The contribution of mothers of foreign nationality to the recent recovery of period fertility in Flanders (Belgium)

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Abstract

After decades of decline, period total fertility has been recovering in Europe since the early 21st century. In the literature, two main explanations are given for this: the end, or slowing down, of the postponement of parenthood and the contribution of migrant populations to the birth rate. This paper addresses the latter issue and investigates to what extent mothers of foreign descent contributed to the recent recovery of period fertility in Flanders (Belgium). We use data collected by an official Family and Child Care Agency to calculate the nominators of age-specific fertility rates for different groups of nationality. Since we lack data that are perfectly equivalent for the denominators, we propose a method to indirectly assess the impact of births to foreign women on age specific and total fertility. Our first results indicate that total fertility in Flanders would have been about one tenth of a child lower without women of foreign nationality. Women who had foreign nationality at birth but who acquired Belgian nationality later on, also have a limited positive impact on total fertility. Still, the recent recovery is mainly due to the end of postponement in the native Belgian population.

Introduction

In the 1990s, the drastic postponement of parenthood resulted in an era of "lowest low fertility", primarily in Southern, Central and Eastern Europe (Kohler et al. 2002). After decades of fertility decline, Goldstein et al. (2009) recently observed a revival in the fertility rates in most European countries. The recent recovery marks the end of the lowest-low fertility era (Goldstein et al. 2009). There are several possible explanations for this. First, given the fact that the decline of period fertility to very low levels was driven primarily by the postponement of first births, scholars expect that the recent recovery might be caused by a slowing down, or even by the end in some countries, of the postponement process (Sobotka 2008). In the case of the United States of America, Vere (2007) has even found a partial reversal of the postponement of motherhood. Second, another possible explanation of the recent fertility revival is related to the increased immigration to different parts of Europe (Goldstein et al. 2009). Migration has become an important factor of demographic change in Europe. Since the end of the 1990s, migration has been one of the main reasons for population growth in many European countries (Sobotka 2008). Migrant women coming from outside Europe typically have a higher fertility level than native European women. Their higher fertility may therefore be an important reason for the recent rise in period fertility in Europe (Fokkema et al. 2008; Sobotka 2008). This paper addresses the second explanation.

Nonetheless, researchers suggest that, as a result of assimilation and/or disruption, the fertility rate of migrants will be lower in the country of destination than in the country of origin (Hill & Johnson 2004; Mayer & Riphahn 1999). *The assimilation theory* predicts that migrant's fertility rate will decline as time spent in the country of destination rises. This means that migrants, or rather their children and grandchildren, will adapt to the cultural norms and values of the country of destination and that their fertility rate will converge to the native fertility level (Hill & Johnson 2004; Mayer & Riphahn 1999). *The disruption theory* on the other hand accentuates the difficulties and obstacles due to migration itself. It is for instance the insecurity during the process of migration or a spousal separation which can lead to lower fertility immediately after migration (Hill & Johnson 2004) but eventually will rise again (Mayer & Riphahn 1999).

Sobotka (2008) argued that the differences in fertility between migrants and native women will gradually diminish over time, even if there are some differences between countries. Migrant's fertility rates are expected to decline to a level close to the level of native women. For the Netherlands for instance, Garssen and Nicolaas (2006) found evidence in favor of the assimilation theory: the fertility rates of the second generation Turkish and Moroccan women are closer to that of the native Dutch women, than to the fertility levels of their parents. Despite this evolution, these authors stress that the rapid fertility decrease among Turkish and Moroccan women became less pronounced since the mid-1990s and that there is a stagnation in the fertility decline among Moroccan women. Also in Belgium there has been a fertility decline among Turkish and Moroccan women. But to what extent this evolution is caused by an adaptation to the Belgian cultural norms

and values is still debatable. As Lodewijckx et al. (1997) indicate, the fertility rates did not only fall in Belgium.

The importance of migration for fertility trends in Europe might have increased in recent years, since migration increased in most of the European countries from both within the EU as from outside it. In 2008, there were 3.2 million people migrating to and between the EU27 member states. If only the non-EU citizens are taking into account, there are still 1.8 million persons that entered a EU27 country in 2008. Among them, Moroccans were the largest group. Furthermore, there were in 2008 more women in migration flows to and from one of the EU27 member states and the immigrants are on average younger then the population of their country of destination (Eurostat 2011).

This paper wants to analyze how migration contributes to the recent fertility changes in Belgium. The aim of this article is to investigate to whether and to what extent births to women of foreign descent have been responsible for the recent recovery of the period total fertility rates in Flanders, i.e. the northern, Dutch speaking region of Belgium. In order to take into account that acquiring the Belgian nationality has been facilitated considerably in recent years (see later), we distinguish between (a) women who had the Belgian nationality at the time of their birth (the native Belgian women), (b) women who acquired Belgian nationality afterwards (the naturalized women), and (c) women with a foreign nationality (the foreigners). Women who have had the Belgian nationality at the time of their birth, but obtained another nationality before the birth of their child are not taken into account in the calculations of the total fertility rates.

Migration and the population of foreign descent in Belgium

Like in other European countries, there has been an increase of migration in Belgium. As Table 1 indicates, the number of people (Belgian and foreign together) that entered Belgium increased from 110 410 in 2001 to 146 409 in 2007 and the number of people leaving the country increased from 75 261 (2001) to 91 052 (2007), which resulted in a rise of a positive net migration from 35 149 in 2001 to 55 357 in 2007. In contrast to the Belgians where there are more people leaving the country and therefore indicate a negative net migration on a yearly basis, the net migration of the foreigners is positive and higher in 2007 (64 489) compared to 2001 (44 480).

Table 1. International migration from 2001 to 2007, Belgium[1].

	Belgians			Foreigners			Total (Belgian + foreigners)		
	Immigration	Emigration	Net Migration	Immigration	Emigration	Net Migration	Immigration	Emigration	Net Migration
2001	28 182	37 513	-9 331	82 228	37 748	44 480	110 410	75 261	35 149
2002	30 489	38 228	-7 736	83 368	37 732	45 636	113 857	75 960	37 897
2003	33 314	40 183	-6 869	78 746	39 216	39 530	112 060	79 399	32 661
2004	33 276	40 716	-7 440	83 960	43 179	40 781	117 236	83 895	33 341
2005	34 922	42 601	-7 679	97 888	44 298	53 590	132 810	86 899	45 911
2006	35 827	42 590	-6 763	101 872	45 573	56 299	137 699	88 163	49 536
2007	36 483	45 615	-9 132	109 926	45 437	64 489	146 409	91 052	55 357

Source: NIS[2]

Migration has led to an increasing proportion of foreign population residing in Belgium. The absolute number and proportion of persons with foreign nationality (the foreign population) in the total Belgian population started to decrease in 1995 and reached a minimum in 2001. The decline of the number of foreign people in this period was to a large extent the result of legal changes that facilitated the acquisition of Belgian nationality, further discussed later. After 2001, the number of foreigners started to rise: on the 31 of December 2001, the total population consisted of 10 309 725 persons, where 846 734 had a foreign nationality. In 2007, Belgium counted 10 666 866 residents: 9 695 418 persons had the Belgian nationality and 971 448 had a foreign nationality. The proportion of the foreign population in the total population rose thus from 8.2% in 2001 to 9.1% in 2007. This rise started primarily among women (going from 7.8% in 2001 to 7.9% in 2003 and 8.0% in 2004). It is only since 2005 that men contributed to the rising proportion of foreigners in the total population. A comparison of the age structure between the foreign population and the Belgian population indicates that the former group consists of a younger population. Men and women with foreign nationality are most concentrated between the ages 25 and 54, whereby only 7% of those coming from outside Europe are older than 65 years, compared to 13% of the foreigners coming from a European country. 18% of the Belgian population is older than 65 years (Algemene Directie Werkgelegenheid en Arbeidsmarkt 2009).

The majority (68%) of the foreign population in Belgium comes from European countries. In 2007 there were 658 589 resident nationals of the European Union in Belgium: an increase of 2.3% compared to 2005 and 4.3% to 2004. Most of them are originating from Italy, France and the Netherlands. The strongest increase (49.6%) between 2006 and 2007 is however due to the Romanians. The foreign population in Belgium coming

[1] Asylum seekers are since 1994 no longer included in the immigration data. They occur primarily on a waiting list and only when the asylum application is accepted, they are registered in the population data.

[2] In this article we use the name 'National Institute for Statistics' (NIS) instead of the Dutch name 'Algemene Directie Statistiek en Economische Informatie' (ADSEI).

from outside Europe increased between 2004 and 2005 with 6.3%, but decreased with 0.7% between 2006 and 2007. The Turkish and Moroccan populations are the largest group of the foreign non-European population, but due to the new law of naturalization in 2000 (see later), the amount of Turks and Moroccans decreased quite strong between 1999 and 2007: respectively with 42.8% and 34.5%. A distinction between the Flemish Region, the Walloon Region and Brussels Capital Region shows that even if the absolute number of foreigners is the highest in the former Region (354 370 in 2007) the proportion of the foreign population in the total population is the lowest in the Flemish Region (5.75%) and the highest in the Brussels Capital Region (28.14%) (Algemene Directie Werkgelegenheid en Arbeidsmarkt 2007 & 2009).

However, due to naturalization, some who are of foreign origin are no longer included in the population of foreign nationality. The growth of the foreign population depends on three factors: *the natural growth* (the number of births minus the number of deaths); *the net migration* (the number of immigrations minus the number of emigrations) and *the number of naturalizations*. As already mentioned, the net migration of persons with foreign nationality is positive and increased between 2001 and 2007. A positive net migration indicates that there are more foreigners that enter the country than there are leaving.

Since 1985, Belgium has a Code of Belgian nationality. Due to this opportunity, the Belgium population increases with the number of foreigners that obtained the Belgian nationality minus those who changed their Belgian nationality to a different one. The foreign population on the other hand decreased with the same amount of naturalizations. There have been three important recent changes in the Belgian legislation of naturalization. The first one dates from 1991, the second one from 1995 and the third one from 2000. The acquisition of the Belgian nationality became every time easier. The law of the first of march 2000 marks for instance a more flexible procedure, the application became free, the duration of the treatment of the application became limited in time and the applicants did not have to indicate there desire to integrate. These adjustments were responsible for an increase of naturalizations in Belgium. More foreigners decided to obtain the Belgian nationality: 61 980 from 897 110 persons with a foreign nationality in 2000 and 62 982 from 861 685 foreigners in 2001. This figure decreased in the following years and especially since 2006, where a restriction was imposed. Nonetheless, there are still quite a lot foreigners that obtain the Belgian nationality: 36 063 of 932 161 persons in 2007, compared to 31 860 of 900 473 foreigners in 2006 and 31 512 of 870 862 in 2005. A distinction between the different countries of origin demonstrates that Morocco and Turkey are the two most important countries of the naturalized Belgium population. In 2000, 63.1% of the persons who obtained the Belgian nationality were Moroccans or Turkish. In 2005 their share was respectively around 36.7% and 32.6% in 2007. Persons coming from a European country (Italy, France and the Netherlands) decide to a lesser extent to obtain the Belgian nationality (Algemene Directie Werkgelegenheid en Arbeidsmarkt 2007 & 2009).

In order to access the impact of migration in the fertility rates, it is not only important to make the distinction between the women with Belgian nationality and the women with foreign nationality, but also to make the

distinction between the native Belgian women, the naturalized Belgian women and the women with foreign nationality. Native women are the women who had the Belgian nationality at the moment of their birth and the Belgian nationality at the birth of their child. Women of foreign descent are the women who acquired the Belgian nationality, but originally had another nationality (the naturalized women) and the women with foreign nationality.

Data and methods

Data required to investigate the main research question *(To what extent are births of women of foreign descent (naturalized and foreign nationality) responsible for the recent recovery of the period total fertility rates in Flanders?)* needs to contain information about age, sex and original nationality of the concerned population. The National Institute for Statistics (NIS) does publish on fertility by nationality, but not by original nationality. For the nominator of the age-specific feritility rates we therefore use the Ikaros-database provided by Kind & Gezin. Kind & Gezin is a Flemish Family and Child care agency that since 1998 registers key information of every birth or adoption they are aware of in the Ikaros-databank[3]. Since they link their records with births registered in the official national population register, Ikaros covers all births officially registered. A major strength of the Ikaros database is that it does contain the original nationality of the mother. A limitation is that it is provided by a Flemish organization whereby it mainly contains information of births occurred in the region of Flanders. Data from the regions of Brussels and Wallonia (i.e. the southern, French speaking part of Belgium) are only available when women of this region(s) informed this organization. Unfortunately, a similar database for Brussels and/or Wallonia does not exist (Van Bavel & Bastiaenssen 2006).

The denominator of the age-specific fertility rates is provided by the NIS. This national institute releases on an annual basis information of the composition of the (legal) population on the first of January. This means that we do not have any information of those who are not registered in Belgium. In the analysis, the denominators are the average population at risk on the first of January of two successive years.

There are three important differences between the nominator and the population at risk of our age-specific fertility rates. First of all, the Ikaros data provides information on the original nationality of the mothers, whereas the data from NIS only contains information of women's current nationality. Second, the data provided by the NIS includes only those who are legally registered in Belgium, in contrast to the Ikaros data. Kind & Gezin register information of every birth they are aware of, which means that the births of those who are illegal in the country, but addresses oneself to their services are included in the data. Third, the NIS data does not make a distinction between countries of origin. So it is impossible to distinguish the different

[3] Ikaros stands for Geïntigreerd Kindactiviteiten en Regio Ondersteuningssysteem.

nationalities among the foreigners (e.g. Turks, Moroccans, other European nationalities) (see Van Bavel & Bastiaenssen 2006 for more details about this).

In this article we will first of all calculate how the period total fertility rate (TFR) evolved between 2001 and 2008 in Flanders. Secondly, we will take a closer look at the TFR and analyse to what extent this evolution can be explained by the contribution of women with the Belgian nationality and by the contribution of women with a foreign nationality. Due to naturalization, we are well aware that women with the Belgian nationality consist of two different groups: women who had the Belgian nationality at the time of their birth and women who acquired the Belgian nationality afterwards. In order to find an answer to our main research question (*To what extent are births of women of foreign descent (naturalized and foreign nationality) responsible for the recent recovery of the period total fertility rates in Flanders?*) we need to "pull" this latter group out of the fertility rates of the women with Belgian nationality. This means that we only bring into account the births of the native Belgian women to the age-specific fertility rates and presume that the naturalized women do not have any children between 2001 and 2008. Given the fact that we do not have the perfect denominator, the methodology we propose can best been seen as a *"simulation experiment"*. That is: we first calculate in the conventional way age-specific and total fertility rates for Belgian women and women with another nationality. Next, we exclude from the nominators all the birth rates occurred by naturalized women, i.e. we exclude all births to women who acquired Belgian nationality later in their lives. Take the following equation:

$$\text{Age-specific fertility rates} = \frac{\text{Number of births by native Belgian women at age x}}{\text{Number of Belgian women at age x}} + \frac{\text{Number of births by naturalized Belgian women at age x}}{\text{Number of Belgian women at age x}}$$

If the recent recovery of fertility in Flanders would be caused only by naturalized Belgian women, the first term on the right hand side of the equation (i.e. the fraction representing the contribution of the native Belgian women) should not show signs of recovery. In other words, the contribution of the native Belgian women to the fertility rates would be stationary.

Results

1. *Results for Flanders*

In Flanders, the period TFR has increased since 2001. The TFR went from 1.52 in 2001 to 1.81 in 2008 (see Table 2). If we distinguish women with foreign nationality from women with the Belgian nationality, we find that the TFR of women with the Belgian nationality increased with 0.28 between 2001 and 2008, while it declined with 0.01 units during the same time period for women with foreign nationality. However, while the

increase for Belgian women was monotonous, the decline for the latter group (a decrease of 0.10 between 2007 and 2008) was preceded with a rise of 0.19 units between 2001 and 2004 (going from 2.93 in 2001 to 3.12 in 2004).

In all years, women with foreign nationality had higher fertility levels than Belgian women at all reproductive ages (see Figure 1). Nonetheless, as the last row of Table 2 indicates, the impact of women with foreign nationality on the TFR is rater limited: the TFR in Flanders would have been about one tenth of a child lower without women of foreign nationality.

Table 2. Total fertility rates in Flanders by nationality, 2001-2008[4,5]

	2001	2002	2003	2004	2005	2006	2007	2008	**Differences 2008-2001**
(1) Belgian nationality	1.43	1.45	1.47	1.54	1.59	1.62	1.65	1.71	**+0.28**
(2) Foreign nationality	2.93	2.95	2.99	3.12	3.00	3.02	3.02	2.92	**-0.01**
(3) Total population	1.52	1.54	1.56	1.64	1.68	1.72	1.75	1.81	**+0.29**
(3) – (1)	0.09	0.09	0.09	0.10	0.09	0.10	0.10	0.10	**+0.01**

Source: Kind & Gezin, *Ikaros* and NIS. Own calculations

Figure 1. Age-specific fertility rates in Flanders, 2001-2008

Figure 1a. Belgian nationality

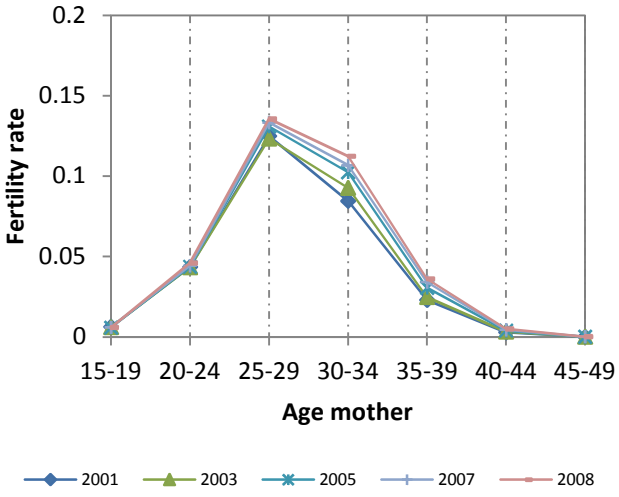
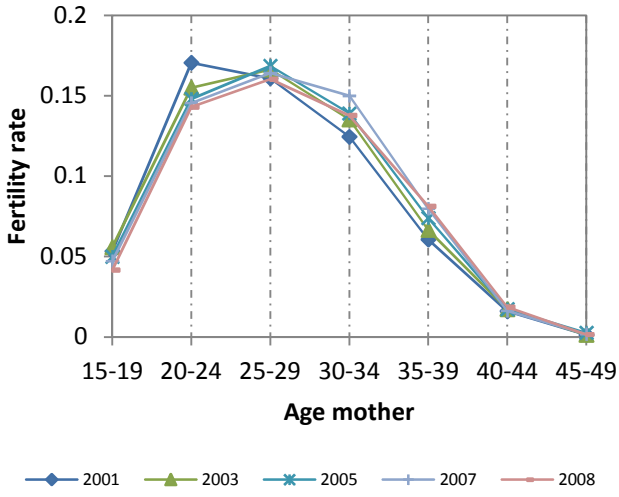


Figure 1b. Foreign nationality



Source: Kind & Gezin, *Ikaros* and NIS. Own calculations

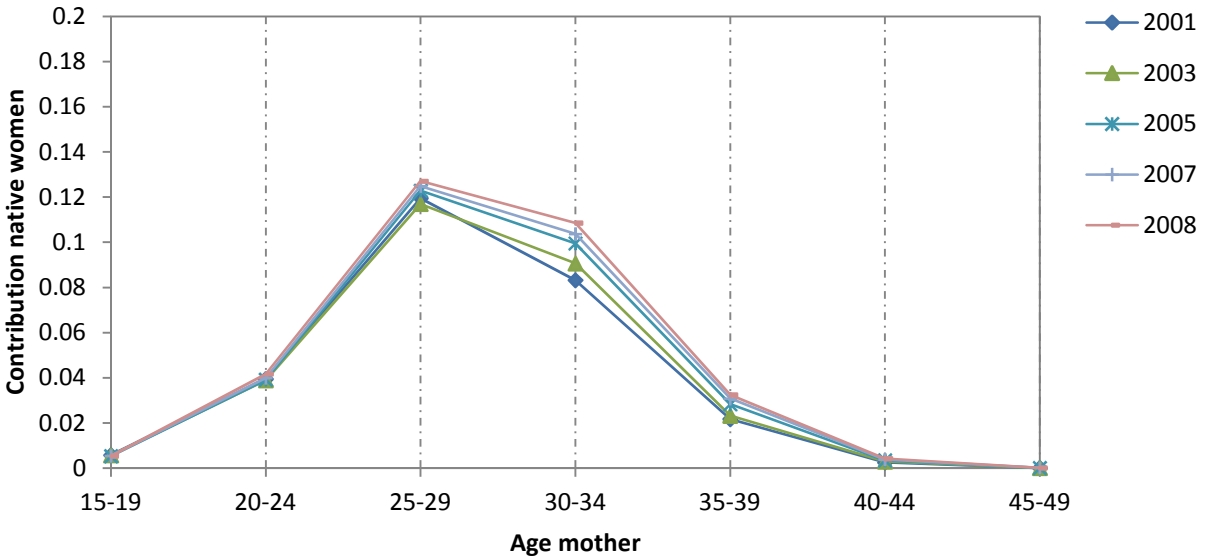
[4] The stillborn babies and the adopted children are not included in the analyses.

[5] The births of the women who had originally the Belgian nationality, but acquired another nationality before the birth of their child are not included in the analyses.

Women with Belgian nationality consist of two different groups: those who had the Belgian nationality already at the time of their birth (the native Belgian women) and those who acquired the Belgian nationality afterwards (the naturalized Belgian women). As explained, naturalization laws have changed during recent years making it easier for people with foreign nationality living in Belgium to acquire Belgian nationality. This has led to a growing proportion women of foreign descent in the group of Belgian women. Given the higher fertility of women with foreign nationality (see Table 2), we presume that the naturalized group also has higher fertility. This would (partly) explain the increase of the TFR of the women with the Belgian nationality.

In order to figure out whether the increase of the TFR among Belgian women is entirely due, or not, to the easier nationality acquisition, we carry out our "simulation experiment" (as explained in the section data and methodology) and only bring into account the births of the native Belgian women to the age-specific fertility rates (see Figure 2). Figure 2 demonstrates that, even on the counterfactual assumption that naturalized women would not bear any children between 2001 and 2008, the native Belgian women contribute to the increase between 2001 and 2008. So, the revival of the total fertility rates in Flanders should at least partly be explained by the increased fertility of native Belgian women.

Figure 2. Contribution of native Belgian women to the age-specific fertility rates of the total Belgian nationality in Flanders, 2001-2008



Source: Kind & Gezin, *Ikaros* and NIS. Own calculations

However, this does not exclude that the weight of the population of foreign descent in the numbers of births (i.e. the nominators of the fertility rates) might have increased. Table 3 provides an overview of the evolution of the absolute number and proportion of births for the native women, the naturalized women and the foreigners in the Flemish Region between 2001 and 2008. Both for those who obtained the Belgian nationality (naturalized women), as for those who had foreign nationality at the moment of birth of their child, there is a distinction between the women coming from one of the 27 EU countries [6], the women coming from a Western non-EU27 country[7] and those who come from a non-Western country[8]. The 'others' category at the women with another nationality include for instance the women who had the Belgian nationality at their own birth, but had another nationality at the birth of their child.

[6] EU27: Bulgaria, Cyprus, Denmark, Germany, Estonia, Finland, France, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Austria, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Czech Republic, the United Kingdom, Sweden.

[7] Western non-EU27: Albania, Australia, Bosnia-Herzegovina, Canada, the United States of America, Gibraltar, Iceland, Japan, Yugoslavia, Kosovo, Croatia, Macedonia, Moldova, Monaco, New Zealand, Norway, Ukraine, Russia, Son Marino, Serbia/Montenegro, Belarus, Switzerland.

[8] Non-Western: All other countries.

Table 3. Absolute number and proportion of births in the Flemish Region by current nationality, 2001-2008.

Nationality			Year								
			2001	2002	2003	2004	2005	2006	2007	2008	2008-2001
BELGIAN		**# births**	**52 070**	**52 477**	**52 909**	**54 968**	**56 346**	**57 368**	**57 838**	**59 681**	**+7 611**
		% of total	**87.9%**	**87.7%**	**87.4%**	**87.0%**	**87.3%**	**86.6%**	**85.9%**	**85.8%**	**-2.1%**
Native		# births	49 755	49 831	49 871	51 631	52 657	53 462	53 704	55 339	**+5 584**
		% of total	84.0%	83.3.%	82.4%	81.7%	81.5%	80.7%	79.8%	79.6%	**-4.4%**
Naturalized		# births	2 315	2 646	3 038	3 337	3 689	3 906	4 134	4 342	**+2 027**
		% of total	3.9%	4.4%	5.0%	5.3%	5.7%	5.9%	6.1%	6.2%	**+2.5%**
	EU27	# births	337	359	333	348	359	410	393	398	**+61**
		% of total	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	**0.0%**
	Western non-EU27	# births	79	92	130	140	192	178	234	290	**+211**
		% of total	0.1%	0.2%	0.2%	0.2%	0.3%	0.3%	0.9%	0.4%	**+0.3%**
	Non-Western	# births	1 899	2 195	2 575	2 849	3 138	3 318	3 507	3 654	**+1 755**
		% of total	3.2%	3.7%	4.3%	4.5%	4.9%	5.0%	5.2%	5.3%	**+2.1%**
OTHER		**# births**	**7 178**	**7 343**	**7 598**	**8 201**	**8 225**	**8 854**	**9 460**	**9 863**	**+2 685**
		% of total	**12.1%**	**12.3%**	**12.6%**	**13.0%**	**12.7%**	**13.4%**	**14.1%**	**14.2%**	**+2.1%**
	EU27	# births	2 110	2 263	2 364	2 527	2 554	2 719	2 907	3 071	**+961**
		% of total	3.6%	3.8%	3.9%	4.0%	4.0%	4.1%	4.3%	4.4%	**+0.8%**
	Western non-EU27	# births	1 072	1 052	1 009	1 044	1 038	1 081	1 186	1 169	**+97**
		% of total	1.8%	1.8%	1.7%	1.7%	1.6%	1.6%	1.8%	1.7%	**-0.1%**
	Non-Western	# births	3 901	3 942	4 116	4 489	4 468	4 814	5 055	5 224	**+1 323**
		% of total	6.6%	6.6%	6.8%	7.1%	6.9%	7.3%	7.5%	7.5%	**+0.9%**
	Others	# births	95	86	109	141	165	240	312	399	**+304**
		% of total	0.2%	0.1%	0.2%	0.2%	0.3%	0.4%	0.5%	0.6%	**+0.4%**
TOTAL			**59 248**	**59 820**	**60 507**	**63 169**	**64 571**	**66 222**	**67 298**	**69 544**	**+10 296**

Source: Kind & Gezin, *Ikaros*. Own calculation

As Table 3 indicates, the weight of the native women in the number of births declined between 2001 and 2008 (-4.4%), whereas the weight of women with foreign descent increased in this period. Relatively to the total number of births occurred in Flanders (Belgian and other nationalities taken together), women with foreign nationality were responsible for 12.1% of the total births in 2001 and of 14.2% of the total births in 2008; an increase of 2.1 percentage points (table 3). The weight of the naturalized Belgian women in the birth rates increased with 2.5 percentage points between 2001 and 2008 (3.9% in 2001 and 6.2% in 2008). Especially women of non-Western descent are responsible for this increase: an increase of 2.1 percentage points among the naturalized women and a rise of 0.9 percentage points among the women of foreign nationality; taken together a rise of 3 percentage points.

This brings us to our second conclusion: even though the revival of the fertility rates can be (partly) explained by the contribution of the native women, the relative weight of the native women in the birth rates declined between 2001 and 2008, whereas the relative weight of the population of foreign descent has increased from 16.0% in 2001 (3.9% for the naturalized women and 12.1% for women with foreign nationality) to 20.4% in 2008 (6.2% for the naturalized women and 14.2% for the women with foreign nationality). In other words, the weight of women of foreign descent in the period total fertility rates increased in the research period.

2. *Results for the five Flemish provinces*

We notice for the total population in each of the five Flemish provinces a raise of the TFR between 2001 and 2008 (see Table 4): from 1.59 to 1.92 in the province Antwerp (an increase of 0.33 units); from 1.48 to 1.69 (a rise of 0.21 units) in the province Limburg; going from 1.54 to 1.83 in the province East Flanders (an increase of 0.29 units); going from 1.42 to 1.74 (+0.32) in the province Flemish Brabant and an increase of the TFR in the province West Flanders of 0.27 units (TFR is 1.55 in 2001 and 1.82 in 2008).

If we distinguish in every province women of foreign nationality from women with the Belgian nationality, we notice an increase of the TFR among this latter group, but that the evolution of the TFR among women of foreign nationality differs in each province. The TFR of women with a foreign nationality declined quite strong in the provinces West Flanders (-0.39), Antwerp (-0.23) and to a more limited extent in the province East Flanders (-0.14). In contrast, there has been an increase of the TFR of the foreign population in the provinces Flemish Brabant (+0.31) and Limburg (+0.08). With the exception of the province Flemish Brabant, the evolution of the TFR of women of foreign nationality is not monotonous. On the contrary, in four out of five provinces, the TFR of these women increased between 2001 and 2004 (see table 4). Even with these differences between the five provinces, their TFR is in every year higher than the TFR of the Belgian women but, as Table 4 indicates, the impact of women with a foreign nationality on the TFR is limited. Only the TFR in the province Antwerp would have been almost two tenth of a child lower without the women of foreign nationality.

Table 4. Total fertility rates in the five Flemish Provinces by nationality, 2001-2008

PROVINCES[9]	2001	2002	2003	2004	2005	2006	2007	2008	Differences 2008-2001
ANTWERP									
(1) Belgian nationality	1.42	1.47	1.51	1.56	1.61	1.66	1.68	1.75	**+0.33**
(2) Foreign nationality	3.51	3.44	3.52	3.59	3.47	3.41	3.37	3.28	**-0.23**
(3) Total population	1.59	1.62	1.67	1.73	1.78	1.83	1.86	1.92	**+0.33**
(3) – (1)	0.17	0.15	0.16	0.17	0.17	0.17	0.18	0.17	**0.00**
LIMBURG									
(1) Belgian nationality	1.40	1.38	1.35	1.43	1.47	1.49	1.56	1.61	**+0.21**
(2) Foreign nationality	2.37	2.49	2.50	2.55	2.43	2.54	2.61	2.45	**+0.08**
(3) Total population	1.48	1.47	1.45	1.52	1.55	1.58	1.66	1.69	**+0.21**
(3) – (1)	0.08	0.09	0.10	0.09	0.08	0.09	0.10	0.08	**0.00**
EAST FLANDERS									
(1) Belgian nationality	1.46	1.44	1.47	1.57	1.60	1.65	1.66	1.74	**+0.28**
(2) Foreign nationality	3.55	3.60	3.53	3.80	3.54	3.57	3.42	3.41	**-0.14**
(3) Total population	1.54	1.52	1.55	1.67	1.69	1.75	1.75	1.83	**+0.29**
(3) – (1)	0.08	0.08	0.08	0.10	0.09	0.10	0.09	0.09	**+0.01**
FLEMISH BRABANT									
(1) Belgian nationality	1.38	1.46	1.52	1.59	1.64	1.67	1.67	1.68	**+0.30**
(2) Foreign nationality	1.98	2.04	2.09	2.28	2.28	2.31	2.41	2.29	**+0.31**
(3) Total population	1.42	1.51	1.57	1.64	1.70	1.73	1.74	1.74	**+0.32**
(3) – (1)	0.04	0.05	0.05	0.05	0.06	0.06	0.07	0.06	**+0.02**
WEST FLANDERS									
(1) Belgian nationality	1.50	1.51	1.50	1.55	1.63	1.67	1.71	1.78	**+0.28**
(2) Foreign nationality	3.29	3.29	3.24	3.34	3.05	3.14	3.09	2.90	**-0.39**
(3) Total population	1.55	1.55	1.54	1.60	1.67	1.72	1.75	1.82	**+0.27**
(3) – (1)	0.05	0.04	0.04	0.05	0.04	0.05	0.04	0.04	**-0.01**

Source: Kind & Gezin, *Ikaros* and NIS. Own calculations

Following the same procedure as for the Flemish Region, we analyze whether the increase of the TFR of the Belgian women is in every Flemish province due to the native Belgian women or, to the naturalized Belgian women. In other words, we only bring into account the births of the former group and presume that the naturalized women did not have any children between 2001 and 2008. After carrying out our *"simulation experiment"* for the five Flemish provinces (see Figure 3), we do not observe stagnation in the contribution of the native Belgian women to the fertility rates. This is true for each of the Flemish provinces. Hereby we

[9] Translation to Dutch and French is respectively 'Antwerpen/Anvers'; 'Limburg/Limbourg'; 'Oost-Vlaanderen/Flandre Orientale'; 'Vlaams Brabant/Brabant Flamand' and 'West-Vlaanderen/Flandre Occidentale'.

could confirm our first conclusion: the revival of the total fertility rates would not only for the Flemish Region, but also for the five Flemish provinces partly be explained by the increased fertility of native Belgian women (Figure 3).

Figure 3. Contribution of native Belgian women to the age-specific fertility rates of the total Belgian nationality in the five Flemish provinces, 2001-2008

Figure 3a. Province Antwerp

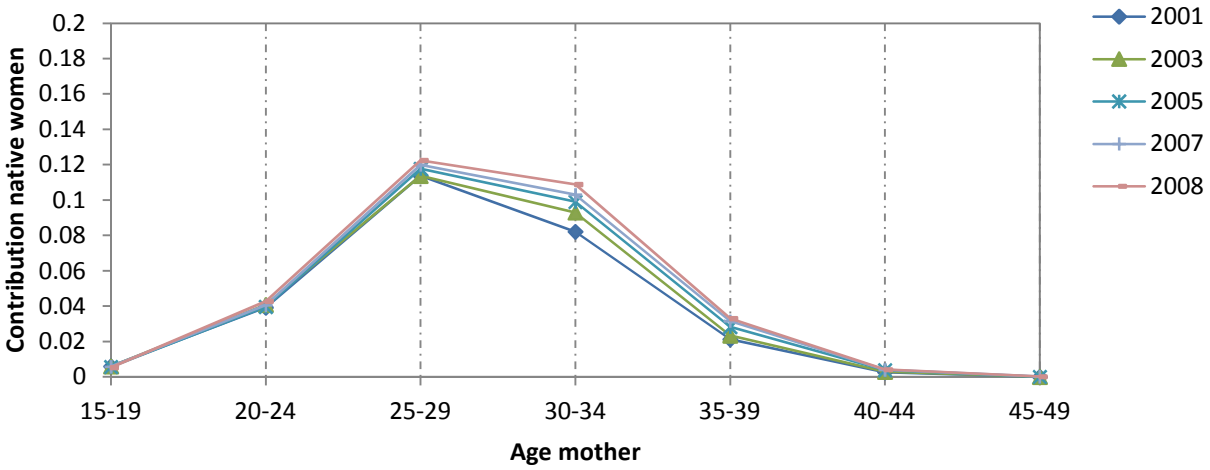


Figure 3b. Province Limburg

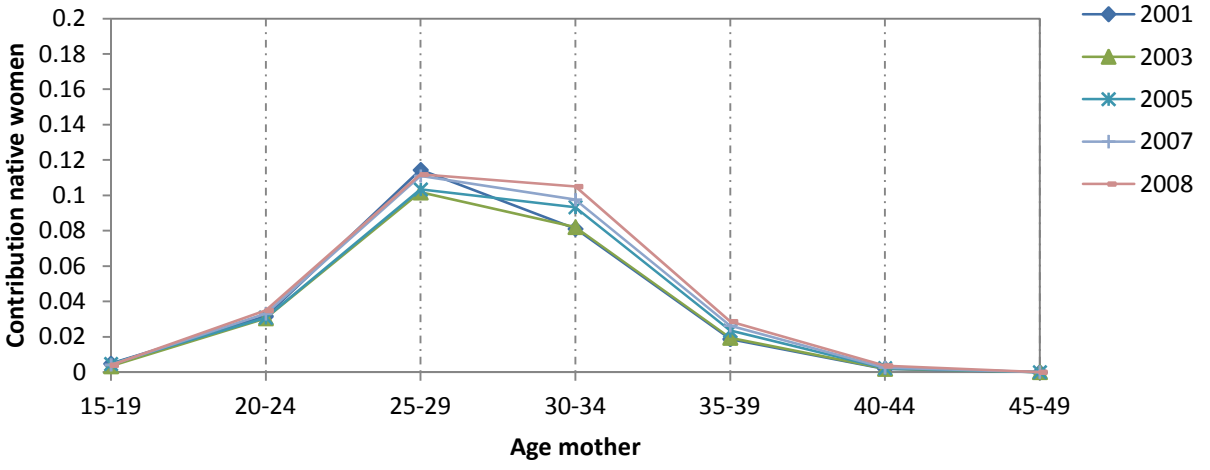


Figure 3c. Province East Flanders

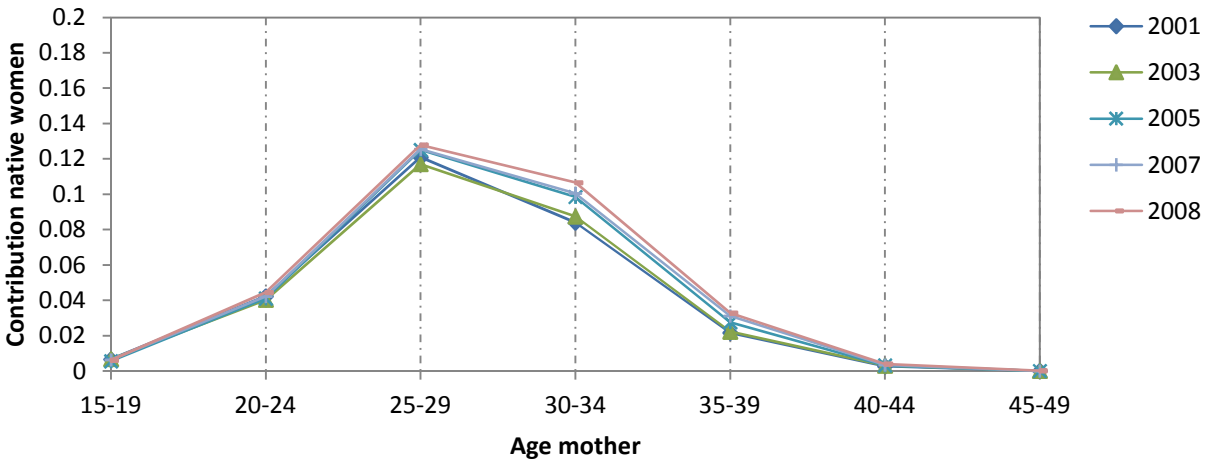


Figure 3d. Province Flemish Brabant

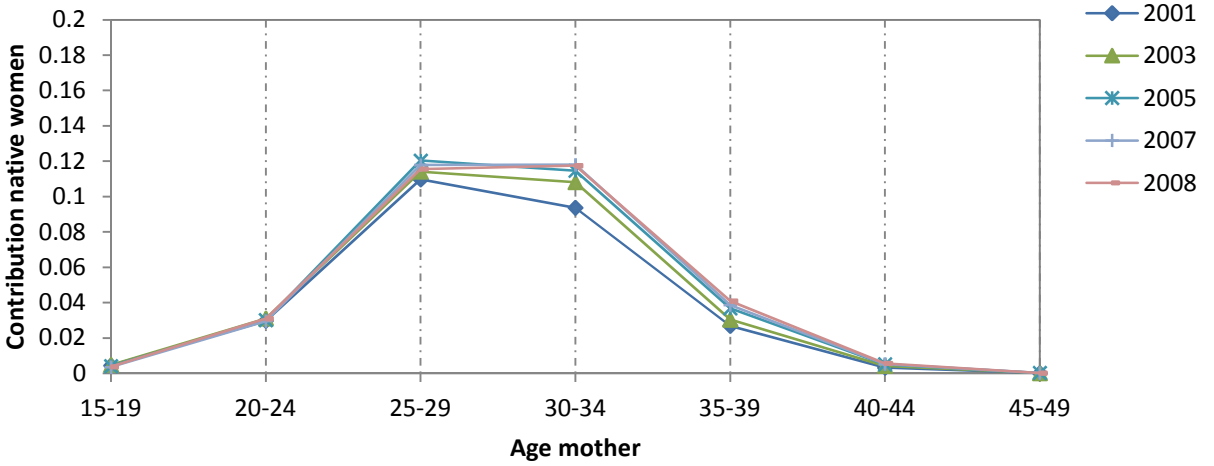
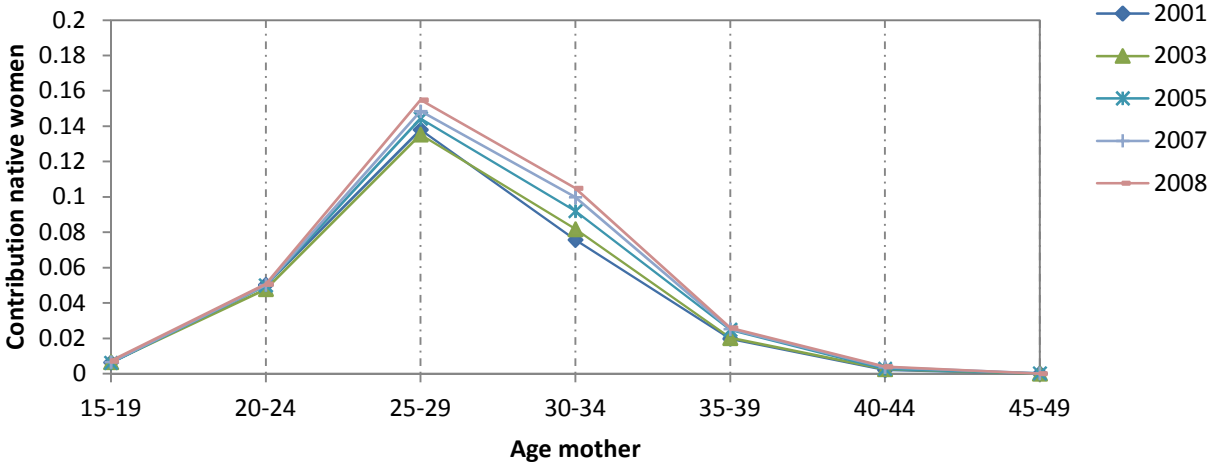


Figure 3e. Province West Flanders



Source: Kind & Gezin, *Ikaros* and NIS. Own calculations

However, this conclusion does not exclude that the weight in the number of births might have increased for women of foreign descent. Table 5 provides an overview of the absolute number and proportions of births for the native Belgian women, the naturalized Belgian women, the women with foreign nationality and the total number of children (native, naturalized and foreign together) born between 2001 and 2008 for each Flemish province. Because we found for the Flemish region that especially the women of won-Western descent are important, we presume that the contribution of foreign non-Western descent is the most decisive. This allows us to no longer make the distinction.

Table 5 indicates that the weight in the birth rates for the native Belgian women declined in each of the five Flemish provinces in the research period. This decline is especially remarkable for the provinces Antwerp (-5.6%), East Flanders (-4.6%), Flemish Brabant (-7.0%) and to a lesser extent in the province West Flanders (-1.9%). On the other hand, the weight of women of foreign descent (naturalized and foreign nationality taken together) in the birth rates increased in every province: + 5.7% in the province Antwerp, + 4.6% in the province East Flanders, + 7.0% in the province Flemish Brabant and + 1.9% in the province West Flanders. Only in the province Limburg there is a limited increase (+0.3%). The increasing weight in the birth rates is due to an approximately equal weight gain for the naturalized women as for the women with a foreign nationality. As a result we can conclude that with the exception of the province Limburg, women of foreign descent contribute to the revival of the fertility rates occurred in these provinces.

Table 5. Absolute number and proportion of births in the five Flemish Provinces by current nationality, 2001.2008

PROVINCES	Nationality		Year 2001	2002	2003	2004	2005	2006	2007	2008	2008-2001
ANTWERP	NATIVE	# births	13 053	13 302	13 533	13 713	14 037	14 254	14 417	14 950	**+1 897**
		% of total	77.5%	77.2%	76.0%	74.5%	74.4%	73.2%	72.5%	71.9%	**-5.6%**
	NATURALIZED	# births	796	932	1 076	1 284	1 336	1 501	1 495	1 617	**+821**
		% of total	4.7%	5.4%	6.0%	7.0%	7.1%	7.7%	7.5%	7.8%	**+3.1%**
	OTHER	# births	2 987	2 994	3 190	3 416	3 497	3 713	3 971	4 228	**+1 241**
		% of total	17.7%	17.4%	17.9%	18.6%	18.5%	19.1%	20.0%	20.3%	**+2.6%**
	TOTAL		**16 836**	**17 228**	**17 799**	**18 413**	**18 870**	**19 468**	**19 883**	**20 795**	**+3 959**
LIMBURG	NATIVE	# births	6 108	5 890	5 719	6 000	6 099	6 193	6 467	6 768	**+660**
		% of total	76.6%	74.8%	74.3%	74.7%	74.8%	74.4%	74.3%	76.4%	**-0.2%**
	NATURALIZED	# births	670	736	756	794	853	833	869	776	**+106**
		% of total	8.4%	9.3%	9.8%	9.9%	10.5%	10.0%	10.0%	8.8%	**+0.4%**
	OTHER	# births	1 197	1 250	1 224	1 236	1 201	1 295	1 371	1 317	**+120**
		% of total	15.0%	15.9%	15.9%	15.4%	14.7%	15.6%	15.7%	14.9%	**-0.1%**
	TOTAL	**# births**	**7 975**	**7 876**	**7 699**	**8 030**	**8 153**	**8 321**	**8 707**	**8 861**	**+886**
EAST FLANDERS	NATIVE	# births	12 346	12 020	12 036	12 810	12 929	13 232	13 144	13 646	**+1 300**
		% of total	87.3%	86.6%	86.0%	85.3%	85.0%	84.3%	83.5%	82.7%	**-4.6%**
	NATURALIZED	# births	531	574	688	747	807	879	942	1033	**+502**
		% of total	3.8%	4.1%	4.9%	5.0%	5.3%	5.9%	6.0%	6.3%	**+2.5%**
	OTHER	# births	1 264	1 282	1 286	1 467	1 466	1 592	1 663	1 821	**+557**
		% of total	8.9%	9.2%	9.2%	9.8%	9.6%	10.1%	10.6%	11.0%	**+2.1%**
	TOTAL		**14 141**	**13 876**	**14 010**	**15 024**	**15 202**	**15 703**	**15 749**	**16 500**	**+2 359**

Source: Kind & Gezin, *Ikaros*. Own calculations

Table 5. Absolute number and proportion of births in the five Flemish Provinces by current nationality, 2001.2008

PROVINCES	Nationality		Year 2001	2002	2003	2004	2005	2006	2007	2008	2008-2001
FLEMISH BRABANT	NATIVE	# births	8 273	8 636	8 845	9 121	9 220	9 284	9 095	9 067	**+794**
		% of total	86.7%	85.6%	84.8%	84.2%	83.1%	82.3%	80.2%	79.7	**-7.0%**
	NATURALIZED	# births	168	277	341	348	486	502	607	637	**+469**
		% of total	1.8%	2.7%	3.3%	3.2%	4.4%	4.5%	5.4%	5.6%	**+3.8%**
	OTHER	# births	1 099	1 175	1 239	1 359	1 389	1 489	1 641	1 673	**+574**
		% of total	11.5%	11.6%	11.9%	12.6%	12.5%	13.2%	14.5%	14.7%	**+3.2%**
	TOTAL		**9 540**	**10 088**	**10 425**	**10 828**	**11 095**	**11 275**	**11 343**	**11 377**	**+1 837**
WEST FLANDERS	NATIVE	# births	9 975	9 983	9 738	9 987	10 372	10 499	10 581	10 908	**+933**
		% of total	92.7%	92.8%	92.1%	91.8%	92.2%	91.7%	91.1%	90.8%	**-1.9%**
	NATURALIZED	# births	150	127	177	166	207	191	221	279	**+129**
		% of total	1.4%	1.2%	1.7%	1.5%	1.8%	1.7%	1.9%	2.3%	**+0.9%**
	OTHER	# births	631	642	659	723	672	765	814	824	**+193**
		% of total	5.9%	6.0%	6.2%	6.6%	6.0%	6.7%	7.0%	6.9%	**+1.0%**
	TOTAL		**10 756**	**10 752**	**10 574**	**10 876**	**11 251**	**11 455**	**11 616**	**12 011**	**+1 255**

Source: Kind & Gezin, *Ikaros*. Own calculations

3. *Results for the municipalities Antwerp, Mechelen and Ghent*[10]

Since the population of foreign descent tends to be concentrated in cities, their impact on the fertility and birth rates will be especially visible there. Therefor we analyses the evolution of the fertility- and birth rates in the municipalities Antwerp, Mechelen en Ghent (see Table 6)[11].

The TFR of the total population in the municipalities Antwerp and Mechelen increased quite strong between 2001 and 2008 and even exceeded the replacement level in both of the municipalities (since 2004 in Antwerp with a TFR of 2.03 and since 2006 in Mechelen with a TFR of 2.08). The TFR went from 1.90 in 2001 to 2.23 in 2008; an increase of 0.33 units in the municipality Antwerp, and the TFR rose from 1.92 in 2001 to 2.21 in 2008 in the municipality Mechelen (+0.29). For the municipality Ghent, the TFR declined between 2001 and 2004, respectively from 1.78 to 1.44, but increased between 2004 (1.44) and 2008 (1.86).

If we distinguish women with foreign nationality from women with the Belgian nationality, we notice that the TFR of the Belgian women increased with 0.37 units in the municipality Antwerp; with 0.29 units in the municipality Mechelen and with 0.08 units in the municipality Ghent between 2001 and 2008. However, while the increase for the Belgian women in the municipality Antwerp was monotonous, the TFR of these women declined first in the municipalities Ghent and Mechelen, but started to increase since 2005. The TFR of women with a foreign nationality decreased quite strong in the municipalities Antwerp, Mechelen and Ghent: a decrease of respectively 0.49, 0.40 and 0.49 units. Nevertheless, the TFR of foreign women started only to decrease since 2004 in Mechelen and Ghent. The TFR of these women rose for instance up to 5.25 (in 2003) in the municipality Mechelen.

During the research period, women with foreign nationality exhibited higher fertility than Belgian women in the three municipalities. As table 6 indicates, the TFR of Belgian women would have been about four tenth of a child lower in the municipality Antwerp, three tenth of a child lower in the municipality Mechelen and around two tenth of a child lower in the municipality Ghent.

As already mentioned, the Belgian women consist out of the native Belgian women and the naturalized Belgian women. Given the higher fertility of foreign women (see Table 6), we assume that the naturalized women also have a higher fertility and that they are (partly) responsible for the increase of the TFR of Belgian women in each of the municipalities. Therefore we carry out our *"simulation experiment"* and only bring into account the births of the native women to the age-specific fertility levels (see Figure 4).

[10] Translation to Dutch and French is respectively 'Antwerpen/Anvers'; 'Gent/Gand' and 'Mechelen/Malines'.

[11] The analyses have been done for all the Flemish municipalities, but only the municipalities Antwerpen, Mechelen and Ghent show clear trends.

Table 6. Total fertility rates in the municipalities Antwerp, Mechelen and Ghent by nationality, 2001-2008

MUNICIPALITY	2001	2002	2003	2004	2005	2006	2007	2008	Differences 2008-2001
ANTWERP									
(1) Belgian nationality	1.47	1.54	1.63	1.73	1.72	1.79	1.79	1.84	**+0.37**
(2) Foreign nationality	4.07	3.94	4.06	4.05	3.91	3.84	3.78	3.58	**-0.49**
(3) Total population	1.90	1.93	2.03	2.13	2.12	2.19	2.21	2.23	**+0.33**
(3) – (1)	0.43	0.39	0.40	0.40	0.40	0.40	0.42	0.39	**-0.04**
MECHELEN									
(1) Belgian nationality	1.64	1.69	1.58	1.61	1.66	1.83	1.86	1.93	**+0.29**
(2) Foreign nationality	4.59	4.63	5.25	5.14	4.68	4.13	3.73	4.19	**-0.40**
(3) Total population	1.92	1.97	1.93	1.96	1.99	2.08	2.08	2.21	**+0.29**
(3) – (1)	0.28	0.28	0.35	0.35	0.33	0.25	0.22	0.28	**+0.00**
GHENT									
(1) Belgian nationality	1.58	1.47	1.44	1.15	1.57	1.59	1.56	1.66	**+0.08**
(2) Foreign nationality	3.57	3.33	3.34	3.80	3.43	3.35	3.31	3.08	**-0.49**
(3) Total population	1.78	1.65	1.64	1.44	1.78	1.81	1.79	1.86	**+0.08**
(3) – (1)	0.20	0.18	0.20	0.29	0.21	0.22	0.23	0.20	**+0.00**

Source: Kind & Gezin, *Ikaros* and NIS. Own calculations

Figure 4. Contribution of native Belgian women to the age-specific fertility rates of the total Belgian nationality in the municipalities Antwerp, Mechelen and Ghent, 2001-2008

Figure 4a. Municipality Antwerp

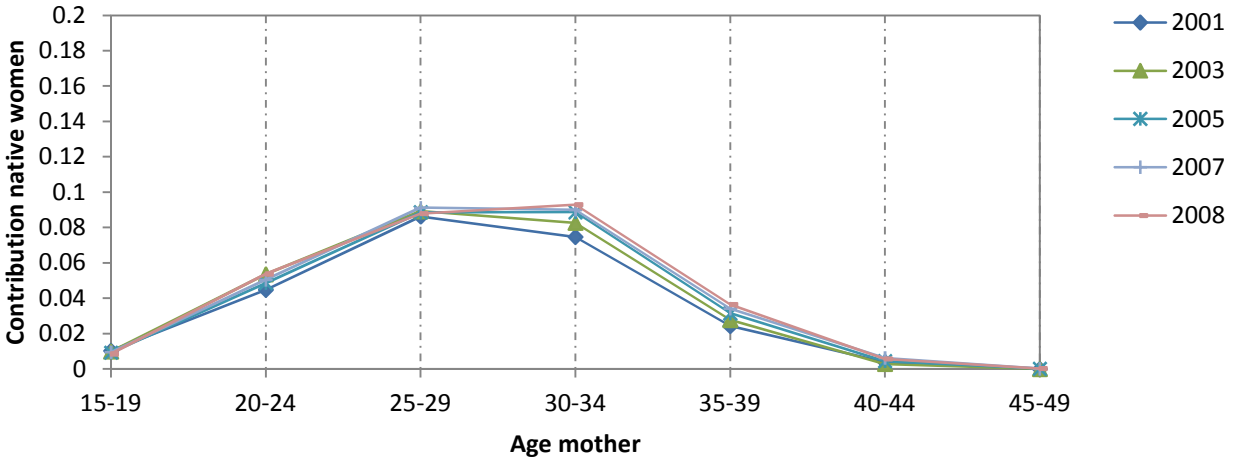


Figure 4b. Municipality Ghent

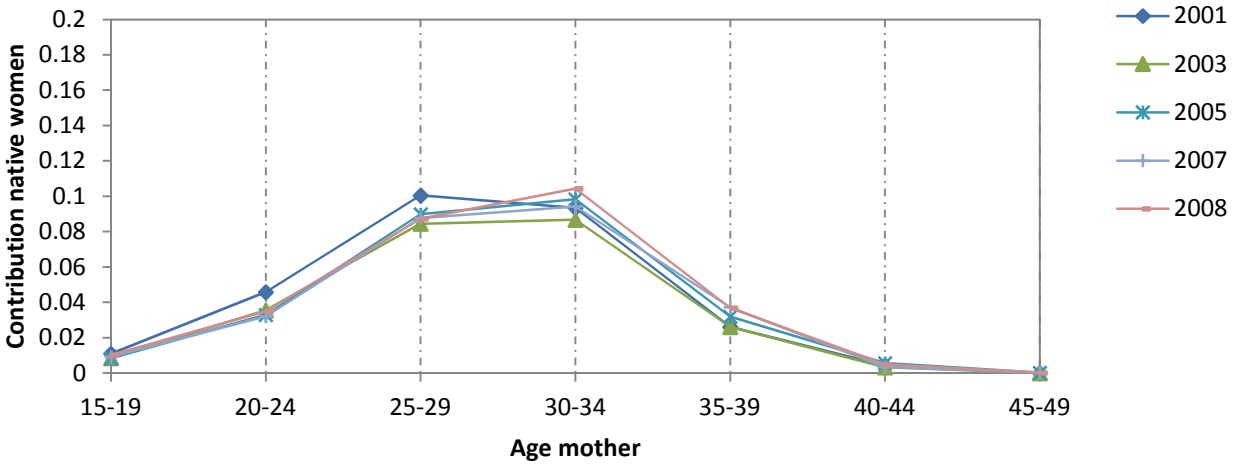
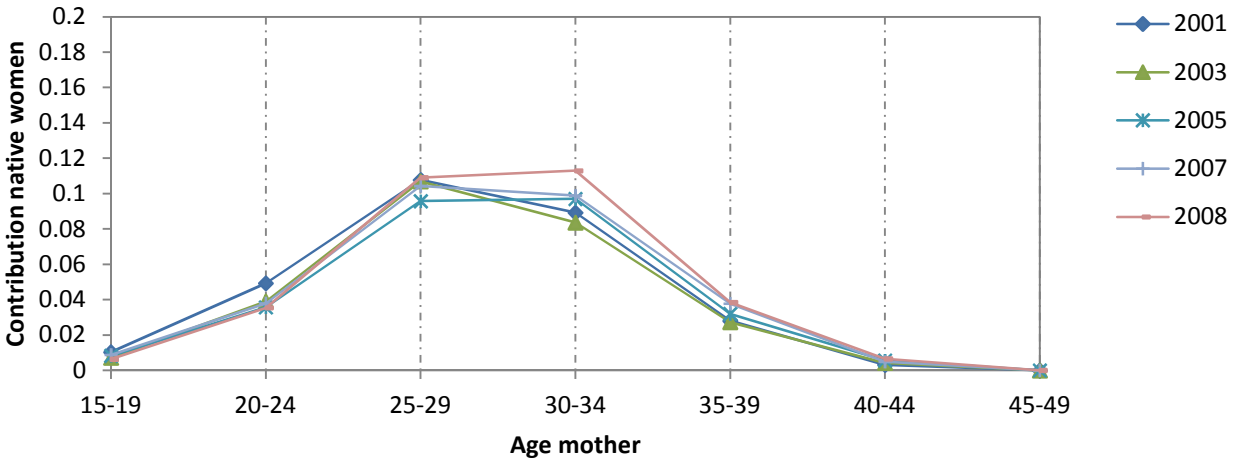


Figure 4c. Municipality Mechelen



Source: Kind & Gezin, *Ikaros* and NIS. Own calculations

Figure 4 (a, b and c) indicates that even if we assume that the naturalized women did not have any children between 2001 and 2008, there has been a contribution of the native Belgian women to the fertility rates. In other words, the revival of the fertility rates in these three municipalities can be partly allocated to the native Belgian women.

Table 7. Absolute number and proportion of births in the municipalities Antwerp, Mechelen and Ghent by current nationality, 2001.2008

MUNICIPALITY	Nationality		Year 2001	2002	2003	2004	2005	2006	2007	2008	2008-2001
ANTWERP	NATIVE	# births	3 031	3 206	3 390	3 525	3 449	3 516	3 570	3 627	**+596**
		% of total	54.2%	55.1%	54.4%	53.4%	52.0%	50.4%	50.0%	49.0%	**-5.2%**
	NATURALIZED	# births	559	652	752	895	927	1 031	965	1 053	**+494**
		% of total	10.0%	11.2%	12.1%	13.6%	14.0%	14.8%	13.5%	14.2%	**+4.2%**
	OTHER	# births	2 000	1 961	2 089	2 183	2 256	2 432	2 610	2 729	**+729**
		% of total	35.8%	33.7%	33.5%	33.1%	34.0%	34.8%	36.5%	36.8%	**+1.0%**
	TOTAL		**5 590**	**5 819**	**6 231**	**6 603**	**6 632**	**6 979**	**7 145**	**7 409**	**+1 819**
MECHELEN	NATIVE	# births	666	684	625	635	650	697	701	747	**+81**
		% of total	68.9%	68.5%	63.2%	62.4%	62.0%	62.8%	62.3%	61.5%	**-7.4%**
	NATURALIZED	# births	82	97	109	119	138	173	188	184	**+102**
		% of total	8.5%	9.7%	11.0%	11.7%	13.2%	15.6%	16.7%	15.2%	**+6.7%**
	OTHER	# births	218	218	255	263	261	240	236	283	**+65**
		% of total	22.6%	21.8%	25.8%	25.9%	24.9%	21.6%	21.0%	23.3%	**+0.7%**
	TOTAL	**# births**	**966**	**999**	**989**	**1 017**	**1 049**	**1 110**	**1 125**	**1 214**	**+248**
GHENT	NATIVE	# births	2 090	1 928	1 878	2 076	2 091	2 114	2 087	2 195	**+105**
		% of total	71.6%	70.2%	67.8%	97.7%	97.6%	66.3%	65.4%	64.9%	**-6.7%**
	NATURALIZED	# births	255	283	325	317	351	367	359	408	**+153**
		% of total	8.7%	10.3%	11.7%	10.3%	11.4%	11.5%	11.2%	12.1%	**+3.4%**
	OTHER	# births	573	537	566	675	649	706	747	781	**+208**
		% of total	19.6%	19.5%	20.4%	22.0%	21.0%	22.2%	23.4%	23.1%	**+3.5%**
	TOTAL	**# births**	**2 918**	**2 748**	**2 769**	**3 068**	**3 091**	**3 187**	**3 193**	**3 384**	**+466**

Source: Kind & Gezin, *Ikaros*. Own calculations

Nonetheless, women of foreign descent do also contribute to this revival. Table 7 demonstrates that the weight in the birth rates of native women decreased quite strong between 2001 and 2008: -5.2% in the municipality Antwerp, -7.4% in the municipality Mechelen and -6.7% in the municipality Genth, whereas the weight in the birth rates of women of foreign descent rose respectively with 5.2%; 7.4% and 6.9%. This rise is the in the municipalities Antwerp and Mechelen mainly caused by the naturalized Belgian women. For these municipalities we can conclude that the revival of the fertility rates can partly be explained by the native Belgian women, but that the TFR would be lower without women with foreign nationality and that the weight in the birth rates of women of foreign descent increased in the research period.

Conclusion

The beginning of the 21st century marks a revival of the fertility rates in most European countries. Several researchers suggest a slowing down or even an end of the postponement process. Others stress the contribution of migration to this revival. This paper addresses the latter issue and tries to find an answer to the following question: *To what extent are births to women of foreign descent responsible for the recent recovery of the period total fertility rates in Flanders (Belgium)?*.

In order to figure out whether the Belgian women or the women of foreign descent are responsible for the revival of period fertility, we used two different data resources: for the nominators of the fertility rates we used the Ikaros data, provided by Kind & Gezin and for the denominators we used data from the National Institute for Statistics (NIS).

In the Flemish Region, as well as in the five Flemish provinces and in the municipalities Antwerp, Mechelen and Ghent, the total fertility rates increased between 2001 and 2008. When we distinguished between women with Belgian and women with foreign nationality, we noticed that the TFR of the former group increased between 2001 and 2008 and that the TFR were in every year higher for women of foreign nationality. Due to recent legal facilitation of the acquisition of Belgian nationality, Belgian women increasingly consist of two different groups: those who had the Belgian nationality at the time of their birth (the native Belgian women) and those who acquired the Belgian nationality afterwards (the naturalized Belgian women). Given the higher fertility of women with foreign nationality, we may expect that naturalized women also have higher fertility and therefore contribute to the recent rise of the TFR of women with a Belgian nationality. We suggested a *"simulation experiment"* as a method to analyze the contribution of the native Belgian women to the revival of the fertility rates. In this experiment we only brought into account the births of the native Belgian women to the age-specific fertility rates and postulated that the naturalized women did not have any children between 2001 and 2008. This experiment allowed us to conclude that the native Belgian women do contribute to the revival of the fertility rates.

From an analysis of the evolution of the numbers of births occurred in the Flemish Region, the five provinces and the municipalities Antwerp, Mechelen and Ghent, we concluded that the relative weight of the number of births to native Belgian women declined between 2001 and 2008, whereas the weight of births to women of foreign descent in the birth rates increased in the same time period. In the Flemish Region, especially women of non-Western descent are responsible for this increase. So, the weight of women of foreign descent in the period total fertility rates increased in the research period, which implies that they are also responsible for the revival of the fertility rates.

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