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MPC – MIGRATION POLICY CENTRE

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A Statistical Note on Unemployment and Immigration in the 27 EU Member States, 2001-2012

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MPC Analytical and Synthetic Note 2012/06



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EUROPEAN UNIVERSITY INSTITUTE, FLORENCE
ROBERT SCHUMAN CENTRE FOR ADVANCED STUDIES
MIGRATION POLICY CENTRE (MPC)

A Statistical Note on Unemployment and Immigration
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[Full name of the author(s)], [title], MPC AS [series number], Robert Schuman Centre for Advanced Studies, San Domenico di Fiesole (FI): European University Institute, [year of publication].

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The Migration Policy Centre (MPC)

Mission statement

The Migration Policy Centre at the European University Institute, Florence, conducts advanced research on global migration to serve migration governance needs at European level, from developing, implementing and monitoring migration-related policies to assessing their impact on the wider economy and society.

Rationale

Migration represents both an opportunity and a challenge. While well-managed migration may foster progress and welfare in origin- as well as destination countries, its mismanagement may put social cohesion, security and national sovereignty at risk. Sound policy-making on migration and related matters must be based on knowledge, but the construction of knowledge must in turn address policy priorities. Because migration is rapidly evolving, knowledge thereof needs to be constantly updated. Given that migration links each individual country with the rest of the world, its study requires innovative cooperation between scholars around the world.

The MPC conducts field as well as archival research, both of which are scientifically robust and policy-relevant, not only at European level, but also globally, targeting policy-makers as well as politicians. This research provides tools for addressing migration challenges, by: 1) producing policy-oriented research on aspects of migration, asylum and mobility in Europe and in countries located along migration routes to Europe, that are regarded as priorities; 2) bridging research with action by providing policy-makers and other stakeholders with results required by evidence-based policy-making, as well as necessary methodologies that address migration governance needs; 3) pooling scholars, experts, policy makers, and influential thinkers in order to identify problems, research their causes and consequences, and devise policy solutions.

The MPC's research includes a core programme and several projects, most of them co-financed by the European Union.

Results of the above activities are made available for public consultation through the website of the project: www.migrationpolicycentre.eu

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Analytic Preamble

The overall purpose of this analysis is to highlight correlations between gross unemployment and gross immigration in 25 European Union member states. (Unfortunately there are no immigration data for Romania or Greece). Due to the significant impact of the global economic downturn in December 2007 there are two time frames: (1) Pre-downturn - Quarter 1 of 2001 to Quarter 3 of 2007 (the white bars in each graph); (2) Downturn period - Quarter 4 of 2007 to Quarter 1 of 2012 (the black bars in each graph). Within the following correlation analysis four types have been identified, with each type being explored with regard to the changes in the relationship between time periods (1) and (2). It is clear from the following analysis that there is a clear relationship between gross unemployment and gross immigration in each country.

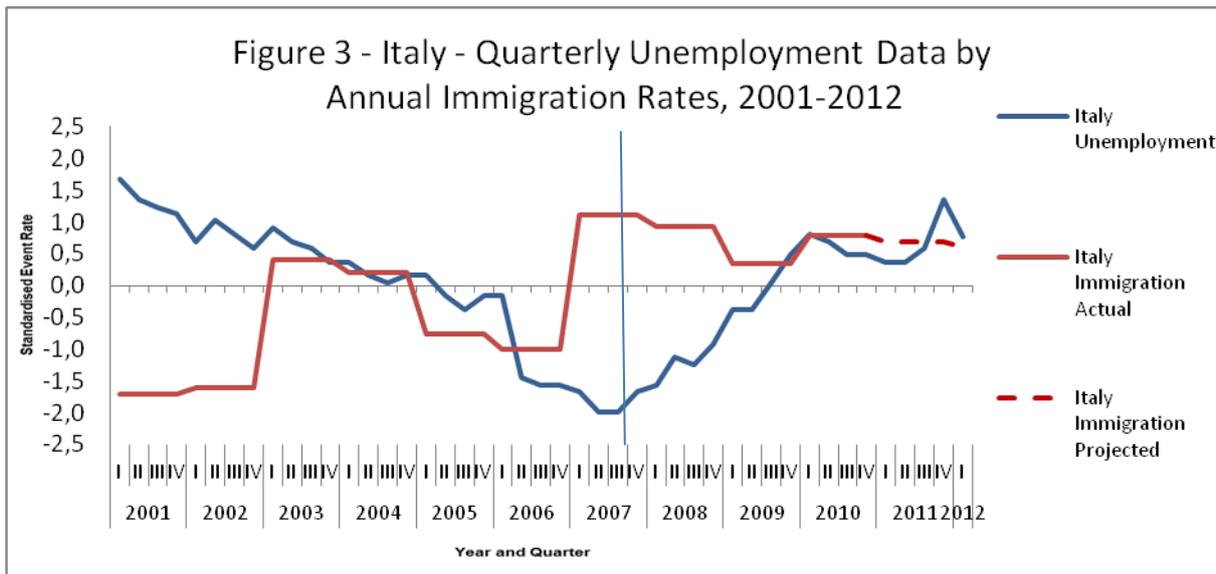
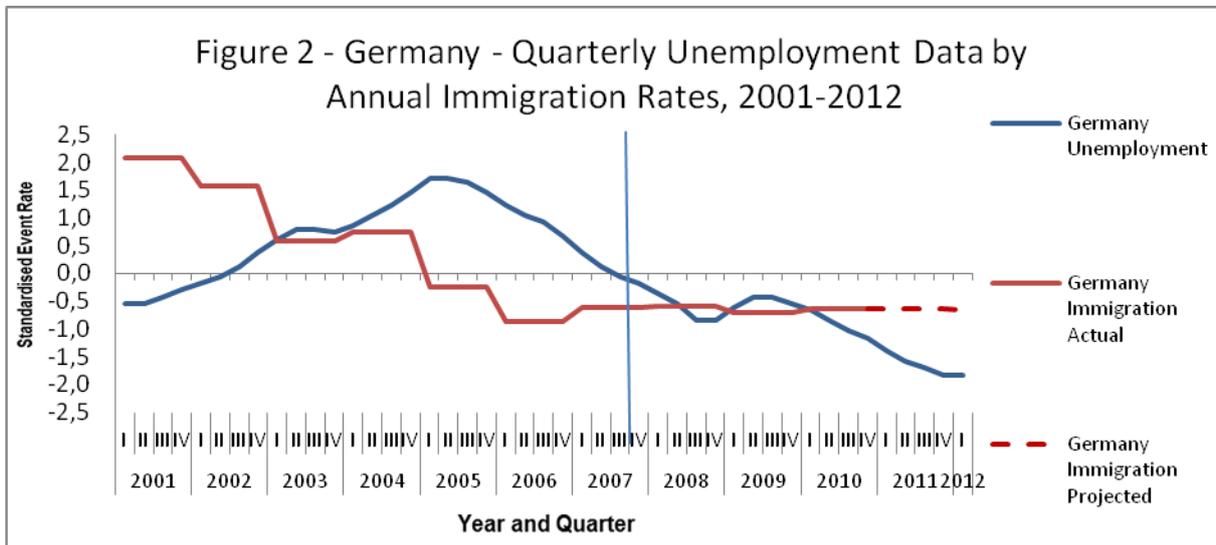
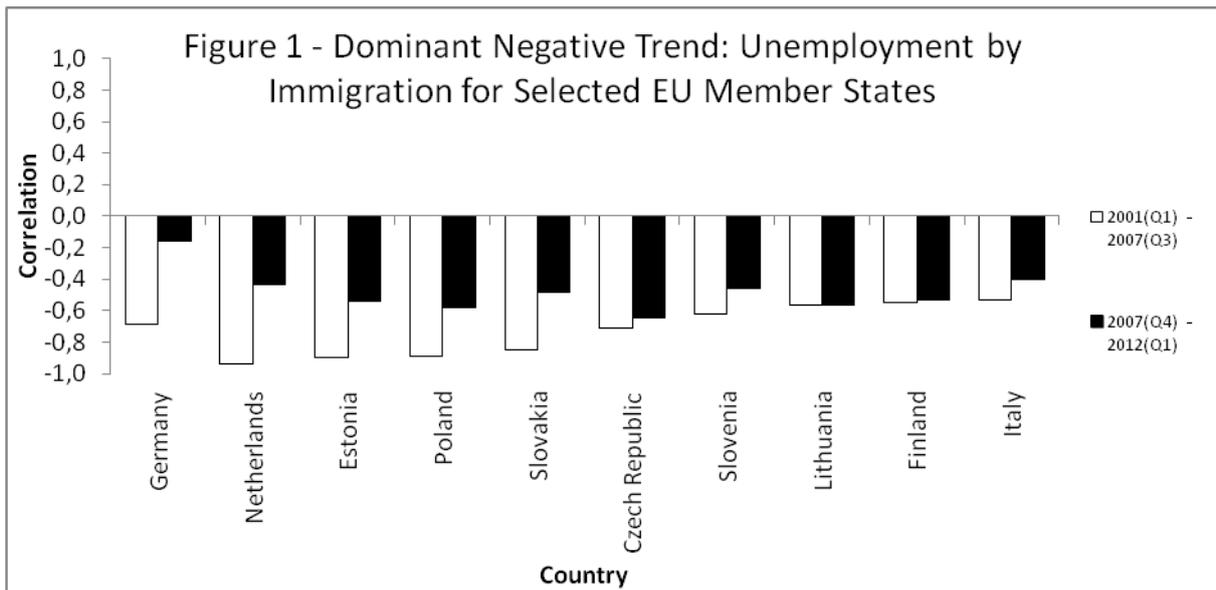
For further information of the methodology of producing the graphs the appendix supplies the relevant standardization details. At this stage it is important to note that these statistics are directly comparable as well as commensurable, hence patterns can be elicited.

Group 1. Dominant Negative Trend

Pre-Downturn Phase: A very strong/strong negative correlation exists between gross unemployment and gross immigration (see figure 1). The trend is clear: *the higher the rate of employment the higher the rate of immigration*. Germany highlights this phenomenon in figure 1.1. In 2001 the rate of unemployment is low, whereas the immigration rate is high, when the unemployment rate rises the rate of immigration falls.

Downturn: For all countries the negative correlation remains, with two main groups: (a) Germany (see figure 2), the Netherlands, Estonia, Poland and Slovakia see a significant weakening in the strength of the negative correlation; (b) the Czech Republic, Slovenia, Lithuania, Finland and Italy (see figure 3) experienced a minor weakening in their correlations. Returning to the German example (figure 1.1) the immigration rate remains low whilst unemployment rates generally fall. Hence they are still negatively correlated. At the very end of the measurement period a transformation to a minor positive correlation is signalled. However, the immigration rates are only projected on the previous three waves, the rates are not only projections. It could be argued that the projection should see a downturn in immigration as it is negatively correlated with gross unemployment throughout the measurement period.

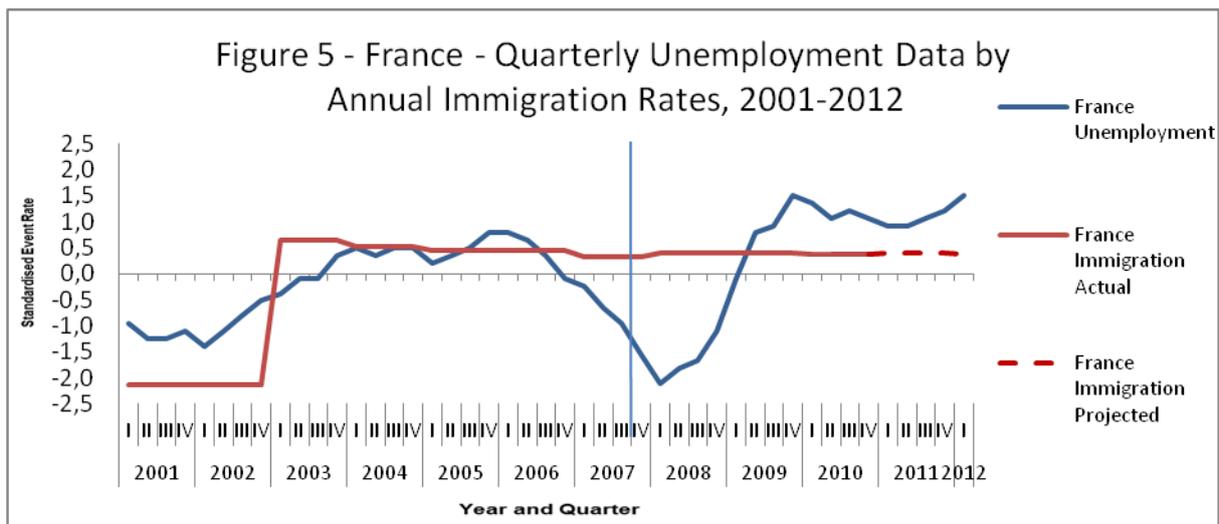
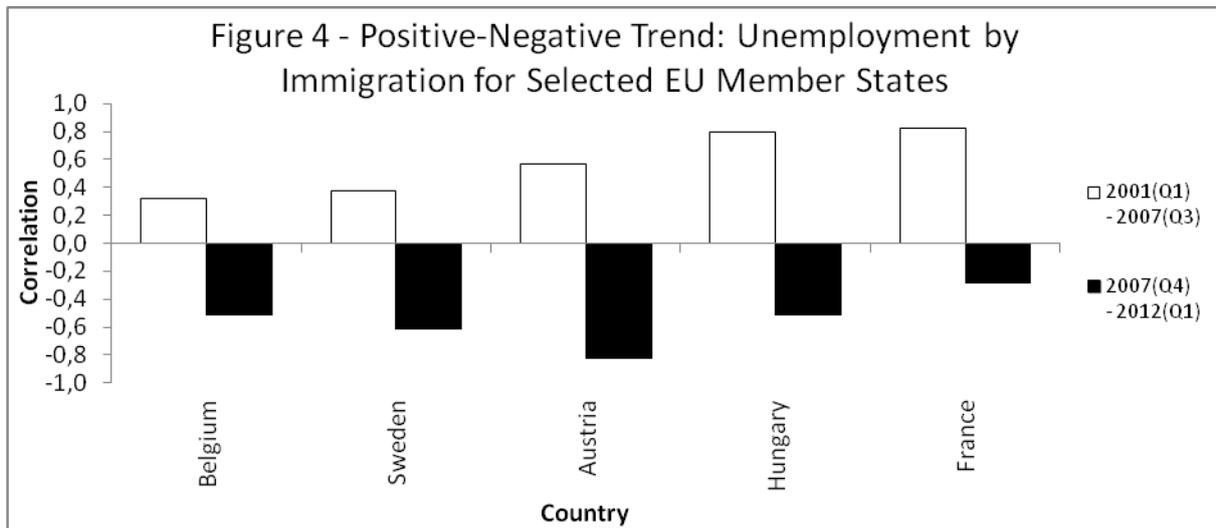
For this group immigration is negatively correlated to unemployment rates i.e. higher unemployment = lower immigration. This relationship weakens, to varying degrees, through time.

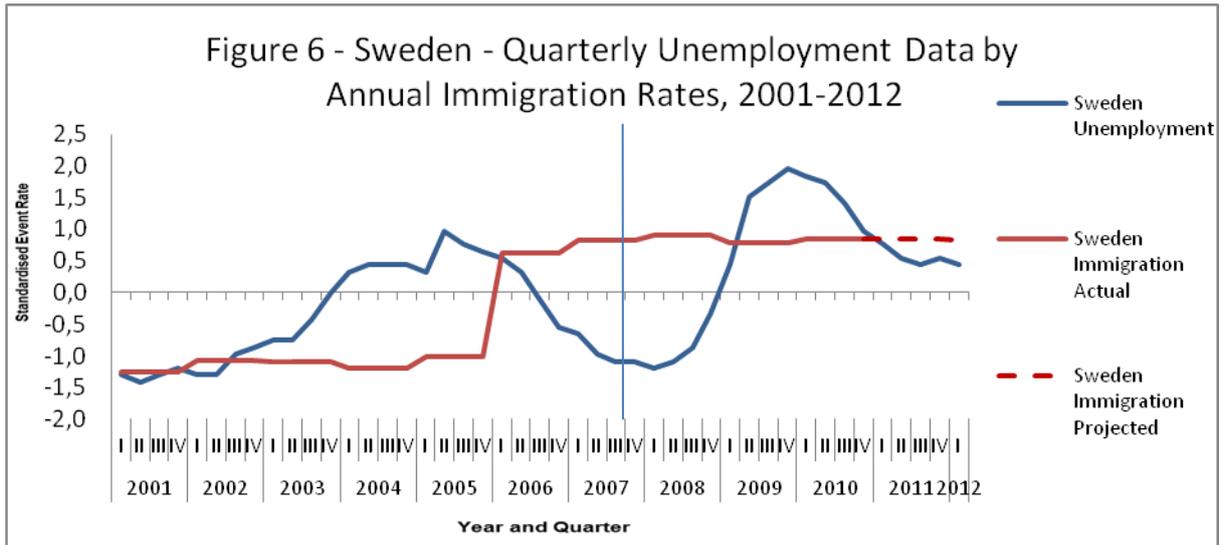


Group 2. Positive-Negative Trend

Pre-Downturn Phase: For all countries in this group there is a strong/very strong positive correlation with gross unemployment and gross immigration (see figure 4). In this case a high rate of unemployment means a high rate of immigration.

Downturn: The opposite of group 2. A substantial shift is seen as unemployment and immigration move to a negative correlation, whereby immigration falls as unemployment falls. France highlight this trend perfectly (see figure 5). Generally in the pre-downturn phase immigration is higher than unemployment. When unemployment rises the immigration pattern remains exactly the same. Hence a change in the unemployment rate has created a shift to a negative correlation (which has happened for Sweden – see figure 6). Including countries from group 1 there are fifteen countries that follow this trend in the recession. Hence the lower the rate of unemployment the lower the rate of immigration is the dominant correlate trend within the EU.



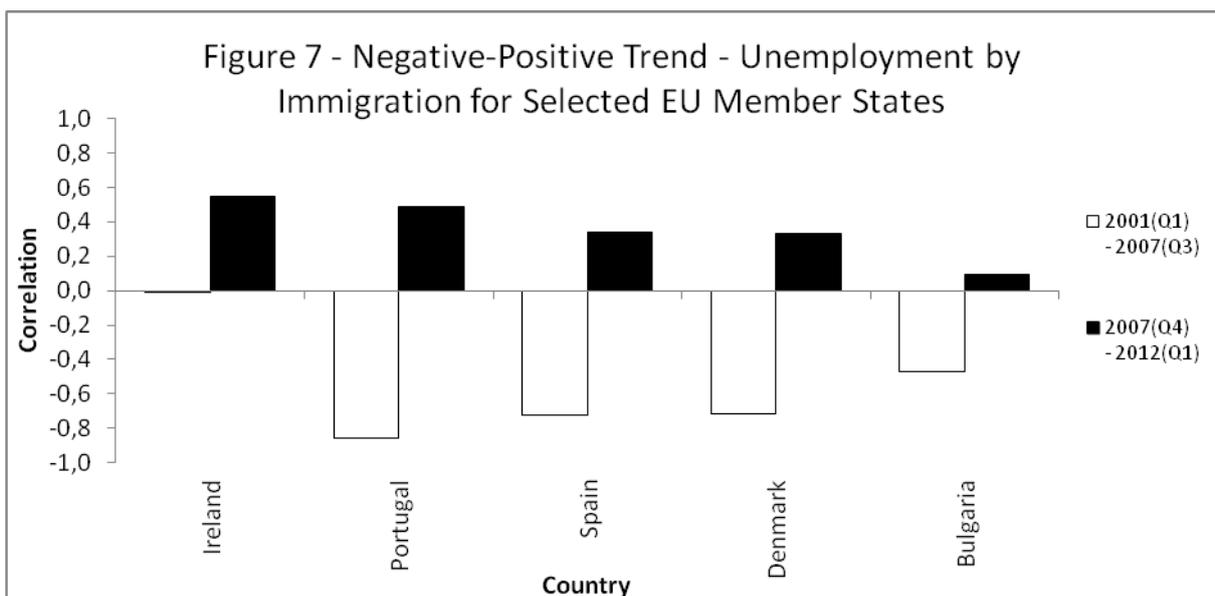


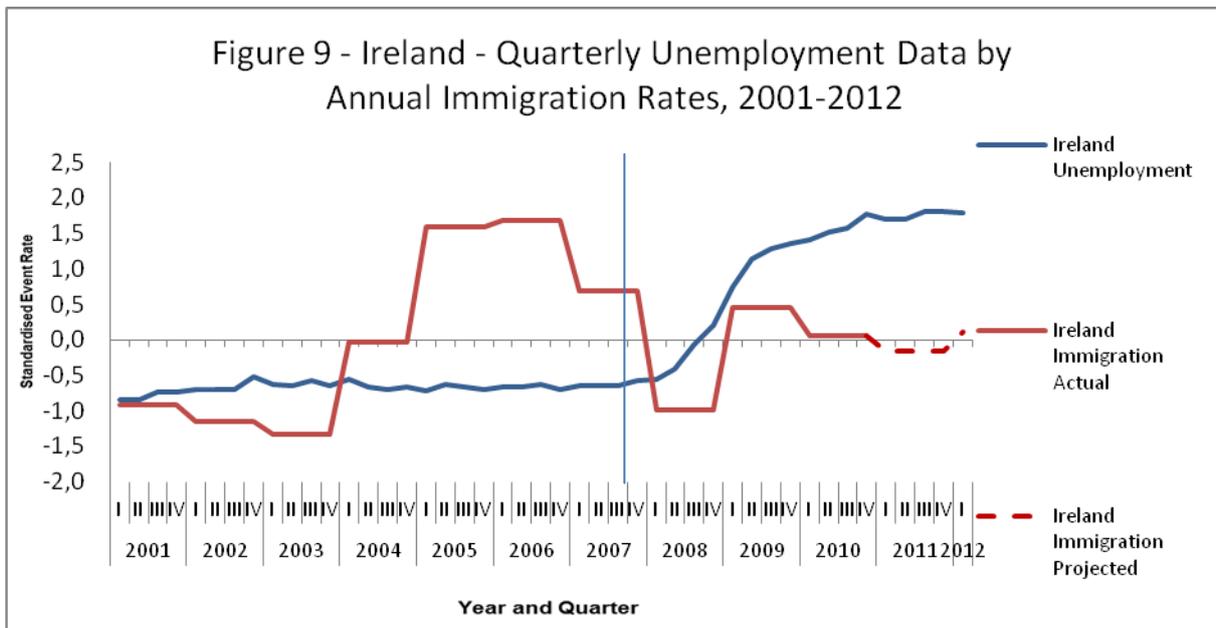
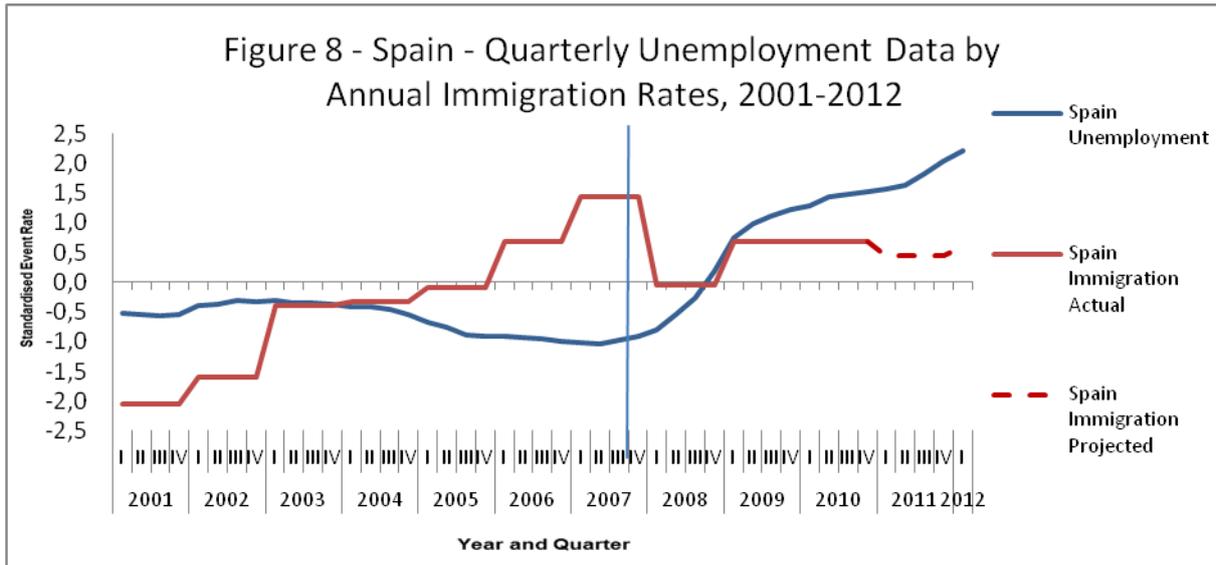
Group 3. Negative-Positive Trend

Pre-Downturn Phase: The same as Group 1, a negative correlation between gross unemployment and gross immigration. Ireland differs, where there is a very weak negative correlation.

Downturn: A substantial shift from a negative to a positive correlation between gross unemployment and gross immigration (see figure 7). Therefore with higher rates of unemployment there is a higher immigration rate. Spain highlights this problem in detail in figure 8 (which has very similar patterns to Ireland in figure 9). In this case the negative correlation shifts to a positive correlation, whereby overall immigration increases through the period, as does gross unemployment.

The shift in trends is both strong and significant. A move from a negative to a positive correlation – higher unemployment is linked with higher immigration. With Spain and Ireland being two of the most struggling economies in the EU it is not clear if this trend that will aid economic recovery. High unemployment rates and the competition for jobs are high and the possible added economic strain of immigrants could make this a difficult issue for these countries.



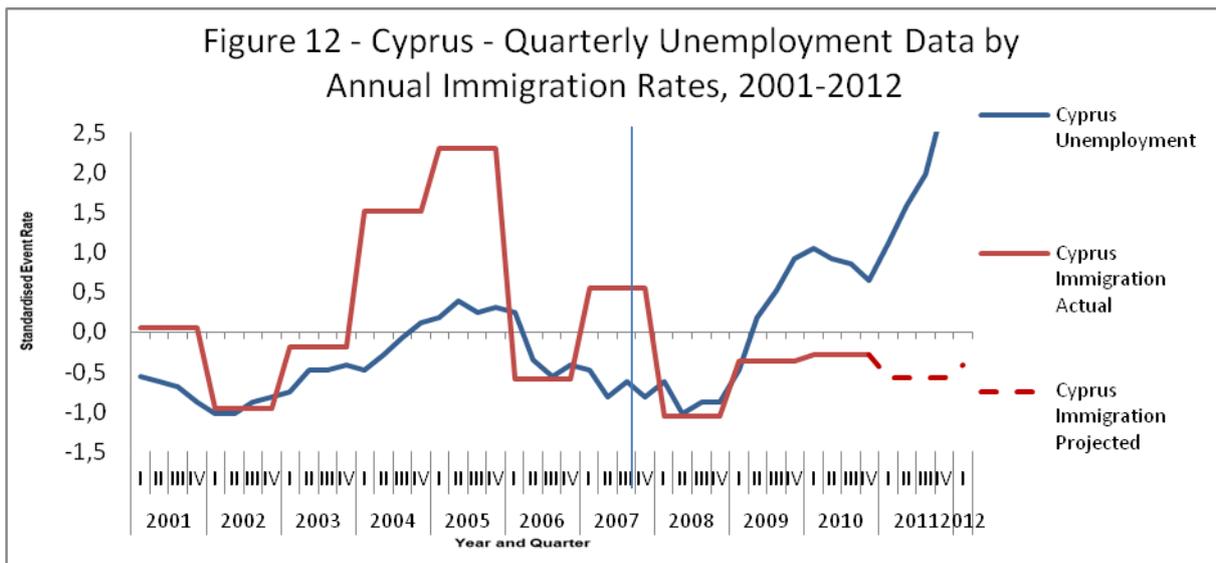
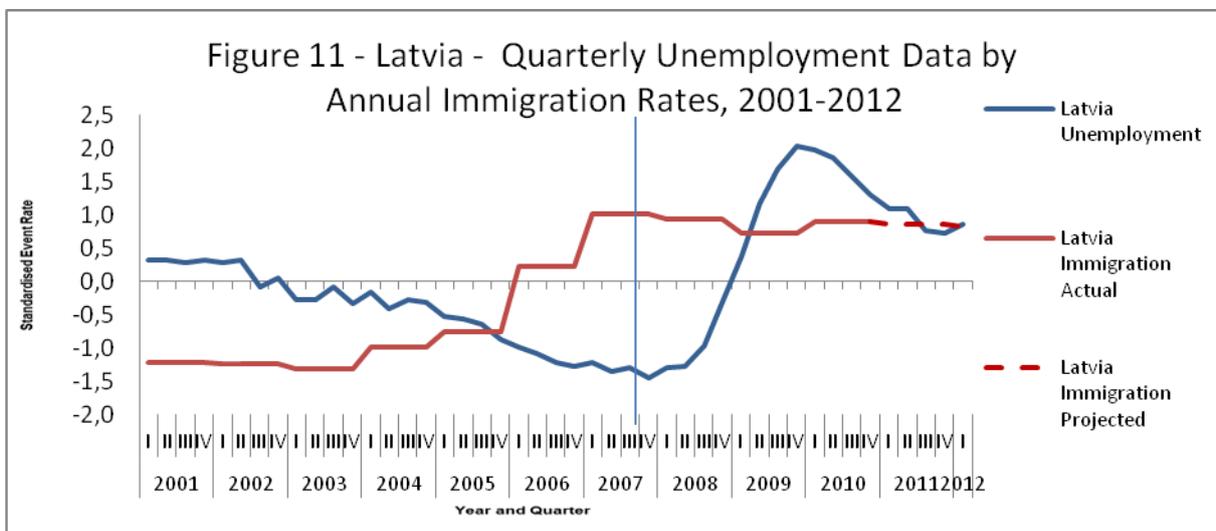
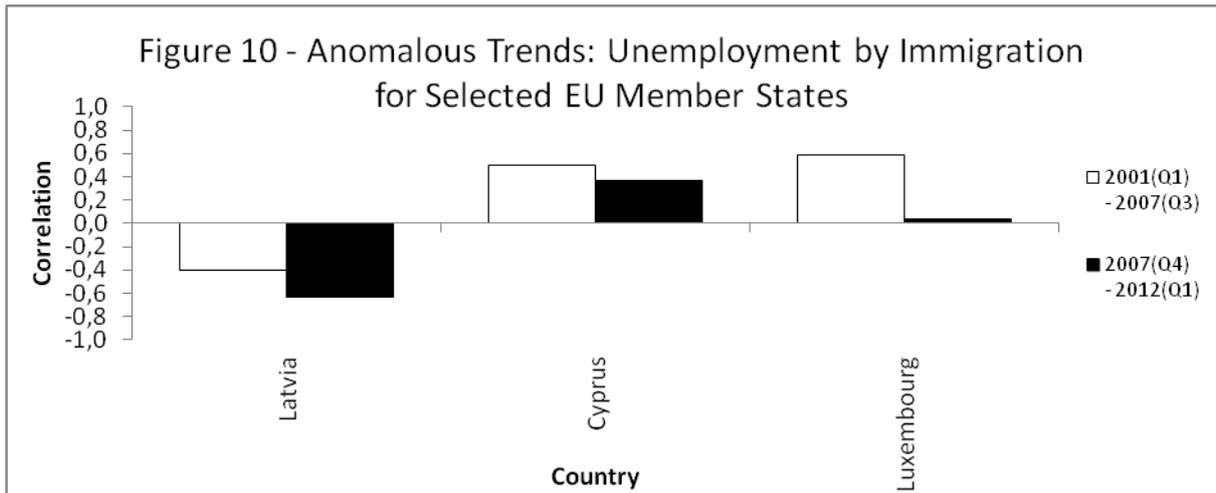


Group 4. Anomalous Trend

There are only three countries in this group (see figure 10). Each country – Latvia, Cyprus and Luxembourg – have small samples for both gross unemployment and gross immigration.

Latvia has a negative trend throughout both periods (see figure 11), however contrary to all other examples there is a strengthening of the negative correlation in the recession phase.

Cyprus and Luxembourg have a positive correlation in both time frames with a decrease in this trend after the recession. This trend is highlighted in detail for Cyprus in figure 12). Contrary to all other positive correlations that convert into negative correlations, these remain positive.



Appendix

All results in the graphs are based on correlations performed on the raw data which show the covariance between gross unemployment and gross immigration, which was sourced from EUROSTAT. These correlations are more technically known as Pearson's r, which is a measure of the linear dependence between variables x and y i.e. gross unemployment and gross immigration. Within the graphs the data have standardised, comparable and commensurable results. In order for this to occur, a two-stage process using the Pearson's correlation has been followed:

1. A standardisation of all data. Gross unemployment and gross immigration data had their covariance between each other divided by their standard deviations via the following equation:

$$x - \bar{x} \div \sigma$$

x – individual figure

\bar{x} - mean (average)

σ – standard deviation (average distance away from the mean).

2. With the data transformed into standard scores the next stage was to calculate Pearson's r correlations between these scores. To create this Pearson's r score for both pre- and per-economic downturn the following calculations took place:

$$r = \frac{1}{n-1} \sum_{i=1}^n (X_i - \bar{X} | \sigma_X) (Y_i - \bar{Y} | \sigma_Y)$$

Subsequent values from this calculation range from -1 (a completely negative relationship) to +1 (a completely positive relationship), have been visualised in all four graphs.

Emigration rates and therefore net migration rates (immigration + emigration) have been excluded from analysis. Data from emigration can be highly speculative as nation states tend to give significantly more focus to flows of immigrants. Hence immigration data give a much more valid and reliable picture of migration patterns in the EU member states and wider afield. It is also important to note that the correlation between both gross unemployment and gross immigration highlights a **probabilistic dependence** – the relationship has a statistical dependence. To claim a **causal relationship** whereby each variable has a fundamental influence on the other would require further, substantial analysis i.e. regression analysis.