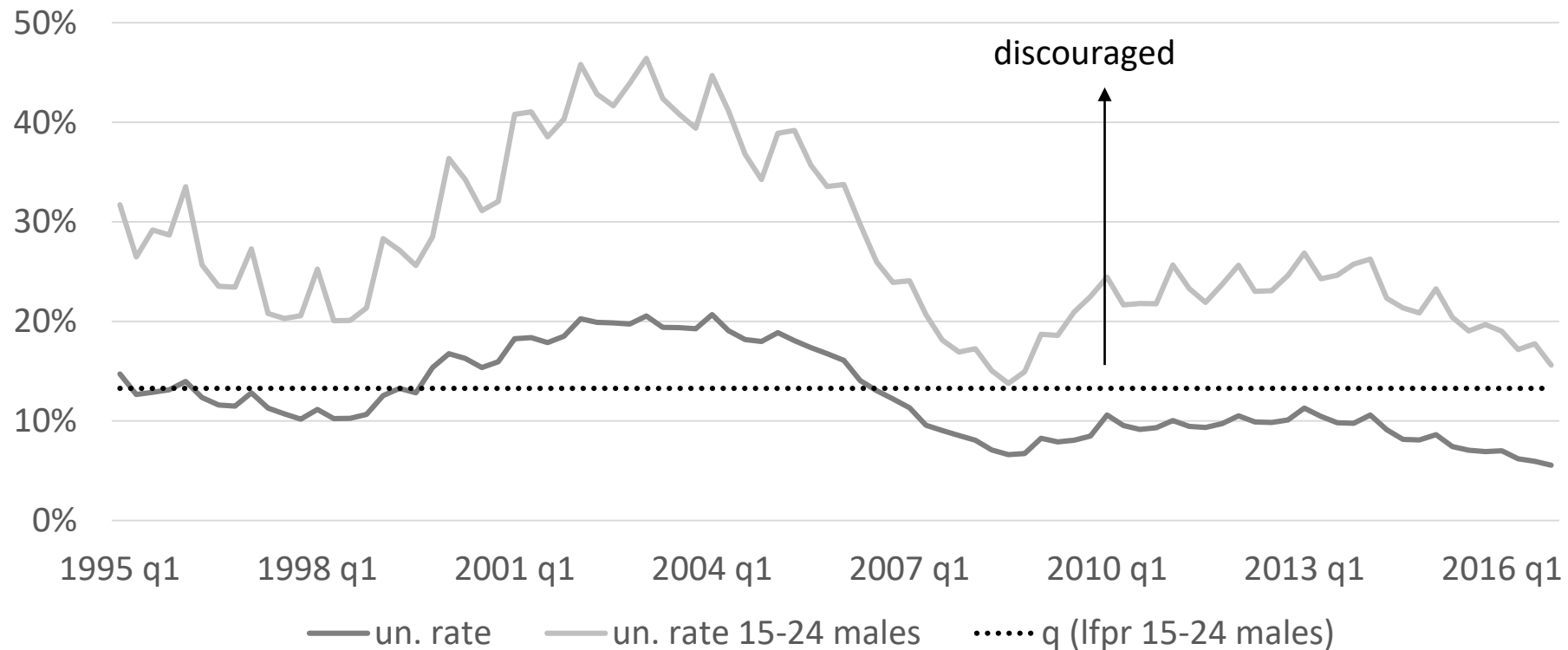
Hansen (2000) threshold estimation between the cyclical components of the labour force participation rates and the cyclical unemployment rate against the reference variable of the unemployment rate.

	lfpr	lfpr males	lfpr females	lfpr 25-44	lfpr 45+	lfpr 15-24 males	lfpr 25-44 males	lfpr 25-44 females
un. rate:								
q	0.1326	0.1674	0.1326	0.1406	0.1674	0.1326	0.1674	0.1406
parameter on un. rate estimate								
q≤q0	-0.000	0.0000	0.0000	0.0001	0.0000	0.0002	0.0001	0.0018*
st. dev.	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
q>q0	-0.0004*	-0.0019*	-0.0005*	-0.0009*	-0.0043*	-0.0015*	-0.0018*	0.0009*
st. dev.	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000

* significant at 0.05, **discouraged worker effect**, **added worker effect**

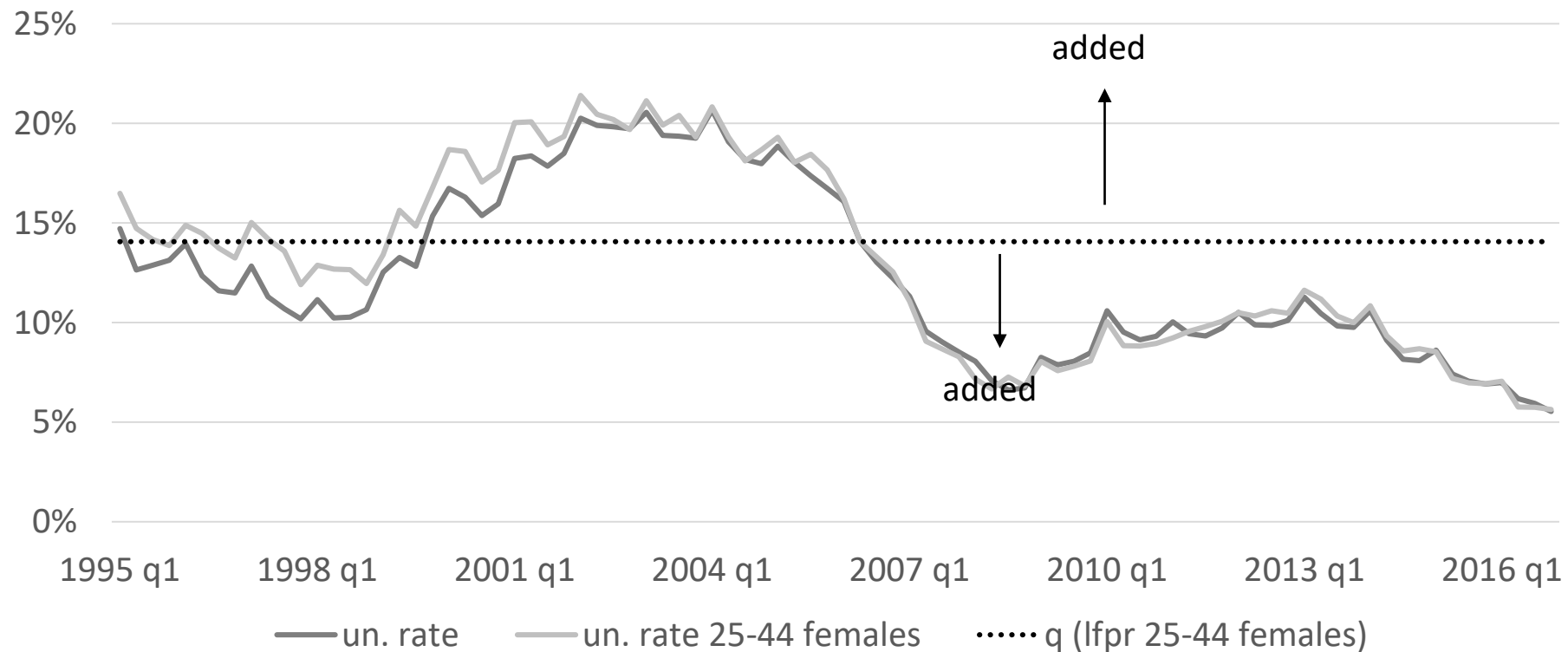
Results – threshold analysis (Hansen 2000)

Discouraged and added worker effects subject to the unemployment level – ages 15-24, males



Results – threshold analysis (Hansen 2000)

Discouraged and added worker effects subject to the unemployment level – ages 25-44, females



Results – STR analysis

Estimates of the significant non-linear relationships of the STR form between the cyclical components of labour force participation rates and cyclical unemployment.

Dependent	Cyclical unemployment						Gamma			C		
	linear part			non-linear part			Est	SD		Est	SD	
	Est	SD		Est	SD							
Male	0.004	1.0E+05	***	-0.004	0.001	***	46	57		-0.93	0.13	***
Both 15-24	0.11	0.03	***	-0.1	0.03	***	45	55		-0.51	0.091	***
Both 45+	0.075	0.04	.	-0.08	0.04	.	2.0E+05	3.9E+08		-0.85	0.03	***
										2.0	0.0095	***
Male 15-24	0.045	0.01	***	-0.044	0.02	.	900	2.6E+09		1.1	2.9E+05	
Male 25-44	0.013	0.01	*	-0.015	0.01	**	16	47		-1.5	0.77	.
Female 15-24	0.23	0.08	**	-0.17	0.09	.	540	2.7E+06		-0.46	510	

* significant at 0.1, ** significant at 0.05, *** significant at 0.01, . significant at 0.1, **discouraged worker effect**, **added worker effect**, **switch**

Conclusions

- Participation in the labour market most business cycle dependent for young workers.
- Males: more prone to the discouraged worker effect. Older males and females – added worker (mostly).
- Females: linear added worker effect, stronger during expansions.
- Rapid, non-linear changes in the labour force participation for certain fractions of population.
- Added worker effect: workers tended to leave the labour market when they could – that is, during economic booms – and to enter it during slowdowns (esp. young males, females, but also males).

Conclusions

- Discouraged worker effect above the mean threshold level of the unemployment rate 13%. The threshold level was higher for males than females, and for older workers than for prime-age workers.
- Older workers never experienced, young workers always discouraged.

Policy recommendations

- Sustain the labour force participation of women who are already active; and of older workers (added worker effect).
- More active policy actions to help workers who face difficult labour market conditions that lead to a prolonged job search, e.g. ALMP, increase aggregate demand to increase labour demand (discouraged worker effect).
- Policy actions should be tailored to the business cycle phase, as poorly timed measures will probably weaken or cancel out the expected effects (as labour force status changes tend to be abrupt and rapid).

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