

*Population and fertility reversals in a high-immigration, low-fertility setting:  
The case of Vienna*

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**EXTENDED ABSTRACT**

**Background, motivation, and main goals**

In public debates, trends in fertility rates are often anxiously observed as if the future prosperity and stability of the country critically depended on reaching the ‘magic’ value of replacement fertility, 2.1 children per woman. Persistent fertility rates well below that level are often seen as signs of permanent demographic disequilibrium and as signals of the coming era of population implosion (Chesnais 2001, Demeny 2003). However, not only the measurement of fertility commonly based on the period total fertility rates may give a distorted picture of the underlying fertility levels (Bongaarts and Feeney 1998, Sobotka and Lutz 2011), but such assessments are often made as if contemporary populations in Europe and other rich regions were closed to migration, or as if migration had only a negligible influence on broader population trends.

These views contrast with a growing body of literature that points out that migration often has profound, long-lasting, and often unforeseen, effects on the population. Spain can be highlighted as an important case. Before the onset of the recent economic recession, Spain experienced unprecedented population dynamics, recording a net migration gain of about 5 million during the decade 1999-2009. Such unexpected development has strongly affected Spanish population trends and structures, but also turned upside down all the previous population projections that did not foresee such population gains even in their wildest scenarios.<sup>1</sup> In highly industrialised and affluent Northern Italy, a long-lasting ‘complementary’ pattern of low fertility and immigration has been studied by Dalla Zuanna (2006), who saw it as a sustainable strategy that not only helps balancing the labour market, but also facilitates upward social mobility among the resident families adopting low fertility. Detailed country-specific analyses published in a Council of Europe monograph by Haug et al. (2004) illustrated the diversity in demographic behaviour among different groups of migrants and showed that in a few cases, migration had a massive influence on population trends. In the case of Switzerland, a simulation showed that direct and indirect migration (children born to immigrants) has been the main reason for continuous population increase during the second half of the 20<sup>th</sup> century (Wanner 2002).

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<sup>1</sup> In 2000, a review by Xavier Bosch (2000) in British Medical Journal of the UN report on replacement migration carried the title „Spain faces massive decline in population“ and claimed that Spain will lose 24% of its by-then population (i.e., 9.6 million people) by the mid-21st century and will have the highest proportion of the elderly. The report simply took the „no migration“scenario in population projections as an almost inevitable reality.

Taking a broad view on migration, Coleman (2006: 402) highlighted its transformative effects for rich societies and argued that the processes of “low fertility combined with high immigration are significant because they are changing the composition of national populations and thereby the culture, physical appearance, social experiences, and self-perceived identity of the inhabitants.” Using more formal approaches, researchers have recognised a need to construct new indicators of population replacement that take migration into account and thus go beyond the traditional approach working with a closed population model. Although these indicators still remain outside of the mainstream tools of demographic analysis, a number of new period (Calot and Sardon 2001, Preston and Wang 2007, Ediev et al. 2007), cohort (Daguet 2007, Sobotka 2008, Wilson et al. 2010), and generational (Ortega and del Rey 2008, del Rey Poveda 2010) indicators of population or birth replacement have been proposed.

Especially large cities—characterised by well-developed infrastructure, transport links, varied job opportunities, education institutions, and cultural diversity—often serve as magnets of immigration, both from abroad and from other parts of the country. Thus, they also constitute an ideal environment for studying the effect of intensive migration on population trends and structures. This is also the case for the city of Vienna with a population of 1.7 million. The example of Vienna is particularly interesting as it has experienced a number of important reversals in its population trends, which are likely to be at least partly driven by migration. Intensive migration is not a new phenomenon for Vienna: as a capital of the Austro-Hungarian empire prior to 1918 and a third largest city in Europe at that time (with a population surpassing 2 million at the 1910 census), Vienna attracted migrants from diverse corners of the empire (Ehmer et al. KMI Working Paper 2004, Fassman 1994). More recently, Vienna has had all the usual features of an attractive migration destination, including large universities, a strong tourism sector, but also retaining some industrial base having a reputation of one of the best cities globally to live in<sup>2</sup>.

International migration to Vienna often took form of distinct waves, such as the early- to mid-1990s migration wave from the former Yugoslavia, following its break-up and the ensuing chaos, including armed conflict in several successor states. As of 2010, foreign-born population surpassed half a million and accounted for over 30% of total population in the city, with largest groups coming from the former Yugoslavia (especially from Serbia, Kosovo, and Bosnia-Herzegovina), Turkey, Germany, and Poland (Statistisches Jahrbuch 2010: 63). In addition, a sizeable share of Viennese population was born in other provinces of Austria. Differently from international migration, where substantial net gains are regularly registered, internal migration has been relatively equally balanced in recent period, with Vienna recording a net internal migration balance between – 4 thousand (2001) and + 2 thousand (2009).

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<sup>2</sup> The Economist’s global survey of the most liveable cities ranked Vienna as a second after Melbourne in 2011; another survey by Merced of the quality of life ranked Vienna first in 2010 (Wikipedia, [http://en.wikipedia.org/wiki/World%27s\\_most\\_livable\\_cities](http://en.wikipedia.org/wiki/World%27s_most_livable_cities), accessed 14 October 2011).

Our study builds partly on our Working paper mapping fertility trends and differentials in Vienna (Zeman et al. 2011), as well as on some earlier studies, most prominently by Lutz et al. (2003) and Lutz and Hanika (1988), who studied a curious ‘rejuvenation’ in the population of Vienna in the 1970s-1990s, as expressed by a decline in the share of elderly population. In this article, we first outline a number of interesting reversals in population trends in the city since the late 1960s. We focus on two distinct types of phenomena: 1) reversals and upturns in selected population trends, specifically, in population size, fertility rates, number of births, age structure as well as natural population increase and 2) crossovers in population trends between Vienna and Austria as a whole. Then we summarise major trends in international and internal migration and their impact on population structure of the Viennese population by age and sex. Subsequently we present results of our simulation exercise, showing hypothetical trends in population trends and age structure under the condition of closed population after 1950. This exercise generally confirms our hypothesis that the observed reversals in selected population trends have been largely driven by migration. The next section concludes.

## **Data and methods, including the simulation model and its assumptions**

*To be drafted*

### **Research questions**

In light of the substantial migration gains achieved in Vienna over long periods of time, we expect that migration has played a key role in the observed population and fertility reversals during the last decades. Similarly, we also expect that migration has largely fuelled the convergence or even crossovers in some demographic trends (such as fertility rates or natural population increase) between Vienna and the whole Austria.

Based on the experience of Vienna discussed here we also offer a more general hypothesis: in many rich, high immigration regions, migration has become more important determinant of population trends than fertility in the long run. Persistent very low fertility thus does not lead to the theoretically expected population implosion, but can be combined with dynamic population developments and relatively rapid population increase.

### **Selected results: population reversals and crossovers**

Several notable population trends can be observed for Vienna during the last 50 years. We focus on a renewed increase in total population size, the upturn in natural population increase and in the number of births, the reversal in the share of elderly, as well as a convergence in period fertility rates between Vienna and the whole Austria.

#### *Population size, births, deaths and natural population increase*

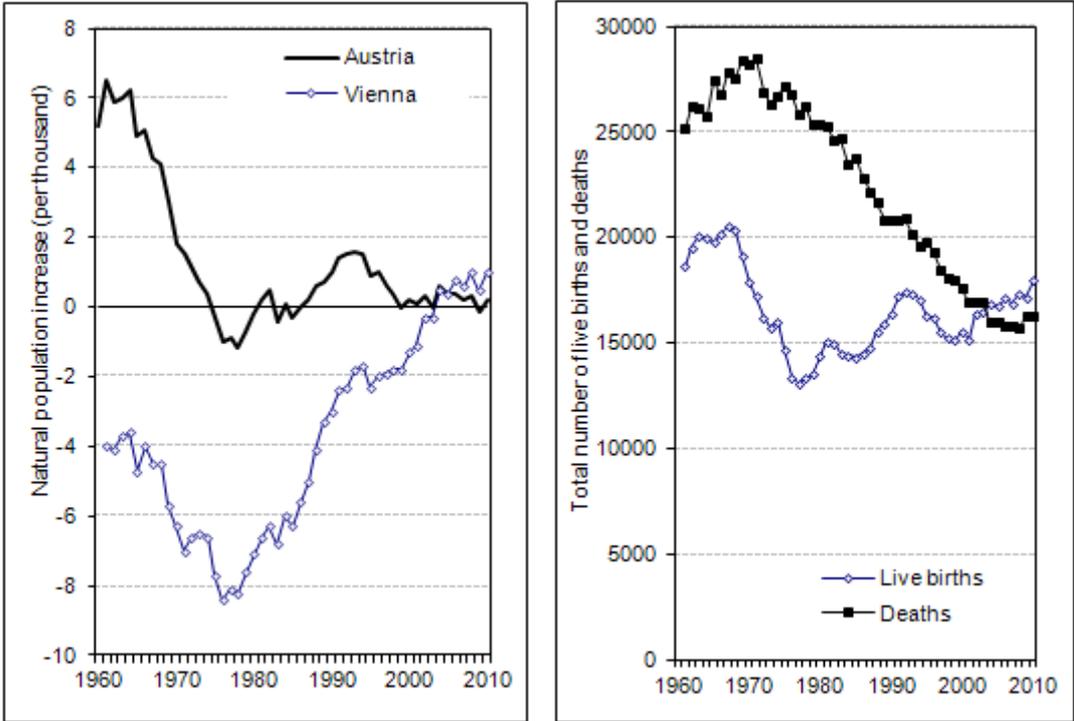
A long-lasting fall in total population size ensued around the time of the break-up of the Austro-Hungarian Empire. Suddenly, Vienna became a disproportionately large capital city in a newly independent Austria, a country that suddenly shrank from being in the hearth of an

empire with over 52 million people as of 1914 to just 6.5 million inhabitants in 1920 (Tacitus Historical Atlas accessed on October 14, 2011 at <http://www.tacitus.nu/historical-atlas/population/centraleurope.htm>). Viennese population had been shrinking for most of the subsequent period, with the exception of a broad stabilisation above 1.6 million in the 1950s and 1960s. Later, population decline resumed again, with the total population shrinking by almost 1 percent per year between the mid-1970s and mid-1980s, when it fell below 1.5 million, the lowest level recorded in the 20<sup>th</sup> century (Figure A1 in the Appendix). Thereafter, renewed population increase has begun in 1988 and continues to date, with population rising by about 1 percent annually after 2000 and surpassing 1.7 million 2010.

Another notable reversal took place in natural population balance. For many decades, number of deaths had outnumbered the number of live births in Vienna by a wide margin and the contrast with the whole Austria had been pronounced (Figure 1a). This natural population decline bottomed out in the mid-1970s: in 1976, the number of registered deaths in Vienna (26.8 thousand) was twice as high as the number of live births (13.4 thousand). Starting in the late 1970s, initially high rate of natural population decline in Vienna had gradually diminished and after 2003 it turned into a positive balance between births and deaths. After 2005, the rate of natural increase in Vienna has surpassed natural increase for the whole Austria for the first time since the early 20<sup>th</sup> century. This remarkable reversal, alongside with a renewed population growth, took place as a result of a combination of increasing longevity, rising immigration of the population of reproductive age, and a slight increase in fertility rates. While the first factor was largely responsible for a continuous reduction in the number of deaths in Vienna by a staggering 43% between 1971 and 2010, the latter two factors jointly helped to push the number of births upward by 37% between 1977 and 2010 (Figure 1b).

**Figure 1a** Natural population increase (per thousand population) in Austria and Vienna (1960-2010)

**Figure 1b** Number of live births and deaths in Vienna, 1961-2010



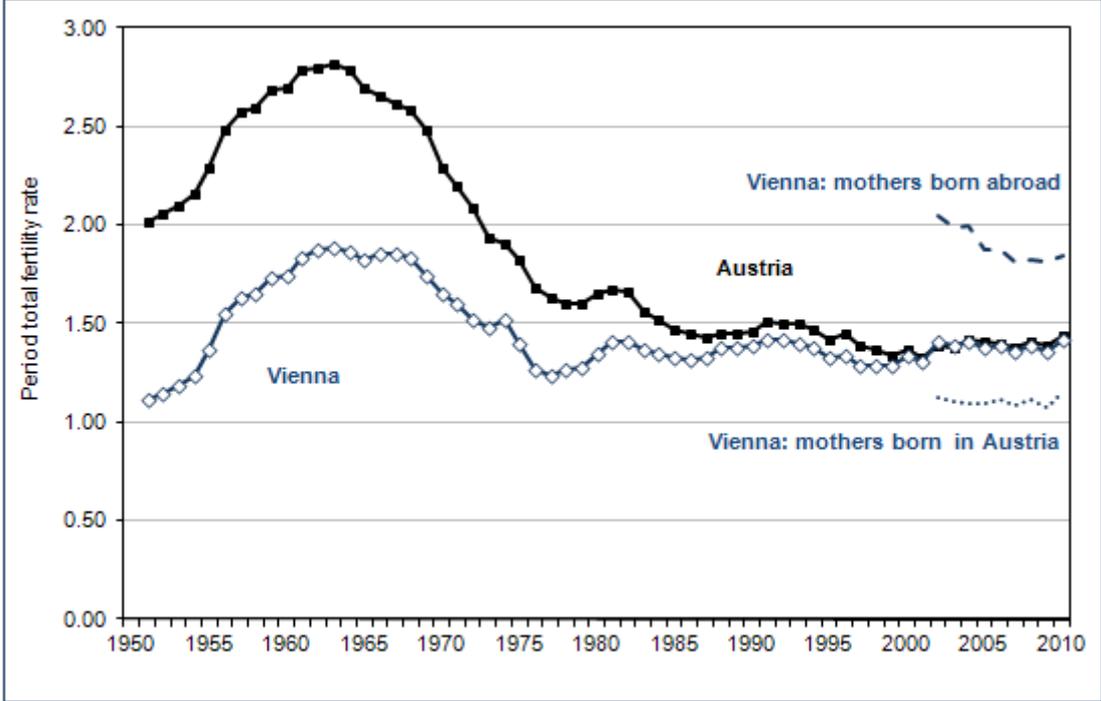
*Fertility*

The gap in the period Total Fertility Rate between Austria and Vienna was closing over time, falling from 1.0 in 1961 to 0.3 in 1980, and completely disappearing by the early 2000s. Much of this convergence can be attributed to the fall in the TFR for Austria, while a small uptick in the TFR for Vienna around 2000 also helped to close this gap (Figure 2). In Vienna, the TFR was very low in the post-war period, estimated at 1.11 in 1951 (Gisser et al. 1975) and the baby boom, peaking in 1963 did not bring it above 1.9. Subsequently, it reached another low of 1.24 already in 1977, much earlier than in the whole Austria, where the lowest TFR of 1.33, has been reached in 2001. As of 2010, the period TFR in Vienna reached 1.42, i.e., about 15% above its 1977 level (Geburtenbarometer 2011).

Fertility trends in Vienna have been increasingly influenced by a growing population of immigrants who have, on average, higher fertility rates and who currently account for more than one half of all births in the city (Figure 3). Migrant women in Vienna not only had a rapidly increasing share on total births since the mid-1980s and contributed thus to a gradual increase in the absolute number of births in Vienna, but their higher fertility rates—although gradually declining—also helped to push the period fertility rates towards the levels recorded in other regions of Austria and, in the case of the period TFR, to erase the gap between Austria and Vienna (see also Figure 2). Their net impact on the period TFR in Vienna in 2002-2010 amounted to 0.3 in absolute terms (Table 1). In particular, migrant women have much higher third and higher-order birth rates. While Vienna retains lower first and second birth rates, its third and fourth parity progression rates have surpassed those for Austria since

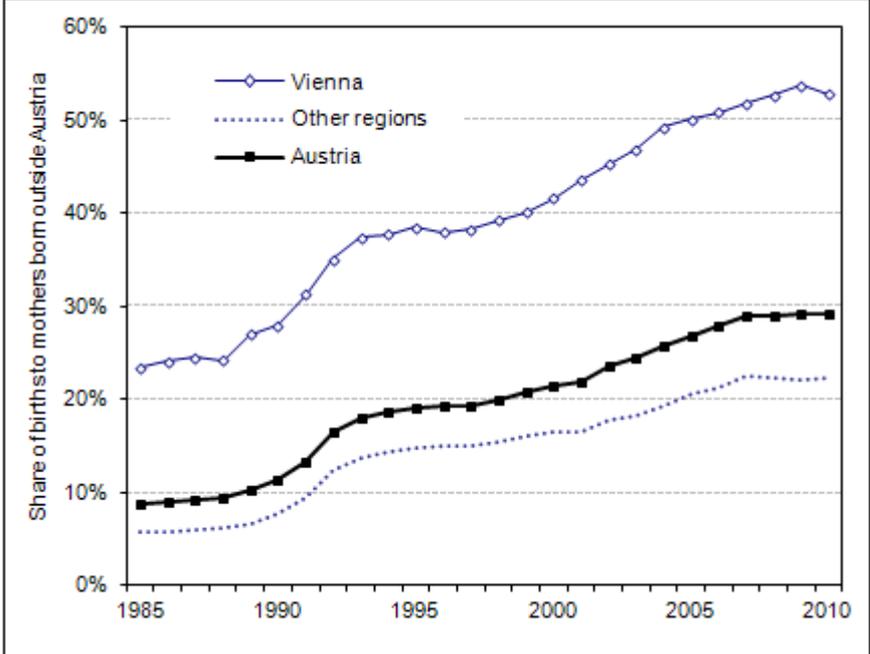
the early 2000s. In addition, immigrant women in Vienna have a considerably younger childbearing schedule, contributing thus to the large variability in the age pattern of childbearing observed there.

**Figure 2:** Period *Total Fertility Rate* in Austria and Vienna (1951-2010)



Source: Zeman et al. 2011

**Figure 3** Percentage of births to foreign-born women in Vienna, in other provinces of Austria and in the whole Austria, 1984-2010)



Source: Geburtenbarometer Vienna, authors' computations.

**Table 1:**

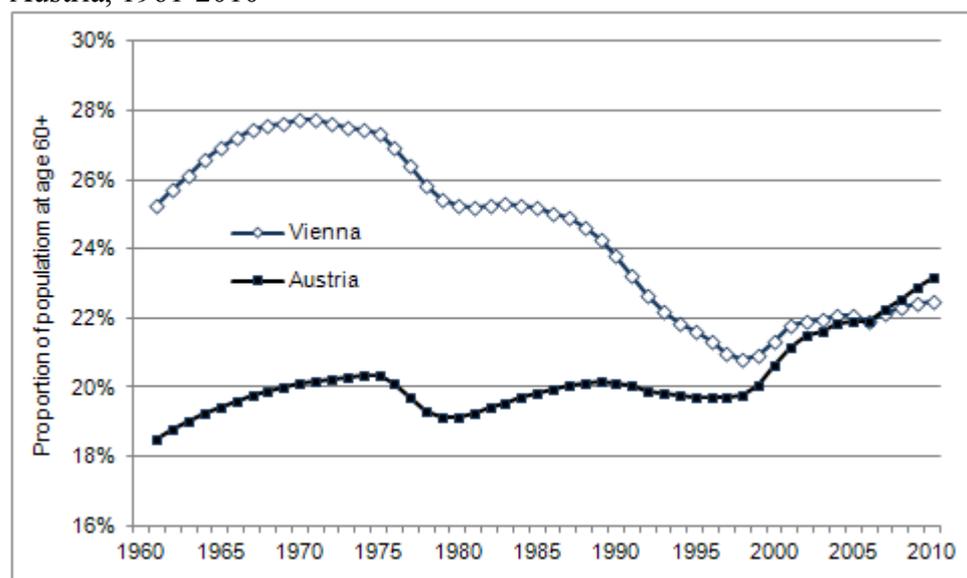
Period TFR by country of birth in Vienna and the net effect of migrants' fertility on the observed TFR

|               | TFR,<br>Austrian-<br>born<br>women | TFR,<br>Foreign-<br>born<br>women | Total TFR | Abs. difference<br>Austrian vs.<br>foreign-born | Net effect of<br>migrants' fertility<br>on total TFR |
|---------------|------------------------------------|-----------------------------------|-----------|-------------------------------------------------|------------------------------------------------------|
| <b>Vienna</b> |                                    |                                   |           |                                                 |                                                      |
| 2002          | 1.12                               | 2.05                              | 1.41      | 0.93                                            | 0.29                                                 |
| 2005          | 1.09                               | 1.87                              | 1.37      | 0.78                                            | 0.28                                                 |
| 2010          | 1.16                               | 1.85                              | 1.41      | 0.69                                            | 0.26                                                 |

### *Share of elderly*

A curious peak in the share of elderly was reached in Vienna in 1971 (27.7%). It was remarkably high, contrasting with 'only' 20% for the whole country. However, most interesting was the subsequent trend, when the share of elderly in Vienna fell to just 21% in 2000 (Figure 4). This occurred despite continuously rising life expectancy and low fertility, which would, in a closed population, brought a vigorous population decline. The observed 'counterintuitive' trend was again largely due to migrant populations. As Lutz et al. (2003) demonstrated, this unexpected trend was unlikely to persist and the 'logic' of increasing longevity would eventually lead to renewed share of older people in the population. The recent renewed increase in the proportion elderly in Vienna proceeded only gradually, with the whole of Austria experiencing a faster rate of increase in the share of elderly and 'overtaking' Vienna

**Figure 4** Proportion of population at age 60 and above in the city of Vienna and the whole Austria, 1961-2010



### **Migration and population changes: A brief overview**

*To be drafted*

## **Simulation: How do observed population trends & structures compare to a simulated closed population?**

*To be drafted*

### **Preliminary conclusions**

Using diverse data sources, our contribution has analysed specific population developments in the city of Vienna, which has had for many decades a population with very low fertility levels combined with dynamic population trends and rapid population growth. Our analysis clearly suggests that in rich developed-country setting, migration often exerts larger influence than fertility on population trends. Migration is a part and parcel of long-term population dynamics and it can no longer be ignored in the assessments of future population prospects. In particular, the conventional indicators which compute population replacement in a closed population may give distorting signals on the long-term implications of observed fertility rates. Without migration, Vienna would remain a region with fertility rates deep below the rest of Austria and with continuously falling numbers of births.

Migrants in Vienna, as in most other cities, are very diverse, and considering them together as one group, as often done in this study, is a gross simplification justified only by our focus on broader population trends. We have looked at demographic effects only and did not address more subjective and controversial issues on the benefits and costs of immigration, its optimal levels, the issue of migrants' integration, or the possible disruptive effects of the rapid increase in the foreign-born population. Most of the demographic effects of immigration discussed here, namely, reverting population decline, contributing indirectly to natural population increase, modestly lifting fertility rates, or slowing-down the pace of population ageing, can be generally considered 'positive.' But intensive immigration is also potentially disruptive and entails social and cultural tensions, clearly demonstrated by the rise of populist political parties embracing anti-immigrant (and particularly anti-Muslim) sentiments, including the "Freedom party" (FPO) in Austria, which secured 25.8 % of votes in the latest (2010) municipal elections in Vienna. But these tensions notwithstanding, migration is here to stay for some time and will often shape future population trends to a larger extent than (low) fertility. Ironically, rather than worrying about the negative consequences of low fertility in bringing perpetual population decline in the future, some low-fertility regions may rather worry about too rapid population increase.

In conclusion, the case of Vienna holds two important conclusions for contemporary developed countries. First, sustained population growth can be achieved through intensive migration even in settings with a long history of very low fertility. Second, fertility rates, even when reaching extreme low levels for long periods of time, may bounce back to higher levels, either through an increase in fertility among native-born women, or through a gradual replacement of low-fertility populations by more fertile groups, which may come from other regions of the same country or from abroad. These findings are likely to pertain to many other

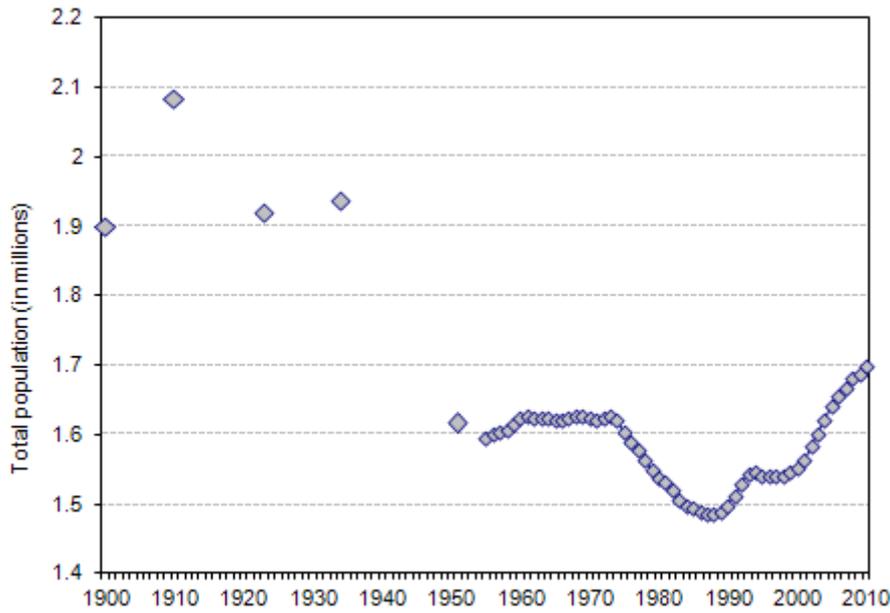
regions in richer parts of Europe as well as some rapidly urbanising settings in the developing world. As migration rather than fertility becomes the main driver of population trends in many attractive regions, worries about the negative and lasting consequences of low fertility are often misplaced or exaggerated.

## **References**

*To be compiled later*

**APPENDIX**

**Figure A1** Population of Vienna, 1900-2010



**Note:** Data for the period 1900-1951 are based on population censuses; data for 1955-2009 are based on vital statistics registration

**Source:** Statistics Austria 2009a, 2009b

**Figure A2** Population of Vienna by origin, citizenship, sex and age, 1.1.2011

