Discerning adaptation and disruption in the childbearing behaviour of immigrants in Greece: an analysis using micro-census data

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Abstract

This paper uses micro-data from the 2001 census of Greece to detect changes in the reproductive behaviour of recent immigrants. The analysis is based on descriptive methods and ordinal logistic regression models. Possible disruption and adaptation effects are investigated for different citizenships. The findings indicate that Albanians, who represent over half of the immigrants and originate from a high fertility country, show signs of reducing levels with increasing duration of residence consistent with the adaptation hypothesis. By contrast, for migrants from other Balkan and Eastern European countries there is some indication of a disruption in childbearing among recent arrivals.

Keywords: immigrant fertility; migrant fertility hypotheses; adaptation; disruption; Greece

Introduction

Large scale immigration is a recent feature of the demography of southern Europe (OECD, 2003). Greece, which in the past had been an emigration country, has followed this new trend since the 1980s (Psimmenos and Georgoulas, 2001); the volume of inflows became quite substantial in the 1990s introducing new determinants of the demographic landscape of the country (Tsimbos, 2006; 2008a).

Effects of migration on the population of the host country are both direct and indirect. Of the latter, childbearing is considered an important aspect; immigrants have been found to contribute substantially to the total number of births across Europe (Sobotka, 2008) though the "net impact" of their higher rates on the total fertility of the host population is rather small. Possible effects thus, deserve exploring, particularly in a country such as Greece where fertility has remained at very low levels, well below replacement, for at least the past 20 years (Billari, 2005). Indeed, vital registration statistics

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by citizenship show that in 2005 births to immigrants represented 16.5% of the total number (Tsimbos, 2008b).

The association between migration and fertility is multifaceted. The long-term contribution of migrant childbearing to the overall fertility of a population is a combination of several factors: the size of the immigrant population, its demographic characteristics, its fertility experience in the country of origin and finally, how reproductive behaviour is modified according to the duration of residence in the country of destination. To explain changes in immigrant fertility over time in the host country, several theories termed "migrant fertility hypotheses" have been proposed (selectivity, disruption, adaptation, assimilation, minority status, cultural maintenance) though they cannot explain all the ramifications of the phenomenon (Abbasi-Shavazi and McDonald 2002; Kahn 1988; Kulu 2005).

Two of these formulations in particular attempt to explain immigrant fertility behaviour around the time of the movement and for short durations of stay, disruption and family formation. It has been suggested that migration itself disrupts family life and the reproductive behaviour of women by separating spouses and causing hardship (disruption theory), resulting thus in reduced fertility immediately before and following immigration, due to a postponement of additional births (Dinkel and Lebok, 1997; Ng and Nault, 1997). This decrease may be observable only briefly as, subsequently, fertility may rise again to compensate for delayed childbearing (Ford, 1990; Ram and George, 1990; Kahn, 1994). The family formation theory, on the other hand, states that fertility of immigrants shortly after arrival may be elevated, as a result of family reunification, marriage and childbearing (Andersson, 2004; Andersson and Scott, 2005; Milewski, 2007).

Immigrant fertility is a time dependent phenomenon. It has been argued that adjustment of the reproductive behaviour of immigrants in the receiving country and changes in fertility occur in variable pace that can be aided by increasing socio-economic status (adaptation theory). Modifications are usually gradual and convergence to the fertility levels of the native population occurs in the long term, mainly among women who immigrated young and for second generation immigrants (Ford, 1990; Kulu, 2005; Stephen and Bean, 1992; Toulemon, 2004; Sobotka, 2008).

The aim of this paper is to explore the link between the duration of residence of immigrants in Greece and their childbearing using micro-data from the 2001 Greek Census. Thus, differences in reproductive behaviour may be identified for different citizenship groups and, in particular, disruption and adaptation effects. Of special interest is to detect such changes for the Albanians who constitute both a relatively high fertility population (Gjonca et al., 2008; Verropoulou et al., 2007) and the majority of immigrants in Greece (57.5% in 2001). This study is also a pioneering attempt exploring this particular relationship in the context of Greece's immigrant populations since the micro-level data was only recently made available.

Data and Methods

In the analysis, micro-data are employed, derived as a 10% sample of the 2001 Greek Population Census and obtained through the IPUMS-International project (Minnesota Population Center, 2008). Immigrants are indentified by country of citizenship as commonly adopted by official sources and used in previous studies (Tsimbos, 2006), despite naturalizations, which however were very few before 2004 (EMKE-Poulopoulou, 2007).

The study focuses on the largest immigrant groups, namely Albanians, Bulgarians, Romanians and those from the former USSR countries which constitute 57.5%, 4.6%, 2.9% and 7.1% of the 2001 census population, respectively. Three cohorts of women are considered separately; women born in the 1950s, who have essentially completed childbearing, women born in the 1960s who were still at the peak of their reproductive lives, and women born in the 1970s who were in the beginning of their main reproductive period.

To assess the possible impact of duration of residence on the mean number of children ever born, apart from the descriptive part of the analysis, ordinal logistic regression is used. The estimated model controls for age and educational attainment of women; the latter is a strong predictor of fertility which additionally takes into account potential differentials in the socio-economic characteristics of immigrants (Khan, 1994). As dependent, a four category variable is employed, distinguishing women by number of children they have: no children, with one child only, with two children, and with three and more children. Duration of residence is categorised into three, indicating the period spent in Greece since arrival and prior to the 2001 Census: 0-4 years, 5-9 years and 10 or more years. Educational attainment also includes three categories, denoting women who have at the most completed 6 years of schooling (primary education), women who have attended 7 to 12 years of mainstream education (secondary education) and those who have obtained post-secondary qualifications (13 years or more). The analysis was carried out using STATA version 10.1.

Results

Table 1 shows mean duration of residence by citizenship and cohort-group of women as well as sample sizes. Albanian females constitute 43.1% of the total while Romanians only 3.6%. Overall, these women represent 65.8% of the female immigrants born in the period 1950-1979. The figures also indicate that, on average, most ethnic groups have remained in Greece for a fairly short period of time; Bulgarians, Romanians and women from the former USSR have stayed for about 5 years while Albanian women for slightly longer, 6.4 years. Mean length of stay decreases somewhat for younger women, but differences are small for the Bulgarians and those from the former USSR. For Romanians there is a more noticeable difference of

about 3 years, while for Albanians there is a divergence of 1.4 years. The group labeled "All immigrants" includes all ethnicities comprising additionally certain groups not included in the present analysis, for which mean duration of stay in Greece is longer. This group includes, for instance, immigrants from other EU countries, Poles and women from the Philippines.

Table 1. Mean duration of residence of immigrant women in years, by cohort-group and citizenship

Cohort	Albanian	Bulgarian	Romanian	Former USSR	All immigrants
1950-59	7.12	4.95	7.05	5.59	9.07
1960-69	6.75	5.02	5.76	5.75	8.09
1970-79	5.76	4.59	4.14	4.72	6.44
All cohorts	6.39	4.85	5.01	5.35	7.69
Sample size	9,265	1,439	761	2,608	21,335

Table 2 shows the percentage distribution of foreign women by cohort-group, duration of residence and citizenship; the figures indicate that there are more immigrants born in the 1970s than in the 1960s or in the 1950s. This finding is consistent with the literature, that it is mostly the young (working age) persons who tend to migrate (IOM, 2003).

Table 2. Percentage distribution of immigrant women by cohort-group, duration of residence and citizenship

Cohort	Duration of residence	Albanian	Bulgarian	Romanian	Former USSR	All immigrants
1950-59	0-4 yrs	29.5	54.6	53.0	47.1	31.1
	5-9 yrs	42.2	36.5	21.8	41.2	32.5
	10+ yrs	28.2	8.9	26.0	11.7	36.4
Sample size		1,908	449	100	818	5,216
1960-69	0-4 yrs	30.5	54.1	47.4	45.3	31.0
	5-9 yrs	44.7	34.7	36.4	40.6	37.1
	10+ yrs	24.8	11.2	16.2	14.1	31.9
Sample size		3,265	510	228	904	7,774
1970-79	0-4 yrs	43.0	57.7	63.7	53.3	44.6
	5-9 yrs	40.1	33.8	31.0	39.0	35.3
	10+ yrs	16.9	8.5	5.3	7.7	20.1
Sample size		4,092	480	433	886	8,345

Albanians constitute a substantial part of each cohort-group; their share has been gradually increasing from 37% among the 1950s to 49% among the 1970s cohorts. By contrast, Romanian women correspond to a very small fraction, around 2% to 6 %. For all ethnic groups, the proportion of young women (born in the 1970s) who resided in the country for longer than 10 years is small (20.1%) compared to women born in the 1960s and the 1950s (32 and 36% respectively).

Table 3 shows mean numbers of children ever born by citizenship of mother, duration of residence in Greece and cohort-group. Bulgarians and women from the former USSR have fairly similar levels while Romanians follow closely behind. Cohort fertility for women born in the 1960s is lower than for the 1950s cohorts independently of duration of residence; this is partly an age effect, related to the censoring of the younger women's reproductive performance by the date of the census. It may also be partly attributable to a postponement of childbearing and a reduction in quantum (Bagavos et al., 2008). The rate is even lower for women born in the 1970s, as expected, mainly due to their very young age. Comparing the different ethnic groups, Albanians exhibit the highest levels in all instances.

Table 3. Mean number of children ever born by cohort-group of women, duration of residence and citizenship

Cohort	Duration of residence	Albanian	Bulgarian	Romanian	Former USSR	All immigrants
1950-59	0-4 yrs	2.45	1.68	1.70	1.59	1.88
	5-9 yrs	2.26	1.76	1.33	1.65	1.94
	10+ yrs	2.30	1.42	1.35	1.74	1.84
1960-69	0-4 yrs	1.85	1.23	1.06	1.20	1.46
	5-9 yrs	1.73	1.43	1.13	1.43	1.52
	10+ yrs	1.72	1.37	1.35	1.66	1.55
1970-79	0-4 yrs	0.96	0.64	0.39	0.65	0.71
	5-9 yrs	1.02	0.88	0.53	0.79	0.89
	10+ yrs	0.94	0.78	0.61	1.01	0.69

Regarding cohort fertility of women who arrived more recently (0-4 years), Albanians born in the 1950s and the 1960s as well as Romanians born in the 1950s have higher rates compared to those who have stayed in the country for 5-9 years. However, for all cohorts of Bulgarians and women from the former USSR as well as for all immigrants born in the 1970s the opposite holds; these lower rates for recent arrivals among women who have not completed their reproductive lives yet, may indicate a disruption in childbearing caused by the movement. That would be in accordance also with other studies indicating that propensity to begin childbearing is higher among migrants who have been established in the labour market (Anders-

son and Scott 2005). Contrasting women with 5-9 years of residence to those who have lived in the country for ten years or more, lower cohort fertility for longer durations can be observed only for Bulgarian women.

Table 4 presents odds ratios derived using ordinal logistic regression, showing associations between duration of residence and mean numbers of children ever born by cohort-group of women and citizenship. The log likelihoods for these models are also reported. All models control for age of woman in 2001 and educational attainment; the latter serves to standardise up to a point for differentials in the socio-economic characteristics between women of different cohorts, ethnicities and timing of immigration.

Table 4. Odds ratios derived using ordinal logistic regression on the number of children ever born by immigrant women, by cohort-group and citizenship

Predictors	Albanian	Bulgarian	Romanian	Former USSR	All immigrants
1950-59					
Educational attainment					
0-6 yrs (ref)					
7-12 yrs	0.687***	0.993	0.373*	1.480**	0.778***
13+ yrs	0.431***	0.734	0.302*	0.926	0.442***
Duration of residence					
0-4 yrs	1.281***	0.837	1.341	0.887	0.853***
5-9 yrs (ref)					
10+ yrs	1.152	0.530**	1.003	1.122	0.883**
Log likelihood	-2108.5	-556.2	-133.4	-1077.7	-6675.9
Sample size	1,908	449	100	818	5,216
1960-69					
Educational attainment					
0-6 yrs (ref)					
7-12 yrs	0.723***	0.633**	2.841**	0.850	0.770***
13+ yrs	0.418***	0.561**	1.786	0.571**	0.467***
Duration of residence					
0-4 yrs	1.268***	0.714*	0.792	0.626***	0.820***
5-9 yrs (ref)					
10+ yrs	1.010	0.949*	0.922	1.466**	1.078
Log likelihood	-3789.8	-663.4	-288.2	-1150.5	-9939.1
Sample size	3,265	510	228	904	7,774

Table 4. *Continued*.

Predictors	Albanian	Bulgarian	Romanian	Former USSR	All immigrants
1970-79					
Educational attainment					
0-6 yrs (ref)					
7-12 yrs	0.703***	0.619**	0.934	0.821	0.573***
13+ yrs	0.315***	0.295***	0.578	0.511***	0.232***
Duration of residence					
0-4 yrs	0.954	0.618**	0.797	0.821	0.781***
5-9 yrs (ref)					
10+ yrs	0.782***	0.764	0.756	1.464	0.635**
Log likelihood	-4469.0	-520.8	-364.2	-932.9	-8805.1
Sample size	4,092	480	433	886	8,345

All models control for age of woman

* $p<0.1$, ** $p<0.05$, *** $p<0.01$

The odds ratios for women born in the 1950s indicate that patterns differ between the Albanians and all other ethnicities. Albanian women who arrived recently, have significantly higher chances, by about 30%, to have an additional child compared to women who have resided in the country for 5-9 years; that latter group exhibits very similar behaviour to migrants who have lived in Greece for at least ten years. By contrast, Bulgarian women and those from the former USSR who arrived recently have lower chances of having an additional child; these results, however, are not significant. Educational attainment, as expected, is a very significant predictor, reducing chances of an additional child quite substantially, particularly for Albanian and Romanian women. By contrast, chances for women from the former USSR with some secondary education are higher than for women with fewer qualifications.

The figures for Albanians born in the 1960s reveal similar patterns to those observed for the 1950s cohorts. Odds ratios for the other ethnicities are better defined compared to women born in the 1950s. Bulgarians who have lived for 0-4 years in the country have significantly (but only at the 10% level) reduced chances (by about 30%) of having an additional child while women from the former USSR and Romania also show very similar results, which in the former case are significant at the 1% level. Women from the former USSR with durations of residence of more than 10 years have significantly higher chances (by 47%) than those living in the country for 5-9 years to have an additional child. In fact, these women exhibit levels of cohort fertility quite similar to the native population (Verropoulou et al., 2007).

Higher educational attainment has again a negative association with the number of children ever born.

Finally, for the 1970s cohorts, tendencies similar to the 1960s cohorts can be observed, with one major exception. In this case, Albanians who lived for less than 5 years in Greece have very similar chances of an additional birth to those who have stayed for 5-9 years while chances for females with longer durations are significantly reduced. For the other ethnic groups again chances for the most recent arrivals are lower than for women with 5-9 years of residence; for Bulgarians that difference is significant. More years in education have again an increasingly negative effect on the chances of having an additional child.

Overall, the results of the regression models (Table 4) and those of Table 3 are consistent; both show that Albanian women born in the 1950s and in the 1960s have significantly lower fertility if they lived in Greece for more than 5 years. This feature may indicate a tendency for this high-fertility group to reduce levels once in a low fertility country to gradually converge to those of the native population (adaptation). The results also show that, for the other ethnic groups, fertility of women born in the 1960s and the 1970s is lower among those who arrived very recently, a finding consistent with disruption effects.

Discussion and Conclusion

Immigrant fertility is an important dimension in the analysis of the long-term demographic consequences of migration (Dinkel and Lebok, 1997) which often necessitate formulation of appropriate integration policies (Coleman, 1994). Greece became a receiving country only recently; however, in 2005 immigrant births already represented 16.5% of the total which is a considerable share compared to other countries of Europe experiencing longer immigrations history (Sobotka, 2008).

In this paper, an attempt is made for the first time to identify associations between duration of residence and fertility of recent migrants using micro-data from the 2001 census of Greece. As foreign residents in this country include many distinct populations with varying socio-cultural backgrounds and fertility behaviour, an effort was made to examine as many different groups as possible, given sample sizes. The ethnicities included in the analysis represent 65.8% of the women born in the period 1950-1979. Of particular interest are changes among Albanians who come from a high fertility country and represented 57.5% of the immigrants in 2001.

The results indicate that, controlling for differences in the socio-economic status between women with different durations of residence, Albanians born in the 1950s and in the 1960s resident in Greece for 5 years or more have lower levels of cohort fertility, a finding consistent with adaptation effects. By contrast, for Bulgarians, Romanians and women from the countries of the former USSR who, themselves, come from low fertility environments, a

short duration of stay (0-4 years) is associated with reduced fertility. That would be in accordance with a disruption in childbearing occurring around the time of migration, evident only for women aged less than 40 at the time of the census. For older women born in the 1950s who have virtually completed reproduction in 2001, there isn't such an effect.

A methodological issue should be raised in connection with the nature of the statistical information used in the present study. Although analysis of the numbers of children ever born can throw some light on certain aspects of immigrant fertility, census data are not ideal for studying the dynamic process of childbearing and its relation to migration (Ford, 1990; Ng and Nault, 1997). Immigrant fertility is a time-dependent phenomenon; to obtain a thorough picture of developments, longitudinal statistical information would be needed (Alders, 2000; Andersson, 2004) which is not available for Greece. Period measures of fertility, on the other hand, are considered inappropriate for investigating the various time-related aspects of immigrant fertility (Morgan et al., 1999; Andersson, 2004; Toulemon, 2004) though they are deemed suitable for examining short-term dynamics of the childbearing outcome (Hoem, 2008; Ford, 1990; Ng and Nault, 1997). Period data on immigrants, however, became available only very recently for Greece (2004) and do not include information on duration of residence; hence, they cannot be used to identify disruption or adaptation effects.

This study does not attempt to identify the impact of immigration and of migrant fertility on the fertility of the host country population. However, recent research (Tsimbos, 2008b) has shown that although immigrants in Greece exhibit lower mean age at childbearing (overall and by birth order) and higher total fertility rate (2.11) compared to the native population (1.24) their contribution to the overall fertility is limited (0.09 children), a finding that is in line with the results of the studies on other European countries (Toulemon, 2004; Fokkema et al., 2008, Sobotka, 2008). In future research, analysis of successive censuses in conjunction with vital registration data for the native and the foreign-origin populations living in the country may delineate further the multi-dimensional nature of the phenomenon.

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