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Are changes in births in Europe driven by immigration?
Methodological insights and empirical evidence for the
2009-2016 period

Christos Bagavos, Panteion University, Athens

Alexandra Tragaki, Harokopio University of Athens

Contents

1. The aims of the study
2. Background
3. Data and methods
4. Results
5. Discussion

1. The aims of the study

- Evaluate the effect of immigration on the changes in the total number of births in selected European countries
- Distinguish the effect on total births due to changes in population from that related to shifts in fertility.
- Provide areas for further research

2. Background

Some facts:

- **Diversities within countries in terms of:**
 - the proportion of births to immigrant mothers (it ranges from 1 to 60%).
 - the proportion of immigrant women in the total population of reproductive age (varies from less than 5% to more than 25%), which means that
 - ✓ changes in the non-migrant population are expected to be more relevant than changes in migrant population for shifts in total births

- **Similarities (1):**

Generally:

- There is an excess fertility of migrant relative to that of non-migrant women (ranging from 15% to 60%)
- Changes in migrant fertility occur towards the same direction as non-migrant fertility.
 - ✓ Thus, increase (decline) in fertility of non-migrant mothers is combined with increase (decline) in migrant fertility.

- **Similarities (2):**

- Differences in population shares between immigrants and non-immigrants are largely more pronounced than diversities in fertility of immigrant and non-immigrant mother.
 - ✓ Thus, changes in total births are expected to be related more to a population, in particular the non-migrant population, than to a fertility component
- The female non-migrant population of reproductive age decreases and this downward trend is not always compensate for increase in female migrant population

2. Data and Methods

- In order to include the maximum number of European countries, the analysis relies on period counts of births and population broken down by citizenship (Eurostat's database).
 - However, the study also provides some evidence based on country of birth

5 country-groups

- group 1 - Scandinavian countries (Denmark, Finland, Norway and Sweden)
- group 2 - Southern European countries (Greece, Italy, Portugal, Spain, Bulgaria, Malta and Cyprus)
- group 3 – “Germanic” countries (Austria, Germany and Switzerland)
- group 4 - Eastern European Countries (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Slovakia and Slovenia)
- group 5 – “Low” countries (Belgium, Luxembourg and the Netherlands).

The analysis of the role of non-citizens for changes, between 2009 and 2016, in the total number of births is articulated into two steps:

Step1:

by comparing

➤ changes in total births

with

➤ changes in total births due to country citizens (both as percentage of the total number of births in 2009)

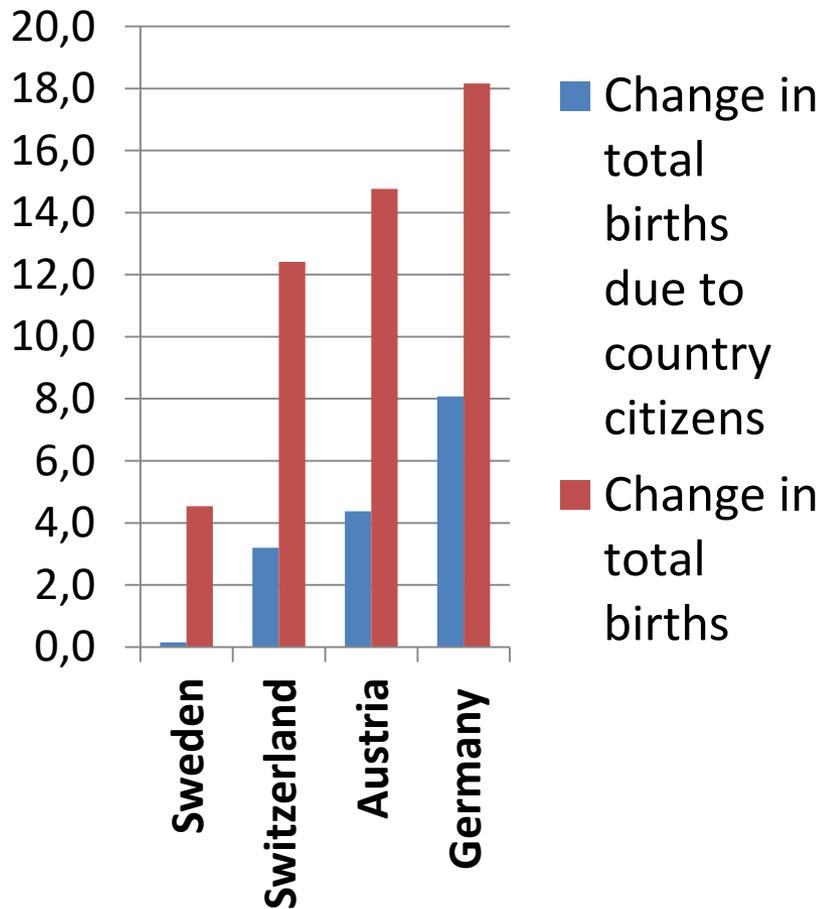
Step2:

By using a mixed decomposition and standardization method for highlighting the components of changes in the total number of births, and in particular:

- The fertility of non-citizens
- The fertility of citizens
- The number and the age structure of non-citizens
- The number and the age structure of citizens
- The interactions within components

4a. Results (Step 1)

Figure 1a "Acceleration" (positive) effect



- "Acceleration" effect of immigration on the increase in total births that would have resulted from an increasing trend in births to non-migrant women

Figure 1b. "Acceleration" (negative) effect

- "Acceleration" effect of immigration on the decrease in total births that would have resulted from a decreasing trend in births to non-migrant women

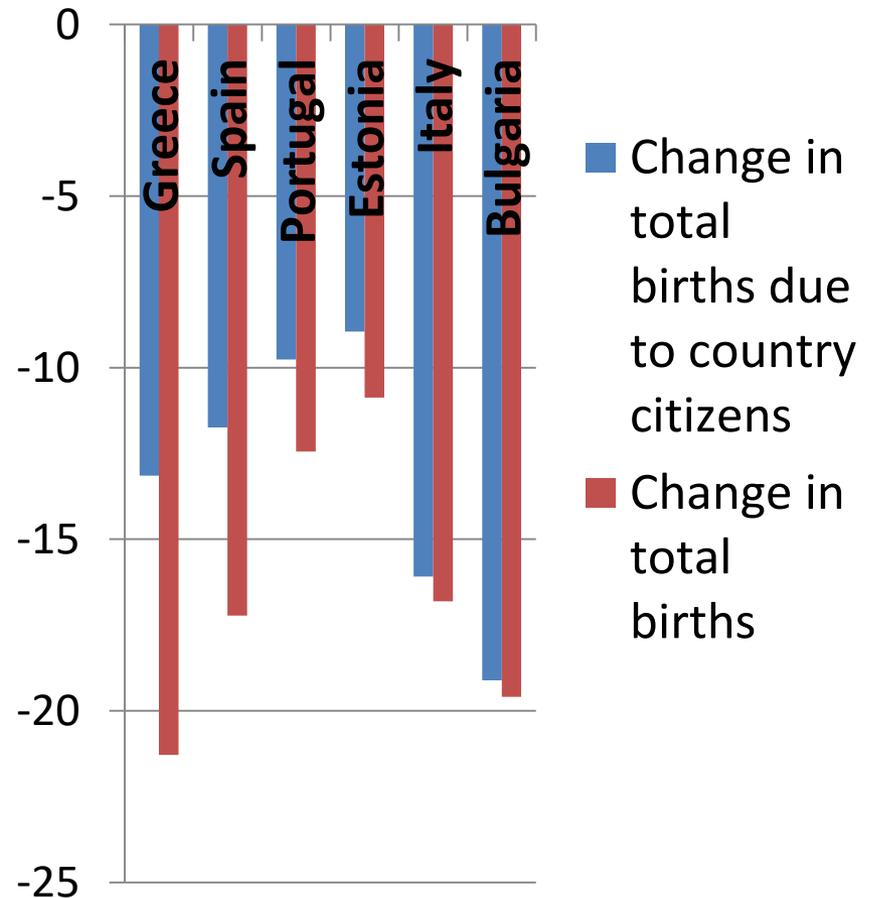
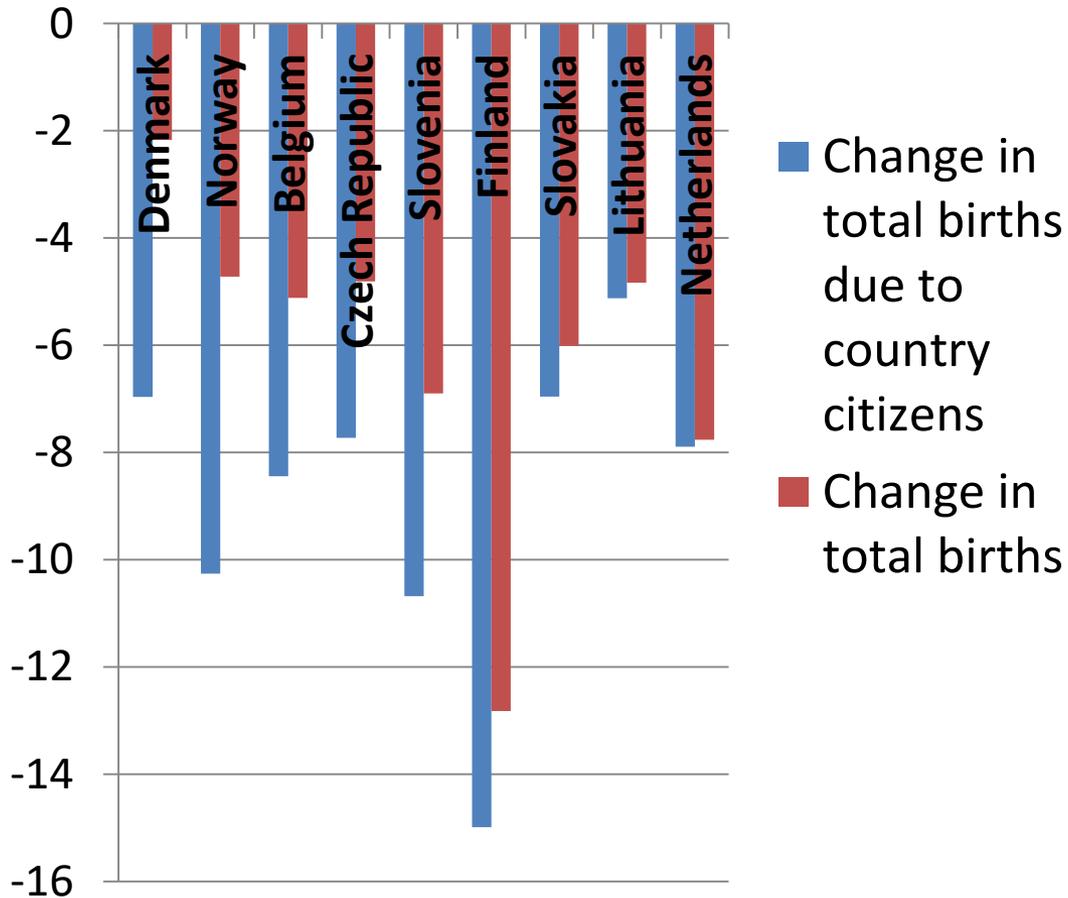


Figure 1c. "Slowdown" effect



- "Slowdown" effect of immigration on the decrease in total births that would have resulted from a decreasing trend in births to non-migrant women

Figure 1d. "Over-compensate" effect

- "Over-compensate" effect of immigration on the decrease in total births that would have resulted from a decreasing trend in births to non-migrant women; immigration leads to an increase in total births

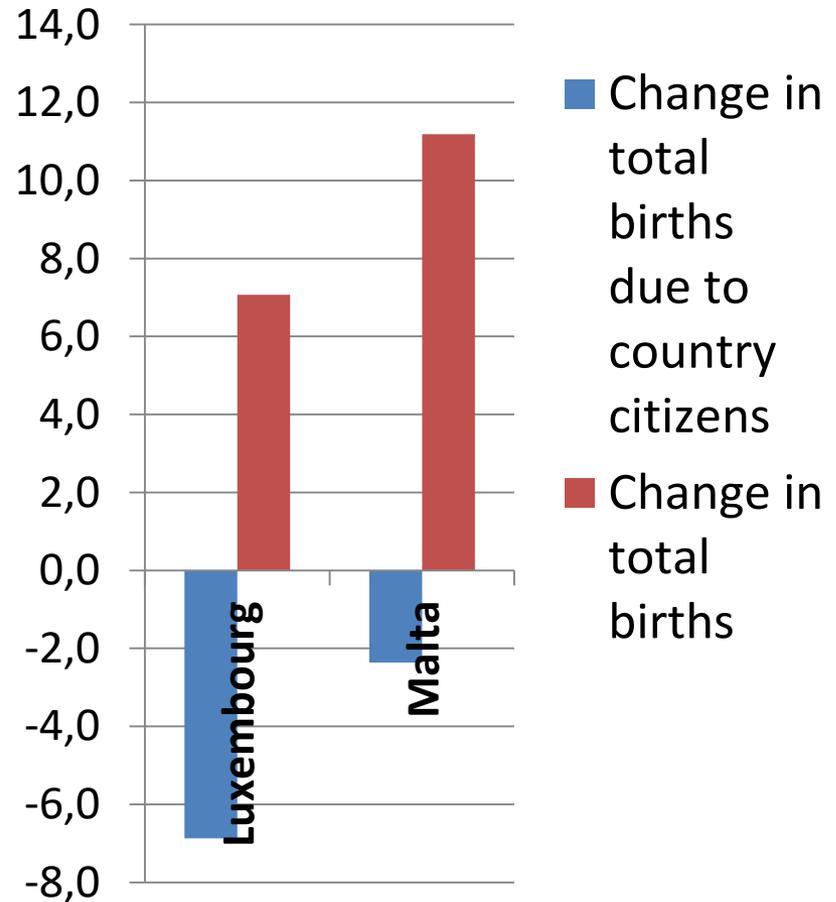
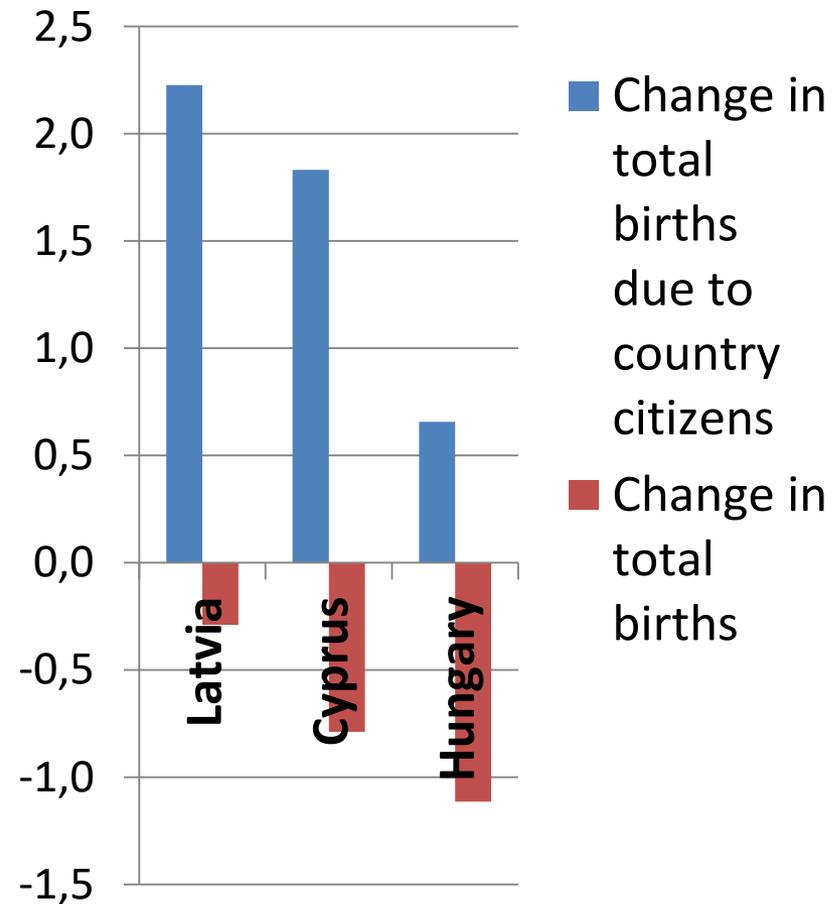


Figure 1e. "Reversal" effect

- "Reversal" effect of immigration on the increase in total births that would have resulted from an increasing trend in births to non-migrant women; immigration leads to a decrease in total births



- In the 4 countries that displayed an “Acceleration” effect the increase in total births is largely or even entirely, driven by rising births of non-citizen than of citizen women
 - Thus, the upward trend in total births is due by 97%, 74%, 70% and 56% to immigration (fertility and population combined) in Sweden, Switzerland, Austria and Germany respectively

4b. Results (Step 2)

All 24 countries

- By considering the countries as a whole, we see that
 - the reduction in total births is attributable to the declining size and the changing age structure of the country citizen female population in reproductive ages (Table 1) and that
 - this is due to decrease in citizen population mainly in Southern and to a lesser extent in Eastern European countries.
 - In addition, the positive population effect (by 33 thousands) of the non-citizens relies on the increase in immigration which took place in the “Germanic” countries and to a lesser extent in the Scandinavian and the “Low” countries.

Table 1. The decomposition of changes in the total number of births in European countries classified in 5 country-groups for the 2009-2016 period (in 1,000)

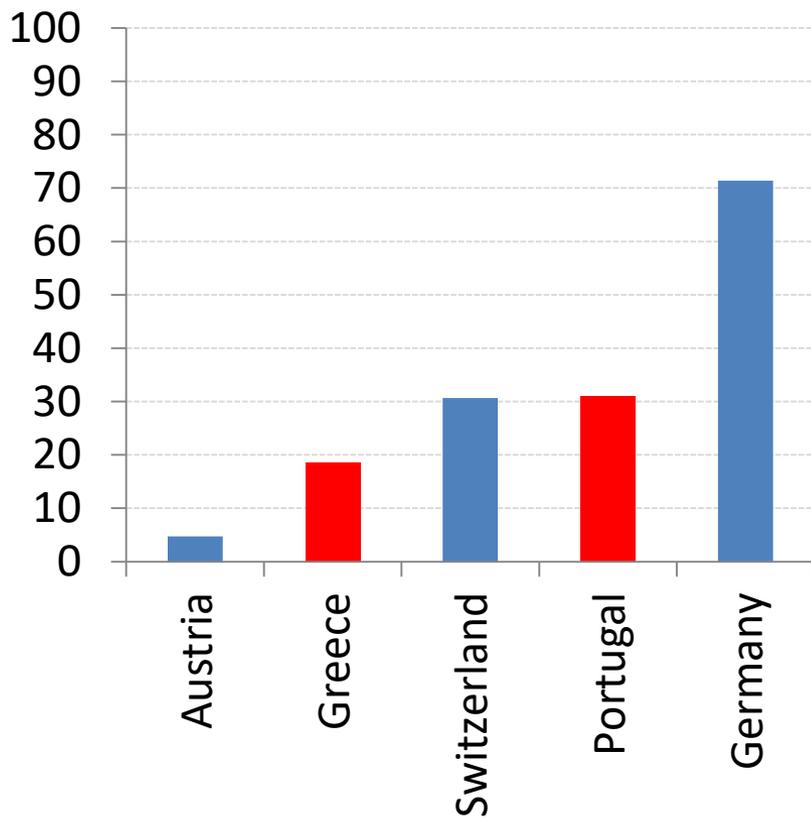
	Changes in the number of total births due to shifts in						Total
	Fertility of non-citizens	Fertility of citizens	The size and the age structure of the non-citizen female population	The size and the age structure of the citizen female population	Interactions due to		
					Fertility and the size and the age structure of the non-citizen female population	Fertility and the size and the age structure of the citizen female population	
Scandinavian	-2	-23	16	6	-1	-2	-7
Southern European	-18	-24	-23	-175	-3	9	-233
‘Germanic’	46	68	29	-7	7	-2	142
Eastern European	3	35	-1	-50	-0	-2	-15
“Low” countries	-6	-22	12	-3	-1	-2	-20
All countries	24	35	33	-230	2	1	-135

Some country-specific results

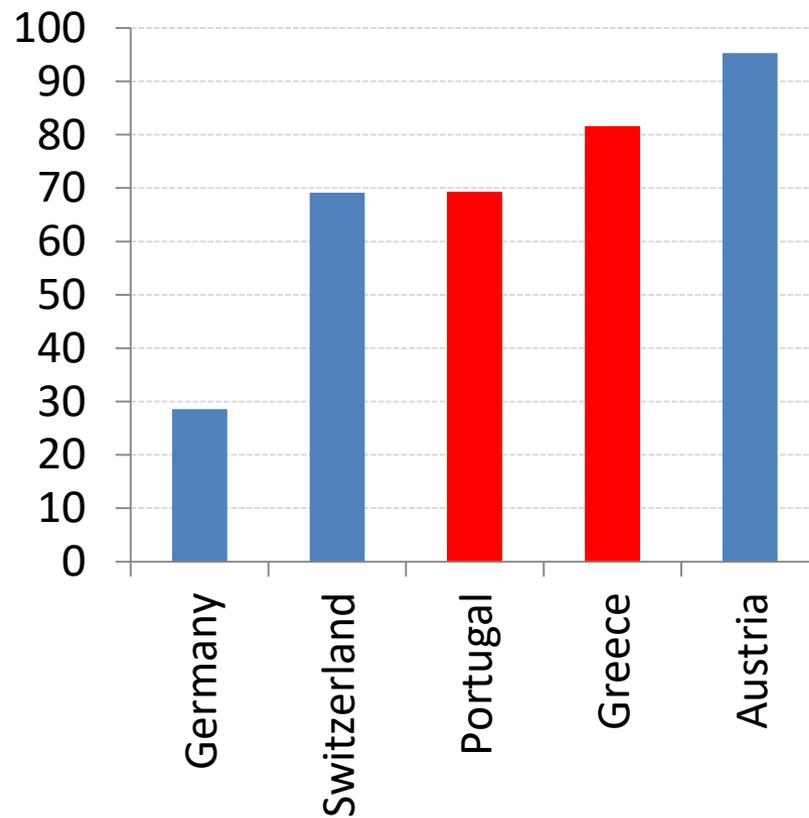
- Diversities in the fertility and the population effect of immigrants on the changes in total births between Germany and the two other “Germanic” countries (Figures 2a and 2b). Thus, the immigration effect on births in **Germany** is largely due (by 71%) to the increasing trend in foreign fertility than to the rising female non citizen population (by 29%), whereas the opposite holds true for **Austria** and **Switzerland** (the population effect account for 95% and 69% of the overall immigration effect on births in Austria and Switzerland respectively).

Figure 2. Percentage of the variation in the total number of births over the 2009-2016 period due to immigrant fertility and immigrant population in selected European countries

a. Immigrant fertility



b. Immigrant population



Citizenship or country of births as proxies for appreciating the impact of immigration on shifts in total births?

There is no differences in the results when the analysis is conducted for 13 countries where the information of both the citizenship and the country of birth of the individuals and of the mothers is available (Table 2). In fact,

- In both cases, the decrease in the total number of births is driven by the shrinking size and the changing age structure of the country-citizen (or equally of the native-born) female population of reproductive age

Table 2. The decomposition of changes in the total number of births on the basis of citizenship or country of birth in 13 European countries over the 2009-2016 period (in 1,000)

	Changes in the number of total births due to shifts in						
	Fertility of non-migrants	Fertility of migrants	The size and the age structure of the non-migrant female population	The size and the age structure of the migrant female population	Interactions due to		Total
					Fertility and the size and the age structure of the non-migrant female population	Fertility and the size and the age structure of the migrant female population	
Country of birth	-12.0	-24.1	17.6	-79.1	-1.8	1.0	-98.3
Citizenship	-2.9	-38.6	5.5	-67.8	-2.8	0.9	-105.5

5. Conclusion - Discussion

- When the countries under study are considered as a whole,
 - the shrinking size and the changing age structure of the non-migrant female population of reproductive age, is the driving force behind changes in the total number of births in Europe.
- This mainly results from the observed pattern in
 - the Southern and
 - the Eastern European countries and
 - to a much lower extent from the Scandinavian and the “Low” countries where shifts in the non-migrant fertility are behind the decrease in total births.

- However, this overall pattern contrasts significantly with that occurring in the “Germanic” countries where the increase in total births are driven by immigration
 - by immigrant fertility in Germany and
 - by immigrant population in Austria and Switzerland
- Some country-specific differentiations in relation to “their” country-group are worth noting;
 - this is particularly the case of Sweden where the increasing trend in total births is entirely resulted from a population effect due to immigration, and
 - the cases of Italy and the Netherlands where the importance of immigration for decreasing total births is completely insignificant.

- The finding on the similar importance of the non-migrants for changes in total births when either country of birth or citizenship is taken into account is most probably related to a kind of a “counterbalanced effect”;
 - The effect of the larger size of the foreign-born population on total births as compared to that of the non-citizen population is counterbalanced by the higher excess fertility of non-citizen women than the excess fertility of foreign-born to native-born women

- The contrast between “Germanic” and Southern European countries as regards the impact of changes in female citizen population on total births deserves further attention.
 - In reality, despite the fact that in both, the “Germanic” and the Southern country-groups, the above-mentioned population decreases (by -10.6% and -7.4% respectively),
 - the number of citizen women aged between 25-34 years increases by 5.5% in the former and decreases by -18.7% in the latter country-group.

- This diversity, resulting from differences in the age structure of the citizen population, is related to
 - the historically persistent low or even very low fertility in Southern Europe, but it is also very likely resulted from the
 - emigration flows over the period of the economic recession. For instance, in Italy over the 2009-2016 period, the outward migration of female citizen population aged between 25-34 years is estimated at more than 80.000 persons , which corresponds to around 3% of this population in 2009; similar figures are also observed for Spain.

- There can be no doubt that, issues related to the impact of the economic recession on natural and population change through the indirect effect of emigration in total births could be a prominent area for further research.
- At the same line, a better approximation of immigration by distinguishing third country from EU country nationals should also be further investigated.

- In this respect, it is worth noting that in the “Germanic” countries,
 - EU country nationals account for almost 50% of the overall immigration flows over the 2013-2016 period.
 - The whole increase in the total population over the period 2009-2016 is attributable to non-citizen population, since citizen population has increased; and that
 - this population increase is due more (by 57%) to EU-citizens than to third-country nationals.

As for future considerations, it is most probably that future demographic context will be characterized by

- an increasing number of deaths subsequent to population ageing and
- a shrinking female native population of reproductive age

Which means that

- a future positive natural change and a subsequent population increase would require
 - a significant fertility recovery
 - and a further increase in immigration waves