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The correlation between fertility and female employment: an analysis at the regional level for Austria and Italy

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Abstract

The cross-country correlation between total fertility (TFR) and female labour force participation (FLP) across OECD countries has changed its sign from a negative value before the 1980s to a positive value thereafter. However, Kögel (2004) and Engelhardt and Prskawetz (2005) show that (a) unmeasured country-specific factors and (b) country-heterogeneity in the magnitude of the negative time-series association account for this reversal. Variables that may account for the country heterogeneity (labour market, educational, institutional, policy settings, etc.) may also vary across regions within countries. We conduct such a regional level analysis for Austria and Italy and investigate whether a change in the correlation between FLP and TFR has occurred within a country across regions. In Austria there has been a reversal in the correlation, while for Italy the positive correlation applies only for the recent years. Panel regression results suggest though that the relation remains negative, but with significant regional heterogeneity.

1. Motivation

Various authors find that in OECD countries the cross-country correlation between the total fertility rate (TFR) and the female labour force participation rate (FLP) turned from a negative value before the 1980s to a positive value thereafter (e.g. Ahn and Mira, 2002; Brewster and Rindfuss, 2000; Esping-Andersen, 1999; Pampel, 2001; Rindfuss et al., 2003). The countries that now have the lowest levels of fertility are those with relatively low levels of female labour force participation, while the countries with higher fertility levels tend to have relatively high female labour force participation rates.

The change in the sign of the cross-country correlation between TFR and FLP has often been mistakenly associated with a change in the time series association between TFR and FLP (Benjamin, 2001; Brewster and Rindfuss, 2000; Esping-Andersen, 1999; Rindfuss et al., 2003). Recent studies by Engelhardt et al. (2004) and Kögel (2004) show that neither the causality nor the time series association between TFR and FLP has in fact changed over time.

Unmeasured country heterogeneity as well as country heterogeneity in the slope coefficient of FLP have been identified to cause the change in the correlation of TFR and FLP at the macro level. This suggests that various factors, possibly related to the differences in labour market policies, in institutional settings, education, culture, etc. affect differently the association between fertility and women's labour force participation. The working hypothesis

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of the current paper is that these factors may well vary also across regions within countries. Institutional regulations, funding of childcare services, cultural aspects, for example, differ often also at regional level and determine variation even within the same national context.

In our paper we focus on the relation between the TFR and FLP across regions in Austria and Italy. First, we investigate whether there has been a reversal in the association between TFR and FLP from negative to positive. Second, in case of a reversal of the cross-regional correlation, we apply methods of panel regression analysis in order to control for unmeasured regional factors that might have driven the reversal in the cross-regional association and verify whether the time series association has actually changed.

The paper is organized as follows. In section 2 we discuss the data and econometric methods. Pooled time series analysis for the basic model and including time and country heterogeneity with respect to the female employment are presented in section 3. We close with a short discussion and outlook for future research in section 4.

2. Data and method

We collect regional data on TFR and FLP for Austria and Italy, available from the national statistical institutes (Statistik Austria and ISTAT). For Austria we use the time series information from 1974 to 2007 for a total of nine regions, while for Italy the time series is from 1977 to 2006 for twenty regions.

We investigate the trend of the cross-regional correlation over time. As the following figures show (Figure 1 and Figure 2), both in Austria and Italy we observe a change in the regional level correlation between TFR and FLP over time. In Austria the change in the correlation could be envisaged already during the 1990s, even though it is only since the year 2000 that the correlation becomes constantly positive.[3] Similarly to what observed in previous studies at the country level (Ahn and Mira 2002), such a preliminary result would suggest that Austrian regions with higher women's participation in the labour market are also characterised by higher period fertility levels, or in other words, that the negative relation between women's employment and fertility has faded out in Austria.

In Italy the negative association between TFR and FLP has persistently characterised previous decades in accordance with most of the economic theories about fertility behaviour: the rise of female education and the greater participation of women in the labour market would depress fertility. The cross-regional correlation has changed its sign only very recently and it may be premature to discuss about a reversal in the cross-regional correlation. It seems, however, that regional characteristics, regarding e.g. the institutional and policy setting and cultural dimensions, have not yet significantly accommodated the increasingly more common double-earner family model, where both partners are involved in the labour market and where family friendlier policies would be needed to help family-work reconciliation.

[3] Unfortunately there is a break in the time series of FLP for Austria due to a change in the sample. Until 1993 the "Lebensunterhaltskonzept" (LUK) has been used. From 1994 onwards the labor force concept (LFK) was used. **LUK**: persons count as employed as long as they work 14 hours per week. This weekly hours have been slight adjusted downwards in 1984 until 1990 to 13 hours and to 12 hours between 1991 to 1994. Moreover "Präsenzdiener" count until 1993 as employed, as long as they had an employment before they became "Präsenzdiener". From 1994 onwards "Präsenzdiener" count as employed independent of their previous employment status. Since 1984 all persons on paternal leave count as employed as well. **LFK**: persons count as employed as long as they work at least one hour a week. However, "Präsenzdiener" and civil servants do no longer count as employed. Persons on paternal leave still count as employed.

In the next step of our analysis we run panel regressions for both countries at regional level in order to account for unmeasured regional factors and test whether, at least for Austria, the association between TFR and FLP has actually become positive over time. Our methodological approach is, therefore, to pool cross-sectional time series.

This technique incorporates the cross-sectional association of the independent variables and fertility as well as the time-series associations within regions. The critical assumption of pooled cross-sectional times series models is that of pooling, i.e., all units are characterised by the same regression equation at all points in time:

$$y_{it} = x'_{it}\beta + \varepsilon_{it}\,; \qquad i = 1, \ldots, N;\ t = 1, \ldots, T \qquad (1)$$

where y_{it} and x_{it} are observations for the i-th unit at time t and β is a vector of coefficients, ε_{it} is the residual with the usual properties (mean 0, uncorrelated with itself across space and time, uncorrelated with x, and homoscedastic).

Figure 1. Cross-regional correlation between TFR and FLP, Austria (9 regions), 1974-2007.

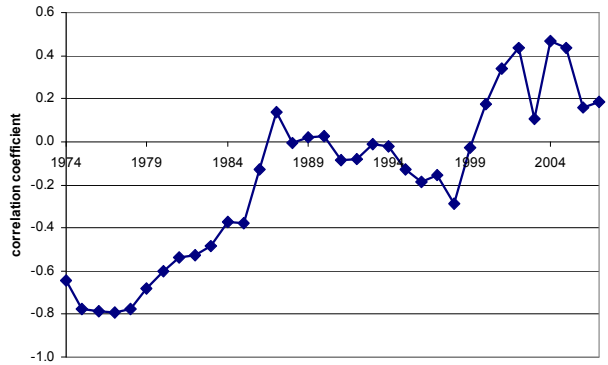
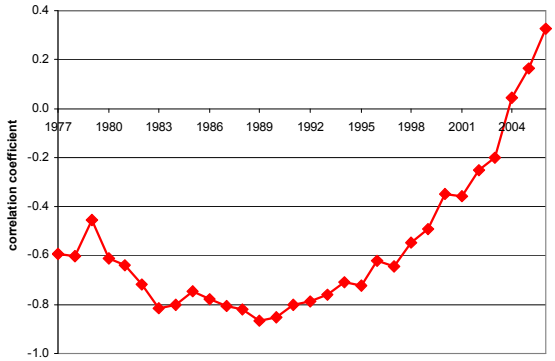


Figure 2. Cross-regional correlation between TFR and FLP, Italy (20 regions), 1977-2006.



To deal with unobserved heterogeneity across regions, we apply the fixed effects model calculated as follows:

$$y_{it} = x'_{it}\beta + \nu_i + \varepsilon_{it} \qquad i = 1, \ldots, N;\ t = 1, \ldots, T \qquad (2)$$

where ν_i are assumed to be fixed parameters which may be correlated with x_{it} . Such a model focuses on the within-region variation, and the coefficients represent a cross-regional average of the longitudinal association. Time unobserved heterogeneity γ_t, in contrast, would capture developments over time that are common to all regions, as it is specified in the following equation:

$$y_{it} = x'_{it}\beta + \gamma_t + \varepsilon_{it} \qquad i = 1, \ldots, N;\ t = 1, \ldots, T \qquad (3)$$

However, if the unobserved region- or time-specific heterogeneity can be assumed to be realisations of a random process and uncorrelated with the included variables, then the model is a random effects model. Thus, the crucial distinction between the fixed and the random effects model is whether the unobserved region- and time-specific effect embodies elements that are correlated with the regressors in the model (Greene, 2003). Whether the fixed or random effects model should be used is both a substantial and statistical question. If there is no substantial reason to assume a significant correlation between the unobserved region-

specific random effects and the regressors, then the random effects model may be more powerful and parsimonious. If there is such a correlation, the random effects model would be inconsistently estimated and preference should be given to the fixed effects model. The Hausman specification test is the classical method for statistical model selection.

Neither the random nor the fixed-effects panel model deal explicitly with temporally and spatially correlated errors that are often contained in pooled time series models. If there is autocorrelation in the model, it is necessary to deal with it because autocorrelation in the residuals causes seriously inefficient estimates. To control for autocorrelation, we apply the static approach where the nuisance in the residuals is modelled as a first-order autoregression or AR(1) process:

$$\varepsilon_{it} = \rho\varepsilon_{i,t-1} + \eta_{it} \qquad (4)$$

where η_{it} are independent and identically distributed with mean 0, and ρ is the so-called autocorrelation parameter, which is less than one in absolute values. In particular in our empirical analysis we apply the Prais-Winsten estimator (Prais and Winsten, 1954) that transforms the data as follows:

$$z_{i1}^{*} = \sqrt{1-\hat{\rho}^2}\, z_{i1}\,, \qquad \text{for } t = 1$$
$$z_{it}^{*} = z_{it} - \hat{\rho}\, z_{it} \qquad \text{for } t = 2, \ldots, T$$

where $z = x, y$. Thus, each value of x and y is corrected by the value times the estimated coefficient ρ of the AR(1) process.

To sum up, in our analysis we run the fixed region effects model to account for unobserved region-specific heterogeneity. Moreover, in order to detect region and time-specific heterogeneity in the association between total fertility and labour force, we include in the models an interaction term between FLP and region and FLP and time respectively.

3. Results

Prais-Winsten estimates

We first estimated fixed effects models (i.e., controlling for heterogeneity in the intercept) and controlled for possible autocorrelation. Our results, based on panel regressions at regional level which control for unmeasured regional factors, indicate for both countries a significant negative time series association between TFR and FLP (Table 1). In particular for Austria it is confirmed that the change in the regional level correlation does not imply a change in the time series association of TFR and FLP. As the value of the R^2 statistic indicates, the model fit is extremely good for both countries.

Table 1. Fixed country effects Prais-Winsten estimations with panel-corrected standard error and AR(1) disturbances of the association between TFR and FLP

	AUSTRIA	ITALY
FLP	-0.0165 ***	-0.0093 ***
Const	2.3051 ***	1.7772 ***
R-sq.	0.86	0.75
Wald χ^2	219.77 ***	143.93 ***

Sign. at level: ***p<0.001; **p<0.01; *p<0.05; +p<0.1.
Note: Wald performs a χ^2 test for H_0 : β=0.

Since the coefficients in Table 1 represent a cross-region average of the longitudinal association of the independent variable, important regional and time heterogeneity in these coefficients is ignored. Therefore, in the next step we run panel regressions controlling for unmeasured regional and time heterogeneity both in the intercept and in the slope, i.e. in the magnitude of the time series negative association.

Regional and time heterogeneity

In order to account for region-specific association between TFR and FLP in Austria and Italy we run regressions allowing for regional-specific effects in the slope (Table 2). Therefore, we include in the model an interaction term between FLP and each regional dummy. In Austria (Figure 3), the results for Vienna (Wien) and Lower Austria (Niederösterreich) indicate the presence of a less negative association between TFR and FLP in comparison to other Austrian regions. In Styria (Steiermark), Tyrol (Tirol) and Vorarlberg the negative effect is clearly strengthened. Compared to average numbers for all of Austria, Vienna has been characterized by above average FLP and below TFR rates over the time period considered. During the last decade however, TFR in Vienna increased. The results in Figure 3 are in accordance with these observed changes and lend support to the hypothesis that combining work and childrearing has become easier in Vienna as opposed to the western regions in Austria.

Similarly, in Italy the result confirms the presence of heterogeneity in the association between TFR and FLP across Italian regions (Figure 4). The magnitude of the negative association is amplified for five regions, which are located in the South of the country. Southern Italian regions have been characterised by higher fertility levels over the past decades and a lower participation of women in the labour market. However, here the increase in the female labour force participation, still minor than in the North, has been clearly accompanied by a deeper fertility decline, which narrowed profoundly the gap between north-central and southern fertility. Such dynamics might account for the more pronounced negative association between TFR and FLP in these regions.

Figure 3 – Austria: region-specific association between FLP and TFR

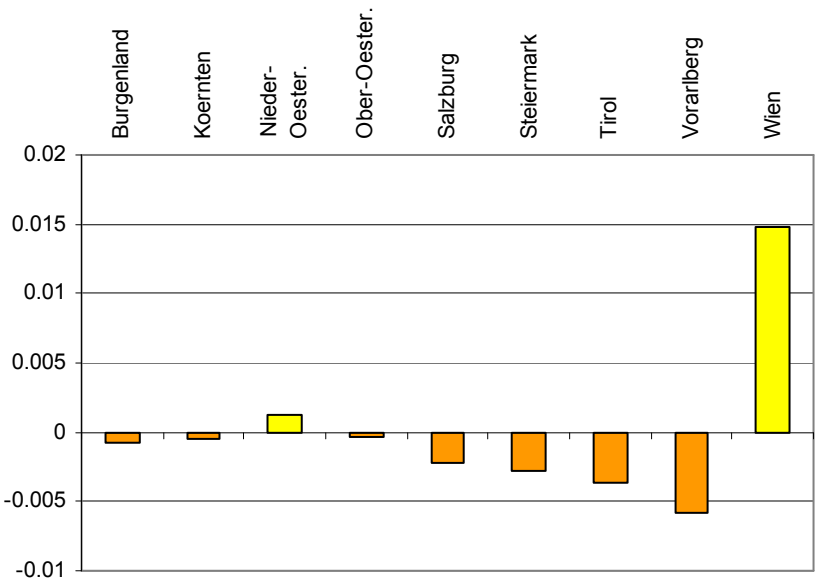
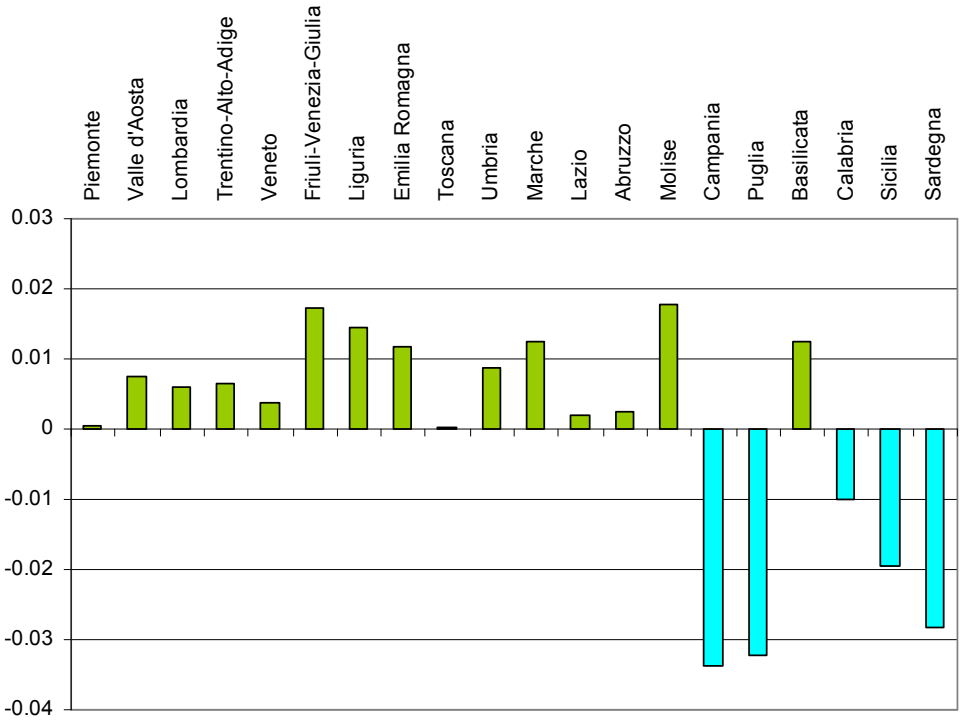


Figure 4 – Italy: region-specific association between FLP and TFR



So far, our results indicate that it is important to control for unobserved regional heterogeneity in the intercept (Table 1) as well as slope (Table 2, Figures 3 and 4) of the relation between FLP and the total fertility rate. We next investigate whether time heterogeneity in the association between TFR and FLP is prevalent as well, allowing for the intercept and slope coefficient to vary over time.

To account for a flexible relation over time, we applied two-year time dummies which capture the change in the correlation correctly enough without loosing in parsimony. We first find that besides the average FLP effect over all regions and over all time periods, there is also an independent time effect both in Austria and Italy. Across Austrian regions the effect was first positive until the mid 1980s and since then negative (Table 3, model 1a and 2a), while in Italy the effect started to be negative since the end of the 1980s (Table 3, model 1b and 2b).

We next study the effect of FLP on TFR for different time periods by including in the model an interaction between FLP and each time dummy. The results of the Prais-Winsten estimation (Table 3, model 3a and 3b) for the Austrian and Italian regions are graphically displayed in Figures 5 and 6. Both in Austria and in Italy the negative association between FLP and TFR fades over time. For the Italian regions the pattern emerges more clearly, while for Austria there seems to be a slow down of the process in the second half of the 1990s. mirroring the trend of the cross-regional correlation plotted in Figure1. The magnitude of the negative effect across Italian and Austrian regions is comparable, even though slightly more pronounced in Italy. The results of the model with the interaction term suggest that, similarly to what happened at country level (Engelhardt and Prskawetz 2005), also at regional level the negative effect of FLP on TFR has decreased over time.

Figure 5 – Austria: time-specific association between FLP and TFR

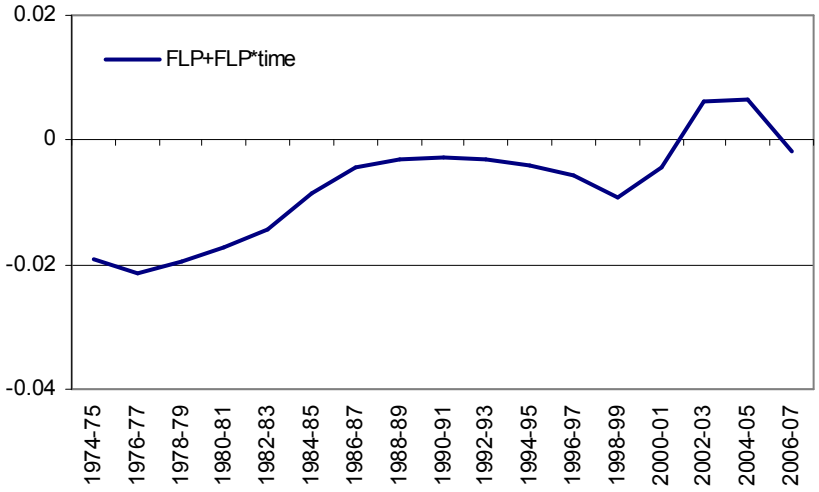
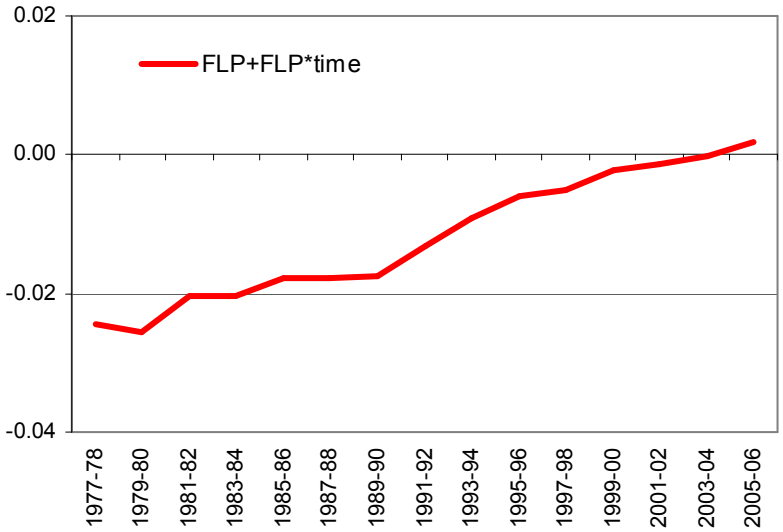


Figure 6 – Italy: time-specific association between FLP and TFR



After including in the model the interaction between FLP and regions and between FLP and time, we are interested to explore whether there is regional heterogeneity in the magnitude of the time change of the TFR-FLP relation. Due to the raise in the number of parameters, we avoid running the three-way interactions and estimate the model with time interaction separately for regional groups. We use the NUTS-1 divisions. For Austria we distinguish between East, South and West Austria[4]. For Italy we distinguish northern, central and southern regions (with respect to NUTS-1 we aggregate the north-eastern and north-western regions and include the Islands in the southern group)[5].

[4] NUTS-1 divisions for Austria: East Austria: Burgenland, Lower Austria, Vienna; South Austria: Carinthia, Styria; West Austria: Upper Austria, Salzburg, Tyrol, Vorarlberg.

[5] NUTS-1 divisions for Italy: North-West: Piemonte, Valle d'Aosta, Liguria, Lombardia, North-East: Trentino-Alto-Adige, Veneto, Friuli-Venezia-Giulia, Emilia-Romagna; Centre: Toscana, Umbria, Marche, Lazio; South: Abruzzo, Molise, Campania, Puglia, Basilicata, Calabria; Islands: Sicilia, Sardegna.

Both in Austria and in Italy there are regional differences in the time-specific association between FLP and TFR. East Austria which includes Vienna, shows a change in the association from negative to positive at the beginning of the 1980s. Conversely, in South and West Austria the pattern is not as clear and does not suggest any change in the association. In Italy, northern regions show since the 1990s a positive effect of FLP on TFR, central Italy seems to be approaching a change in the association, while in the South the relation continues to be negative.

Figure 7 – Austrian regional groupings: time-specific association between FLP and TFR

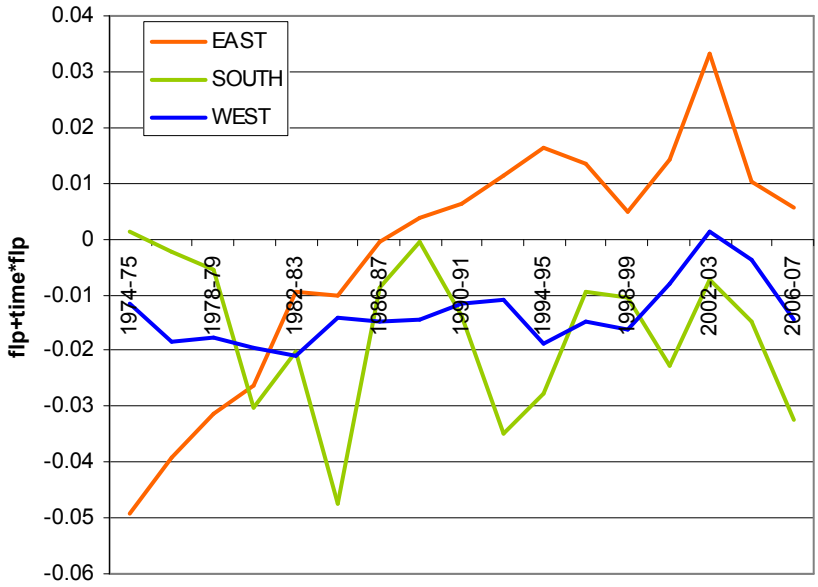
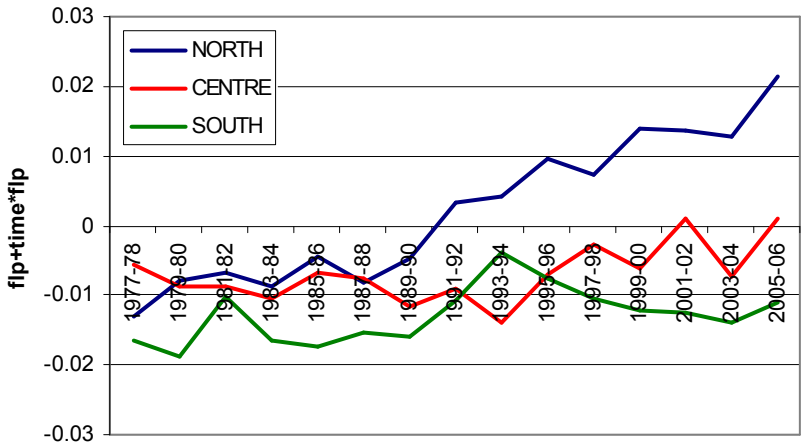


Figure 8 – Italian regional groupings: time-specific association between FLP and TFR



4. Concluding remarks

The change in labour market conditions combined with regional patterns of institutional settings, may explain the change in the cross-regional correlation between fertility and female labour force participation as observed for Austria since the end of the 1990s and recently also for Italy.

Once we control for regional heterogeneity, i.e. different social contexts across regions, increases in FLP have been associated with decreases in total fertility. The extent to which total fertility declines are linked to changes in female labour force participation is, however, rather different across regions. For Vienna and lower Austria a less negative association between TFR and FLP in comparison to other Austrian regions becomes obvious. In case of Italy the relation is most negative for regions located in the south of Italy. Moreover, the time specific association between FLP and TFR varies essentially across the regions within each country. For Austria, the eastern regions are showing up a positive association between TFR and FLP since the mid 1980s. Regions located in the south and west of Austria do not show any trend of the time-specific association between TFR and FLP. For Italy we find that the time specific association between TFR and FLP becomes positive over time for the northern part of Italy.

So far, we have estimated several models to disentangle the time and region specific variation of the association between TFR and FLP. Overall we may conclude, that over time the negative correlation between TFR and FLP faded away in Austria and only very recently for Italy, though not for all regions to the same extent. The next step of research is obviously to investigate the factors underlying the regional and time specific effects of FLP on TFR.

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TABLES

Table 2 Main and region-specific effects of FLP on TFR; Prais-Winsten regressions with panel-corrected standard errors and AR(1) disturbances

	AUSTRIA			
	Main effect	p-value	FLP*region	p-value
FLP	-0.0158	0.000		
Burgenland	-0.0592	0.000	-0.0008	0.000
Koernten	-0.0632	0.498	-0.0004	0.814
Nieder-Oester.	-0.0262	0.805	0.0012	0.510
Ober-Oester.	0.0556	0.487	-0.0004	0.779
Salzburg	0.2169	0.111	-0.0021	0.386
Steiermark	0.0682	0.541	-0.0027	0.200
Tirol	0.2352	0.004	-0.0037	0.015
Vorarlberg	0.5089	0.001	-0.0058	0.044
Wien	-0.9364	0.000	0.0148	0.000
Constant	*2.3644*	*0.000*		
Number of obs.	*306*			
	ITALY			
	Main effect	p-value	FLP*region	p-value
FLP	-0.0163	0.000		
Piemonte	-0.0021	0.994	0.0005	0.926
Valle d'Aosta	-0.3255	0.244	0.0075	0.194
Lombardia	-0.2506	0.259	0.0061	0.187
Trentino-Alto-Adige	-0.0433	0.797	0.0064	0.082
Veneto	-0.1219	0.690	0.0037	0.568
Friuli-Venezia-Giulia	-0.9281	0.000	0.0173	0.002
Liguria	-0.8522	0.000	0.0145	0.000
Emilia Romagna	-0.6153	0.040	0.0119	0.024
Toscana	-0.0563	0.776	0.0003	0.942
Umbria	-0.3776	0.050	0.0089	0.037
Marche	-0.5245	0.090	0.0125	0.045
Lazio	-0.0982	0.480	0.0019	0.587
Abruzzo	-0.0027	0.991	0.0024	0.641
Molise	-0.6373	0.150	0.0176	0.081
Campania	1.5130	0.000	-0.0338	0.004
Puglia	1.2914	0.035	-0.0322	0.077
Basilicata	-0.2774	0.631	0.0125	0.399
Calabria	0.5522	0.151	-0.0101	0.368
Sicilia	0.7415	0.000	-0.0194	0.001
Sardegna	1.0149	0.000	-0.0283	0.000
Constant	*2.0555*	*0.000*		
Number of obs.	*600*			

Table 3 Main and time-specific effects of FLP on TFR; Prais-Winsten regressions with panel-corrected standard errors and AR(1) disturbances

	AUSTRIA							
	(1a)		(2a)		(3a)			
	Main effect	p-value	Main effect	p-value	Main effect	p-value	FLP*time	p-value
FLP			-0.0073	0.002	-0.0074	0.000		
1974-75	0.3900	0.000	0.3202	0.000	0.9090	0.000	-0.0116	0.008
1976-77	0.2069	0.000	0.1393	0.001	0.8214	0.000	-0.0141	0.000
1978-79	0.1433	0.000	0.0829	0.033	0.6841	0.000	-0.0122	0.000
1980-81	0.1638	0.000	0.1067	0.005	0.6042	0.000	-0.0098	0.001
1982-83	0.1078	0.000	0.0540	0.152	0.4177	0.025	-0.0071	0.055
1984-85	0.0293	0.329	0.0015	0.966	0.0849	0.650	-0.0010	0.770
1986-87	-0.0364	0.225	-0.0530	0.124	-0.1665	0.412	0.0029	0.445
1988-89	-0.0423	0.158	-0.0547	0.107	-0.2417	0.209	0.0044	0.217
1990-91	-0.0356	0.235	-0.0393	0.240	-0.2467	0.209	0.0048	0.178
1992-93	-0.0419	0.162	-0.0342	0.310	-0.2267	0.226	0.0044	0.170
1994-95	-0.0955	0.001	-0.0661	0.060	-0.2050	0.293	0.0033	0.310
1996-97	-0.1048	0.000	-0.0722	0.041	-0.1289	0.484	0.0018	0.561
1998-99	-0.1506	0.000	-0.1095	0.002	0.0409	0.879	-0.0019	0.670
2000-01	-0.1651	0.000	-0.1155	0.002	-0.2673	0.303	0.0031	0.468
2002-03	-0.1376	0.000	-0.0740	0.061	-0.8675	0.000	0.0136	0.001
2004-05	-0.1074	0.001	-0.0414	0.306	-0.8649	0.074	0.0140	0.075
2006-07	-0.1239	0.000	-0.0447	0.315	-0.3472	0.562	0.0054	0.562
Constant	*1.5164*	*0.000*	*1.9079*	*0.000*	*1.8661*	*0.000*		
Number of obs.	*306*		*306*		*306*			
	ITALY							
	(1b)		(2b)		(3b)			
	Main effect	p-value	Main effect	p-value	Main effect	p-value	FLP*time	p-value
FLP			-0.0071	0.002	-0.0119	0.000		
1977-78	0.4067	0.000	0.3625	0.000	0.8600	0.000	-0.0124	0.000
1979-80	0.2754	0.000	0.2363	0.000	0.7829	0.000	-0.0136	0.000
1981-82	0.1837	0.008	0.1495	0.001	0.4995	0.000	-0.0084	0.007
1983-84	0.1125	0.193	0.0875	0.036	0.4435	0.006	-0.0083	0.023
1985-86	0.0523	0.526	0.0263	0.506	0.2727	0.068	-0.0058	0.088
1987-88	0.0243	0.480	0.0098	0.792	0.2761	0.093	-0.0059	0.104
1989-90	-0.0263	0.076	-0.0334	0.352	0.2226	0.214	-0.0055	0.165
1991-92	-0.0654	0.001	-0.0730	0.040	0.0035	0.984	-0.0014	0.723
1993-94	-0.1260	0.000	-0.1184	0.001	-0.2183	0.256	0.0028	0.494
1995-96	-0.1525	0.000	-0.1393	0.000	-0.3792	0.065	0.0060	0.173
1997-98	-0.1467	0.001	-0.1274	0.001	-0.4020	0.057	0.0068	0.125
1999-00	-0.1359	0.002	-0.1066	0.012	-0.5152	0.019	0.0096	0.031
2001-02	-0.1443	0.011	-0.1057	0.021	-0.5644	0.017	0.0106	0.022
2003-04	-0.1264	0.015	-0.0813	0.104	-0.5875	0.017	0.0116	0.014
2005-06	-0.1312	0.000	-0.0867	0.110	-0.6941	0.008	0.0138	0.007
Constant	*1.4171*	*0.000*	*1.7270*	*0.000*	*1.8680*	*0.000*		
Number of obs.	*600*		*600*		*600*			

Table 4 Main and time-specific effects of FLP on TFR by regional groupings; Prais-Winsten regressions with panel-corrected standard errors and AR(1) disturbances

	AUSTRIA					
	EAST		SOUTH		WEST	
	Main effect	p-value	Main effect	p-value	Main effect	p-value
FLP	-0.0027	0.348	-0.0169	0.000	-0.0134	0.000
1974-75	2.7095	0.000	-0.4447	0.000	0.2567	0.404
1976-77	1.9952	0.000	-0.5023	0.000	0.3560	0.125
1978-79	1.5587	0.000	-0.4661	0.000	0.2692	0.221
1980-81	1.3704	0.000	0.5968	0.049	0.3943	0.066
1982-83	0.4539	0.120	0.1352	0.488	0.3879	0.150
1984-85	0.4465	0.114	1.2302	0.000	0.0322	0.932
1986-87	-0.0961	0.720	-0.5307	0.031	0.0172	0.962
1988-89	-0.2980	0.288	-0.9140	0.000	-0.0176	0.965
1990-91	-0.4154	0.161	-0.2137	0.333	-0.1403	0.679
1992-93	-0.7355	0.047	0.9008	0.326	-0.1194	0.670
1994-95	-1.1137	0.020	0.5640	0.102	0.3008	0.586
1996-97	-0.9532	0.171	-0.4405	0.054	0.0502	0.904
1998-99	-0.4921	0.403	-0.4265	0.038	0.0879	0.823
2000-01	-1.0353	0.196	0.2252	0.310	-0.4089	0.303
2002-03	-2.1803	0.039	-0.6229	0.001	-0.9525	0.104
2004-05	-0.7310	0.289	-0.1105	0.686	-0.5860	0.313
2006-07	-0.4835	0.514	1.0195	0.000	0.0722	0.944
	FLP*time	p-value	FLP*time	p-value	FLP*time	p-value
1974-75	-0.0464	0.000	0.0180	0.000	0.0017	0.791
1976-77	-0.0364	0.000	0.0145	0.000	-0.0049	0.302
1978-79	-0.0286	0.000	0.0115	0.000	-0.0042	0.341
1980-81	-0.0237	0.000	-0.0133	0.066	-0.0060	0.149
1982-83	-0.0067	0.218	-0.0032	0.476	-0.0073	0.188
1984-85	-0.0073	0.155	-0.0306	0.000	-0.0008	0.919
1986-87	0.0024	0.627	0.0080	0.137	-0.0014	0.838
1988-89	0.0067	0.185	0.0164	0.000	-0.0010	0.894
1990-91	0.0091	0.078	0.0033	0.469	0.0019	0.759
1992-93	0.0141	0.025	-0.0180	0.319	0.0024	0.630
1994-95	0.0190	0.015	-0.0108	0.092	-0.0052	0.580
1996-97	0.0161	0.162	0.0074	0.085	-0.0012	0.862
1998-99	0.0077	0.430	0.0063	0.095	-0.0027	0.683
2000-01	0.0168	0.202	-0.0060	0.140	0.0053	0.416
2002-03	0.0360	0.037	0.0097	0.003	0.0148	0.118
2004-05	0.0130	0.255	0.0021	0.657	0.0096	0.301
2006-07	0.0084	0.474	-0.0154	0.000	-0.0010	0.950
Constant	1.4891	*0.000*	2.3316	0.000	2.2922	*0.000*
Number of obs.	*102*		*68*		*136*	
	ITALY					
	NORTH		CENTRE		SOUTH	
	Main effect	p-value	Main effect	p-value	Main effect	p-value
FLP	0.0021	0.247	-0.0069	0.000	-0.0128	0.000
1977-78	2.7095	0.000	0.3376	0.00	0.7076	0.000
1979-80	0.6500	0.000	0.2748	0.001	0.6790	0.000
1981-82	0.5231	0.001	0.1647	0.047	0.2611	0.012
1983-84	0.5532	0.066	0.1814	0.046	0.3508	0.002
1985-86	0.3118	0.038	-0.0554	0.528	0.2636	0.043
1987-88	0.4669	0.016	-0.0337	0.732	0.1668	0.205
1989-90	0.2792	0.189	0.1472	0.174	0.1212	0.415
1991-92	-0.1120	0.586	-0.0098	0.962	-0.1381	0.318

1993-94	-0.1955	0.241	0.1945	0.410	-0.4850	0.001
1995-96	-0.4539	0.014	-0.1341	0.585	-0.4265	0.003
1997-98	-0.3081	0.072	-0.3176	0.157	-0.3377	0.040
1999-00	-0.6446	0.001	-0.0696	0.749	-0.2860	0.166
2001-02	-0.6139	0.016	-0.4260	0.061	-0.2850	0.163
2003-04	-0.5128	0.101	0.0836	0.723	-0.2208	0.346
2005-06	-0.9834	0.001	-0.3375	0.443	-0.3709	0.125
	FLP*time	p-value	FLP*time	p-value	FLP*time	p-value
1977-78	-0.0152	0.000	0.0013	0.501	-0.0037	0.212
1979-80	-0.0099	0.000	-0.0018	0.327	-0.0059	0.038
1981-82	-0.0089	0.000	-0.0019	0.288	0.0027	0.346
1983-84	-0.0110	0.000	-0.0035	0.074	-0.0036	0.253
1985-86	-0.0067	0.218	0.0002	0.918	-0.0045	0.234
1987-88	-0.0102	0.155	-0.0006	0.796	-0.0025	0.489
1989-90	-0.0068	0.627	-0.0048	0.040	-0.0030	0.472
1991-92	0.0011	0.185	-0.0020	0.658	0.0020	0.591
1993-94	0.0020	0.078	-0.0070	0.160	0.0090	0.018
1995-96	0.0074	0.025	-0.0002	0.961	0.0052	0.164
1997-98	0.0051	0.015	0.0042	0.347	0.0024	0.555
1999-00	0.0118	0.162	0.0007	0.875	0.0006	0.900
2001-02	0.0115	0.430	0.0078	0.062	0.0004	0.934
2003-04	0.0106	0.202	-0.0003	0.943	-0.0009	0.868
2005-06	0.0192	0.037	0.0079	0.313	0.0018	0.758
Constant	1.0543	0.000	1.5685	0.000	2.0656	*0.000*
Number of obs.	*240*		*120*		*240*	