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# Immigration Policy and Macroeconomic Performances in France<sup>1</sup>

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## **Abstract**

This paper proposes a quantitative assessment of the interactions between the GDP per capita and the unemployment rate, and permanent immigration in France over the period 1994-2008. It uses a new database where immigration is measured by the flow of issuing long-term residence permits. The flow is distinguished by nationality of the migrant and depends on the reason for issuing the permit. Estimations of VAR models indicate that immigration increases GDP per capita, in particular, for family immigration. In addition, family immigration from developing countries reduces unemployment. Moreover, GDP per capita increases immigration while the unemployment rate reduces labor migration.

*JEL classification:* E20, F22, J61

*Keywords:* Immigration, Female and Family Migration, Growth, Unemployment, VAR Models

# 1 Introduction

The theoretical relationship between immigration and the economic growth of the host country is ambiguous. Migration represents an increase in population that can lead to a "capital dilution" and a temporary decline in GDP per capita if the returns-to-scale are constant or, alternatively, a "scale effect" leading to a permanent increase in the growth rate if returns are increasing. Migration is also a population inflow that may have different characteristics in terms of age, human capital, or assets than those of the resident population. The economic effect of this increase in diversity then depends on the degree of complementarity in the production process between the characteristics in question and that of the native born population. As most economic effects of migration pass through the labor market, the analysis must also assess the specific effects on markets where migrants are working. The degree of geographical and occupational mobility of native born professionals and the mechanism of wage formation are key parameters. Several microeconomic studies have proposed evaluations of these different mechanisms, but they are not sufficient for assessing the overall impact of migration.

The purpose of this study is to provide a quantitative assessment of the relationship between immigration and macroeconomic performance without preconceptions or theoretical assumptions. As endogeneity between the variables is likely, we estimate VAR models from data sets on the flow of issuing residence permits of more than a year and the usual series of macroeconomics, the GDP per capita and the unemployment rate. The scope of the study is France between 1994 and 2008 and immigration from countries for which na-

tionals are required to hold a residence permit in France. Over this period, migration flows were mainly composed of families, students and refugees<sup>1</sup>. The INED established the residence permit database from administrative data collected by the Ministry of the Interior. This database is extremely rich in terms of migrant characteristics (age, sex, and nationality) and residence permit characteristics (date of issue, period of validity, and administrative reason of issue). In addition, the database describes monthly changes, giving sufficient time coverage, and avoids the need for a panel of countries. This is the first time that the database has been used for econometric work.

VAR models are estimated in levels, and the effect of a shock to one variable on the temporal evolution of other variables in the model is calculated using the generalized impulse response functions (GIRF), according to the methodology proposed by Pesaran and Shin (1998). In particular, no restriction is imposed on the VAR. The estimates allow us to conclude a positive and significant effect of the migration rate on GDP per capita. Elasticity of GDP per capita one year after a permanent shock to the migration rate is 0.0172. This result differs from recent studies on United States data – Kiguchi and Mountfort (2013) found a negative effect – and studies on panel data, Ortega and Peri (2009) revealed that migration has no effect on the GDP per capita, suggesting that migration is more beneficial in France as it is on average in OECD countries. The characteristics of residence permits and their holders are also used to refine the analysis. We also find that primarily female migration and family migration (both overlap) are at the origin of the

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<sup>1</sup>For a description of the migration policy in France during these years see, in particular, Constant (2005) and Schain (2008).

effect on GDP, whereas labor migration has no significant effect. This result might be seem surprising but it is supported by microeconomic studies suggesting a positive impact of this immigration on the labor supply of skilled native women (Kremer and Watt, 2006, and Furtado and Hock, 2010) and on the high school completion of natives children (Hunt, 2012). Moreover, the results remain valid when we restrict ourselves to migration from developing countries. Finally, the effects on unemployment are mostly non-significant except for family migration from developing countries for which we find it reduces the unemployment rate.

The advantage of the VAR modeling is the isolation of the effect of macroeconomic variables on migration. Estimates indicate a strong reaction of the migration rate on GDP per capita: elasticities of labor and family migration rates at one year are 0.29 and 0.17, respectively. This is explained either by a policy for issuing permits that is more favorable during high growth periods or by a greater demand for permits. The delivery of permits for work purposes is clearly a political decision linked to the current economic situation. But the fact that family migration also reacts to the macroeconomic performances suggests that the demand effect cannot be eliminated. The unemployment rate in turn negatively affects labor migration. Overall, the econometric results indicate some pro-cyclicity between migration and macroeconomic performance.

This article is structured as follows: Section 2 presents the data sets, especially those concerning migration; Section 3 describes the estimated models and presents the response functions; Section 4 discusses the econometric results and compare them to related articles of the literature; and finally,

Section 5 presents the conclusions.

## 2 Data Description

Three types of variables for which we have the time series are used: GDP per capita, the unemployment rate, and the migration rate. The latter is, for some estimations, broken down by age, gender, nationality and admission reasons. The monthly data sets used cover the period 1994-2008 and are seasonally adjusted<sup>2</sup>. They concern metropolitan France.

GDP is calculated by converting the quarterly series of real GDP provided by the INSEE into monthly data (Denton, 1971) by using the monthly indicator of industrial production provided by the OECD. GDP per capita is then obtained by using the INSEE population series that determines the size of the population in France on the first of each month. Monthly unemployment rates are taken from the OECD "Labor Force Statistics" database.

Foreign immigration flow statistics are calculated by the INED from the AGDREF administrative database of the Ministry of Interior that gathers information on residence permit applicants<sup>3</sup>. The statistics relate to the start date of validity of the first residence permit, valid for at least one year, issued to adult foreigners. The start date of the permit validity is after the arrival of the migrants because of the time the permit issue process may take, but also because the migrant may have previously received a permit of less than one year or may have resided illegally in the territory. However, the

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<sup>2</sup>The papers that are using monthly migration data are Hanson and Spilimbergo (1999),

Orrenius and Zavodny (2003) and Bertoli *et al.* (2013).

<sup>3</sup>See Thierry (2001) for a more comprehensive presentation of the database.

date of issue is valuable because it shows the date of entry into the long-term immigration status and, in some cases, grants new labor market rights. The major restriction is that migrant residence permits are not required for minors. Migration rates are obtained by dividing the monthly entries by the number of inhabitants in France on the first of each month.

In this study, only permits issued to nationals of a certain number of countries are retained. In the basic version of the estimates, we include all countries except the EU15 and the European Economic Area (which includes Iceland, Switzerland, Liechtenstein, and Norway). Exclusion of these countries is justified by the fact that since 2004, residence permits are no longer required for their nationals settling in France. However, we choose to retain the permits issued to nationals of Estonia, Latvia, Lithuania, Hungary, Czech Republic, Poland, and Slovenia, even if they are no longer obliged to hold a permit since July 1, 2008. It should be noted that since 2009, the process of issuing residence permits has been modified by the introduction of some visas, which are equivalent to residence permits and are issued abroad by French consulates. The date of issue shown on these permits may be prior to arrival in the country. This is the reason why the study period ends in 2008.

A breakdown of the flow of residence permits depending on the nationality of the recipients reveals that permits issued to nationals of African countries are in the majority, while those issued to nationals of Asian countries account for nearly a quarter of the total number. To test the robustness of our results, we decomposed the permits issued according to the average standard of living in the migrant's country of origin. We created a database containing all the



permits issued to nationals of developing countries<sup>4</sup>, constituting 87.3% of the permits issued during the period.

The INED statistics allow other decompositions of the flow of issued permits. A first decomposition by age and sex of the recipient of the permit indicates that permanent migration in France is overwhelmingly young and female. During the period, those under age 40 accounted for 83.2% of residence permit recipients, while men accounted for 48.3%.

A second decomposition distinguishes the reason for admission, i.e., the administrative reason for issuing the residence permit. Reasons are numerous, and to fit better the objectives of the study, they are grouped into three categories according to their economic relevance, particularly with regard to access to the labor market rights. The first category includes migrants who received a residence permit for work purposes. It represents 7.8% of the total issued permits and 5.8% of the permits issued to nationals of developing countries. Men are in the majority among the recipients.

A second category of migrants obtains a permit for family reasons. It covers the permits issued based on a "spouse of a foreigner," such as in the context of family reunification, but also on the grounds of "spouses of French nationals" and "ancestors and descendants of French nationals." The procedures for obtaining permits are not the same for foreign families and families of French nationals, but in both cases, the residence permit gives access to the labor market. During the reporting period, this category accounts for

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<sup>4</sup>We use the designation "developing" for convenience. More precisely, we consider all countries except Australia, Canada, Hong Kong, Israel, Japan, New Zealand, the USA as well as European countries.

37.7% of total permits issued and 40.6% of the permits issued to nationals of developing countries. Women outnumber men among the recipients.

A final category includes all other reasons. In particular, "students" category, which is a significant proportion (29% of permits) and gives the right to work part-time, but usually treated in the international classifications as temporary migration. The "visitor" category is attributed to applicants with family ties with residents, but it does not give access to the labor market. The "retired" category, which exists since 2004, also does not give access to the labor market. However, permits issued for the "regularization" reason, which was relatively high in 1997 and 1998, and the "refugees and stateless persons" reason (11.9% of permits) give access to the labor market, but it is not possible to distinguish among them between labor and family reasons. Included, also, are permits issued for the "private and family life" reason, which concerns various situations, including families accompanying workers holding a one-year and more permit as well as the recent recipients of "Skills and Talents" cards designed e.g. for scientists.

### **3 VAR Analysis and Empirical Results**

Analysis of the relationship between immigration and the macroeconomic situation is carried out using a VAR model according to the following function:

$$X_t = A(L)X_t + \varepsilon_t, \quad (1)$$

where  $X_t$  is a vector comprising the logarithm of the variables of interest observed at time  $t$ ,  $A(L)$  is the lag polynomial, and  $\varepsilon_t$  is the residual. The purpose of the analysis is not to characterize a long-term relationship, which

would be difficult and inappropriate given the temporal coverage of the series used. However, to investigate the short-run dynamic, variables are considered in level for the following reason. As explained in Sims *et al.* (1990), not taking the first-difference process avoids loss of information contained in the data when a cointegration relationship exists between the variables<sup>5</sup>. For the estimation, a constant and a deterministic trend are added.

The dynamic effects of one variable on another are computed using the GIRF method proposed by Pesaran and Shin (1998). The purpose is to identify the impact based on the history of past correlations. This approach does not require an orthogonalization of shocks and is invariant to the order of variables in the VAR model. The choice of lag was made using AIC (Akaike information criterion) and BIC (Bayesian information criterion) tests and led to selecting three lags.

Two models are estimated as follows. The first includes all residence permits issued while the second distinguishes permits issued for work reasons and those issued for family reasons. For both models, several robustness tests are proposed.

### **3.1 Estimates with All Residence Permits**

The first model we estimate is a three dimensional VAR where:

$$X_t = [Y_t, U_t, M_t]', \quad (2)$$

which includes the logarithm of GDP per capita denoted  $Y_t$ , the logarithm of unemployment rate denoted  $U_t$ , and the logarithm of migration rate denoted

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<sup>5</sup>Preliminary tests indicate that the series are non stationary and cointegrated.

$M_t$ . This model incorporates all permits issued, regardless of the administrative reason for issuance. Figure 1 shows the GIRF generated by a 1% increase of a variable. The confidence interval is 5% on the left and 5% on the right.

Figure 1, about here

The results, shown in Figure 1, are as follows<sup>6</sup>. The response of GDP per capita to the migration rate is positive and significant the first and the fourth months following the shock and continuously from the sixth to the 27th month. Furthermore, the response of the migration rate to GDP per capita is only positive and significant the first month following the shock. However, neither the response of the unemployment rate to the migration rate, nor the response of the migration rate to the unemployment rate is significant.

The robustness of this first model is evaluated using information on the nationality of the permit holders. If we only use residence permits issued to nationals of developing countries, very similar results, which are illustrated in Figure 2, are obtained. The response of GDP per capita to the migration rate from developing countries is positive and significant the first and the fourth months following the shock and continuously from the seventh to the 34th month. The response of the migration rate to GDP per capita is only positive and significant the third month following the shock; the relationship

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<sup>6</sup>Using the following Cholesky ordering (M, Y, U), we get qualitatively similar results. Migration is placed first because the decision to migrate is based on the past values of the host country's economic conditions. GDP per capita is placed second as productivity shocks can contemporaneously impact unemployment.

with the unemployment rate remains non significant.

Figure 2, about here

The results of the first model are completed by estimating two four-dimensional vectors that integrate a decomposition either by age or by sex of the residence permit recipients.

To account for the effects of age, the flow of residence permits was decomposed into two: recipients under age 40 (i.e. the younger migrants, denoted  $YM_t$ ) and recipients aged 40 and over (i.e. the older migrants, denoted  $OM_t$ ). The response functions are reproduced in Figure 3. The estimate indicates that the response of GDP per capita to the migration rate of recipients under age 40 is positive and significant the first and the fourth months following the shock and continuously from the ninth to the 22nd month. However, the response of GDP per capita to the migration rate of recipients aged 40 and over is not significant. In addition, the response of migration to GDP per capita is positive and significant one month after the shock for recipients under age 40 and is not significant for recipients aged 40 and over. The relationship between migration variables and unemployment remains non significant.

Figure 3, about here

A similar estimate was made by distinguishing the permit recipients based on sex. Permits issued to men are denoted  $MM_t$  while those issued to women are denoted  $FM_t$ . The response functions are shown in Figure 4. The results indicate that the response of GDP per capita to the migration rate to men is positive and significant the first and the fourth month following the shock

while the response to the migration rate of women is positive and significant from the 12th to the 25th month. In addition, the response of the migration of men and of women to GDP per capita is positive and significant the first and the sixth month following the shock. The relationship between migration variables and unemployment remains non significant.

Figure 4, about here

### **3.2 Estimates with Residence Permits issued for Labor and Family Reasons**

A second VAR model was then estimated using a four-dimensional vector:

$$X_t = [Y_t, U_t, MW_t, MF_t]', \quad (3)$$

where  $MW_t$  represents the logarithm of the labor migration rate and  $MF_t$  is the logarithm of the family migration rate. The latter two variables are the two categories of residence permits described in the previous section. Figure 5 shows the GIRF generated by the model.

Figure 5, about here

The results are as follows. The response of GDP per capita to the family migration rate is positive and significant continuously from the sixth to the 27th month after the shock, while that associated with the rate of labor migration is not significant. Furthermore, the response rate of family and labor migration to GDP per capita is positive and significant from the third to the 37th month in the first case and from the third to the 17th month in the second case. The response of unemployment to migration, whether

family or labor, is not significant. In contrast, the response of the labor migration rate to the unemployment rate is negative and significant from the sixth to the 22nd month while the response of the family migration rate to the unemployment rate is not significant.

As with the previous model, the robustness of these results was tested by limiting ourselves to the residence permits issued to nationals of developing countries. The GIRF are shown in Figure 6. The response of GDP per capita to the family migration rate is positive and significant the first and fourth months after the shock and continuously from the sixth to the 39th month. Moreover, unlike the case where all nationalities are considered, the response of GDP per capita to the labor migration rate is positive and significant from the 22nd to the 39th month. Furthermore, the response rate of labor and family migration to GDP per capita is positive and significant in the first month following the shock, as well as from the third to the 40th month in the first case, and from the third to the 22nd month in the second. In addition, the response of unemployment to labor migration is not significant, but unlike the previous case, the response of unemployment to family migration is negative and significant from the 22nd to the 38th month following the shock. Finally, the response of labor migration to the unemployment rate is negative and significant from the sixth to the 20th month, while the response of family migration to the unemployment rate is not significant.

Figure 6, about here

## 4 Discussion of the Results

VAR analysis on French data for the period 1994-2008 allow for a better understanding of the nature of the relationships between the policy of issuing residence permits to immigrants and national macroeconomic performances.

### 4.1 Effect of Immigration Policy on GDP per capita

The GIRF built from the estimated models show that the GDP per capita responds positively to the migration rate. This reaction is robust to decomposition of migration by age, sex, reasons for issuing residence permits, and the migrant's birth continent. These results are different from those obtained from panel data estimations, which conclude a lack of the migration effect on GDP per capita. In particular, Ortega and Peri (2009) estimated a gravity model using data on 14 OECD countries, including France, over the 1980-2005 period. They found that immigration increased GDP one for one, and that it therefore had no effect on GDP per capita. In addition, some authors have estimated, using panel data, a Solow model with human capital to assess the respective magnitudes of the increase in human capital and the capital dilution. Dolado *et al.* (1994) found that the dilution effect was generally higher, while Boubtane and Dumont (2013) found that for a panel of 22 OECD countries (including France) over the period 1986-2006, the human capital effect prevailed. This result and the GIRF presented in the previous section indicate that migration is more favorable to economic activity in France than in the average of the OECD countries. Recently, Kiguchi and Mountfort (2013) used a VAR model to quantify the macroeco-



conomic effects of immigration in the United States. The series of immigration flows was constructed from unanticipated shocks to the labor force. In addition, the shocks were identified by imposing sign restrictions. The increase in the labor force had a temporary negative effect on GDP per capita with no negative effect on wages. The authors interpreted these results using a model where the labor supply of migrants is complementary to the labor supply of skilled natives and substitute to capital.

Quantitatively, the effect on GDP per capita is high. Calculation of the cumulative response one year after a permanent shock of 1% on the migration rate is associated with a 0.0172% increase in GDP per capita (with a standard deviation of 0.0081). This impact reinforces previous studies that show, using alternative methodologies, the potential gain from an increase in the mobility of workers is higher than that of increased capital mobility or increased trade (see Clemens, 2011, and references cited therein). The long-term effect of migration on productivity in OECD countries was estimated by Aleksynska and Tritah (2010). They found an elasticity of 0.1.

When we do consider migration from developing countries only, our results suggest that the response of GDP per capita to shock is of a similar magnitude, but it is more persistent. In addition, labor migration has been found to have a significant and positive effect on GDP per capita only when this migration is considered. This reinforces the recent studies by Alesina *et al.* (2013) and Ager and Brückner (2013), which showed that the diversity of migrant birthplaces had a positive effect on growth in rich countries. It is not possible with the data to know the level of education of migrants, but our results provide further evidence of the complementarity of labor supply

of immigrants with the native born population.

Robustness exercises performed in the previous section also identify the migration factors most conducive to GDP per capita. Age appears to be a crucial variable because the estimation decomposing the flows between those over and under age 40 reveals that migrants aged 40 and over do not have a significant effect on GDP per capita. To explain the positive effect of younger migrants, several hypotheses are possible. From a microeconomic point of view, better integration in the labor market due in part to a higher human capital is possible. From a macroeconomic perspective, the migration of young workers can mitigate the effects of an aging workforce. According to the United Nations (2001), the net immigration that would be required to maintain the number of persons of working age in France is approximately equal to 150,000 persons per year.

The GIRF also indicate that migration of women has a higher effect on the GDP than migration of men: the cumulative response after a permanent shock of 1% on the migration rate is significant and positive when we consider only women, while it is not significant when considering only men. Similarly, we find that family migration has a positive effect while labor migration has, in most cases, no significant effect. Both results are consistent as family migration, which mainly consists of foreign spouses of foreigners or French nationals, is predominantly female. The positive effect of this migration was studied, in particular, by Kremer and Watt (2006), Furtado and Hock (2010) and Cortés and Tessada (2011) for the United States, Farré *et al.* (2011) for Spain, Romiti (2011) for Great Britain, and Barone and Mocetti (2011) for Italy. The idea is that female and/or poorly educated migration

fits well in the market for home services, which allows the educated native born women to increase their participation in the labor market. There is, to date, no studies for France, but if this mechanism is effective, it is likely to be due to the lack of labor supply in the area of home services. Because of legislation on the minimum wage, it is indeed unlikely that migration leads to downward pressure on wages in this sector. It is important to have in mind that a residence permit allowed for family reasons give access, in France, to the labor market with no restrictions, whereas permits allowed for work purposes are often delivered provided that the employment is taken in specific sectors, such as the construction industry.

Another channel that might explain the positive effect of family migration has been explored by Hunt (2012). She evaluates the impact of immigrant children on the high school completion of natives children in the United States and finds that an increase in the share of immigrants in the population aged 11-64 increases the probability natives complete 12 years of schooling. The mechanism is that immigration increases wage inequality in the lower part of the native distribution, particularly the wage gap between high school dropouts and high school graduates, which in turns increases the return to completing high school. This impact has not been tested for France.

Finally, the relative advantage of family migration can be apprehended by its impact on the demand. Immigrants that stay in family are more likely to consume a large part of their income in the host country whereas labor migrants devote a substantial part as remittances.

## 4.2 Effect of Immigration Policy on Unemployment

The estimated models in the previous section cannot conclude that, in most cases, migration has a significant effect on unemployment in France. A significantly negative relationship was found only in the case of family migration from developing countries. The effect is quite offset, almost two years after the shock, and can be interpreted in the same way as the effect on GDP per capita. Apart from this particular case, our results are in line with previous studies, although sometimes contradictory, and which conclude either very moderate effects or a lack of effect of migration on unemployment<sup>7</sup>.

Among these studies, Hunt (1992) studied the effect of repatriates from Algeria in 1962 as a natural experiment and showed that the arrival of 900,000 people increased resident unemployment by 0.3 percentage points. In contrast, Gross (2002), who estimated a VAR on French data between 1975 and 1994 by imposing structural relationships on the variables, did not find any significant short-term effects of migration on unemployment. Studies on a range of countries, including France, also led to conflicting results. Angrist and Kugler (2003) studied 18 European countries between 1983 and 1999 and concluded that European foreigners reduced employment of the native born population, but non-Europeans had no significant effect. Jean and Jiménez (2011) studied these countries between 1984 and 2003 and found a positive but temporary effect of foreigners on the unemployment of the native born. In contrast, Ortega and Peri (2009) showed that immigration increased em-

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<sup>7</sup>See, in particular, Card (2005) for the United States, Dustman *et al.* (2005) for the United Kingdom and Kerr and Kerr (2011) for a survey.

ployment without any effect on native born populations and Damette and Fromentin (2013) found that immigration reduced short-term unemployment.

The long-term relationship between immigration and unemployment was studied in France and in British Columbia by Gross (2002) and Gross (2004), respectively. In both cases, a negative and significant relationship was established. Finally, work on the causal relationship between migration and unemployment concluded either no causal relationship between migration and unemployment (Withers and Pope, 1985, and Pope and Withers, 1993, for Australia, Shan *et al.*, 1999, for Australia and New Zealand, and Islam, 2007, for Canada) or a negative causal relationship (Kónya, 2000, for Australia).

Of course, our macroeconomic approach is not restricted to the unemployment rate of natives (Borjas, 2003), but in the case of France, Ortega and Verdugo (2012) showed that the natives were unaffected by migration and avoided competition with immigrants by changing profession.

The decomposition of immigrants by the administrative reason for issuing the residence permits has been shown to be useful to assess the labor market performance of immigrants. Concerning European countries, Constant and Zimmermann (2005a, 2005b) have studied those performances in Denmark and Germany, Rodriguez-Planas and Vegas (2011) in Spain and Akgüç (2013) in France. The latter shows that women who come for family reasons have lower labor participation and employment rates than those who arrive as worker or students.

### 4.3 Effect of Macroeconomic Performances on Migration

It is interesting to point out that the number of residence permits issued evolves according to the macroeconomic conditions. When estimates are made with all residence permits, the effect of GDP per capita is indeed positive and significant, but mostly over a very short interval of time, usually a month. In addition, the effect of unemployment is always non significant. However, when we restricted to permits issued for work or family reasons, the results are much more convincing. Indeed, eliminating the permits issued to students, refugees, or foreign patients can only improve the analysis of the effect of macroeconomic conditions on migration. It is more relevant to distinguish permits issued to workers than those issued to families. Permits issued to workers depend on political decisions, including the adoption of a list of jobs for which foreigners are allowed to apply for a permit, which is certainly affected by the labor market situation. We find that the reaction of labor migration, whether from OECD countries or not, to GDP per capita is positive and strong. Calculation of the cumulative response one year after a permanent shock of 1% on the GDP per capita indicates a 0.2898% increase in migration rates (with a standard deviation of 0.1119). This result is consistent with the study of long-term causality by Morley (2006) using annual data between 1930 and 2002 for Australia, Canada, and the United States. Labor migration also reacts negatively and significantly to the unemployment rate. Elasticity of the migration rate to the unemployment rate equals -0.3136 (with a standard deviation of 0.1155). The effect of unemployment on migration confirms the results of Damette and Fromentin (2013), and stud-

ies of long-run causality by Withers and Pope (1985) and Pope and Withers (1993) for Australia and by Islam (2007) for Canada. Recently, these results were reinforced by a study by Beine *et al.* (2013) based on the estimation of a gravity model. They showed that relative business cycles and employment rates have an effect on bilateral migration flows.

Study of the impact of macroeconomic conditions on family migration also brings an interesting perspective. By definition, the policy of issuing residence permits is, for this reason, less dependent on economic conditions. An important part of this migration concerns the spouses of French nationals, who can benefit from non-discretionary residence permits. Similarly, the issue of permits to foreign spouses is governed by a number of regulatory mechanisms, such as the "family reunification procedure," which evolves slower than the macro-economic conditions. However, we find that family migration reacts sustainably and strongly to the GDP per capita. Elasticity of migration rates to the GDP per capita equals 0.1869 (standard deviation 0.0671). This confirms the numerous studies showing that migration choices depend on the economic conditions of the host country.

## 5 Conclusion

Contrary to an idea that is sometimes shared and despite the ambiguity of the effects highlighted by theoretical models, most empirical studies do not suggest a negative impact of immigration on the host country (Friedberg and Hunt, 1995, 1999, Chojnicki, 2004). The case study of France between 1994 and 2008 goes further. Although the majority of recipients of residence permits of more than a year immigrated for family reasons, immigrants con-

tributed significantly to the growth of GDP per capita, and in some cases, reduced the unemployment rate. This reinforces the idea that some complementarities exist between the supply of labor of immigrants and that of native born populations, and that diverse places of birth is a positive factor for the economic performance of a country. In addition, the entry of migrants reacts significantly to the macroeconomic performance: all migrants react positively to GDP per capita and migrants in search of work react negatively to the unemployment rate. Additional microeconomic investigations are needed to distinguish among the possible causes, and most notably between the territory's attractiveness and the migration policy choices. However, examination of the reasons for issuing residence permits confirms that the choice of location made by migrants is based on the economic conditions.



## References

- [1] P. Ager and M. Brückner (2013), Cultural Diversity and Economic Growth: Evidence from the US during the Age of Mass Migration. *European Economic Review* 64, 76-97
- [2] M. Akgüç (2013), Do Visas Matter? Labor Market Outcomes of Immigrants in France by Visa Classes at Entry. Mimeo
- [3] M. Aleksynska and A. Tritah (2010), Immigration et productivité dans les pays de l'OCDE. *Revue Economique* 61, 521-531
- [4] A. Alesina, J. Harnoss and H. Rapoport (2013), Birthplace Diversity and Economic Prosperity. NBER Working Papers 18699
- [5] J. Angrist and A. Kugler (2003), Protective or Counter-productive? Labor Market Institutions and the Effect of Immigration on EU Native. *Economic Journal* 113, F302–F331
- [6] G. Barone and S. Mocetti (2011), With a Little Help from Abroad: The Effect of Low-skilled Immigration on the Female Labour Supply. *Labour Economics* 18, 664-675
- [7] M. Beine, P. Bourgeon and J.-C. Bricongne (2013), Business Cycles and International Migration among OECD Countries. Mimeo
- [8] S. Bertoli, H. Brücker and J. Fernández-Huertas Moraga (2013), The European Crisis and Migration to Germany: Expectations and the Diversion of Migration Flows. IZA Discussion Paper No. 7170

- [9] G. J. Borjas (2003), The Labor Demand Curve is Downward Sloping: Reexamining the Impact of Migration on the Labor Market. *The Quarterly Journal of Economics* 118, 1335-1374
- [10] E. Boubtane and J.C. Dumont (2013), Immigration and Economic Growth in the OECD Countries 1986-2006: A Panel Data Analysis. CES working paper 2013.13, University Paris 1
- [11] D. Card (2005), Is the New Immigration Really so Bad? *Economic Journal* 115, F300-F323
- [12] X. Chojnicki (2004), The Economic Impact of Immigration for the Host Countries, *Brussels Economic Review* 47, 9-28
- [13] M. A. Clemens (2011), Economics and Emigration: Trillion-Dollar Bills on the Sidewalk? *Journal of Economic Perspectives* 22, 83-106
- [14] A. F. Constant (2005), Immigrant Adjustment in France and Impacts on the Natives. In K.F. Zimmermann (ed.), *European Migration: What Do We Know*, Oxford: OUP
- [15] A. F. Constant and K.F. Zimmermann (2005a), Immigrant Performance and Selective Immigration Policy: A European Perspective, *National Institute Economic Review* 194, 94-105
- [16] A. F. Constant and K.F. Zimmermann (2005b), Legal Status at Entry, Economic Performance, and Self-employment Proclivity: A Bi-national Study of Immigrants, IZA Discussion Paper No. 1910

- [17] P. Cortés and J. Tessada (2011), Low-Skilled Immigration and the Labor Supply of Highly Skilled Women. *American Economic Journal: Applied Economics* 3, 88-123
- [18] O. Damette and V. Fromentin (2013), Migration and Labour Markets in OECD Countries: A Panel Cointegration Approach. *Applied Economics* 45, 2295-2304
- [19] F. T. Denton (1971), Adjustment of Monthly or Quarterly Series to Annual Totals: An Approach Based on Quadratic Minimization. *Journal of the American Statistical Association* 66, 99-102
- [20] J. Dolado, A. Goria and A. Ichino (1994), Immigration, Human Capital and Growth in the Host Country. Evidence from Pooled Country Data. *Journal of Population Economics* 7, 193-215
- [21] C. Dustmann, F. Fabbri and I. Preston (2005), The Impact of Immigration on the British Labour Market, *Economic Journal* 115, F324-F341
- [22] L. Farré, L. González and F. Ortega (2011), Immigration, Family Responsibilities and the Labor Supply of Skilled Native Women. *The B.E. Journal of Economic Analysis & Policy* 11, 1-48
- [23] R. M. Friedberg and J. Hunt (1995), The Impact of Immigrants on Host Country Wages, Employment and Growth. *Journal of Economic Perspectives* 9, 23-44
- [24] R. M. Friedberg and J. Hunt (1995), Immigrants and the Receiving Economies. In C. Hirschman, P. Kasinitz and J. DeWind (eds.), *Hand-*

book of International Migration: The American Experience, New York: Russell Sage Foundation

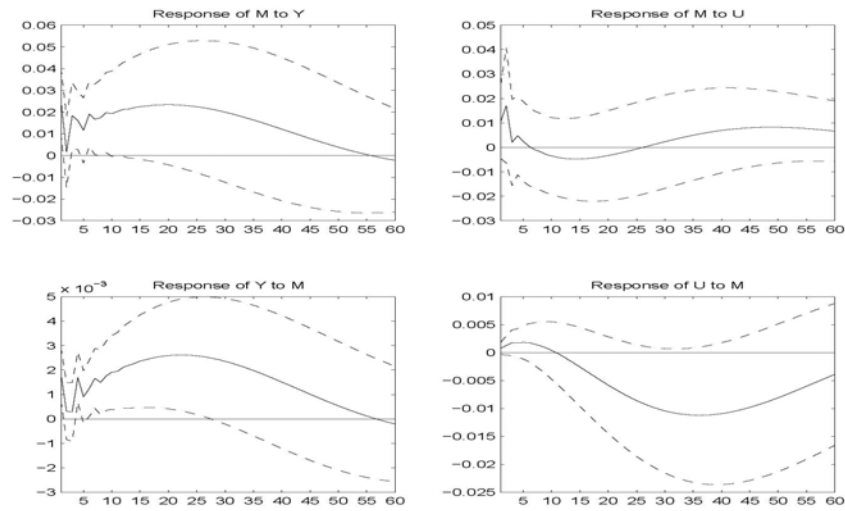
- [25] D. Furtado and H. Hock (2010), Low Skilled Immigration and Work-Fertility Tradeoffs among High Skilled US Natives. *American Economic Review* 100, 224-28
- [26] D. Gross (2002), Three Million Foreigners, Three Million Unemployed? Immigration Flows and the Labour Market in France. *Applied Economics* 34, 1969-1983
- [27] D. Gross (2004), Impact of Immigrant Workers on a Regional Labour Market. *Applied Economics Letters* 11, 405-408
- [28] G. H. Hanson and A. Spilimbergo (1999), Illegal Immigration, Border Enforcement, and Relative Wages: Evidence from Apprehensions at the U.S.-Mexico Border, *American Economic Review* 89, 1337-1357.
- [29] J. Hunt (1992), The Impact of the 1962 Repatriates from Algeria on the French Labor Market. *Industrial and Labor Relations Review* 45, 556-572
- [30] J. Hunt (2012), The Impact of Immigration on the Educational Attainment of Natives. NBER Working Paper No. 18047
- [31] A. Islam (2007), Immigration Unemployment Relationship: The Evidence from Canada. *Australian Economic paper* 46, 52-66

- [32] S. Jean and M. Jiménez (2011), The Unemployment Impact of Immigration in OECD Countries. *European Journal of Political Economy* 27, 241-256
- [33] S. P. Kerr and W. R. Kerr (2011), Economic Impacts of Immigration: A Survey, *Finnish Economic Papers* 24, 1-32
- [34] T. Kiguchi and A. Mountford (2013), The Macroeconomics of Immigration. MPRA Paper No. 45517
- [35] L. Kónya (2000), Bivariate Causality between Immigration and Long-term Unemployment in Australia, 1981-1998, Working Paper, Victoria University, School of Applied Economics, No. 18/00
- [36] M. Kremer and S. Watt (2006), The Globalization of Household Production. Mimeo
- [37] B. Morley (2006), Causality between Economic Growth and Immigration: An ARDL Bounds Testing Approach. *Economics Letters* 90, 72-76
- [38] P. M. Orrenius and M. Zavodny (2003), Do Amnesty Programs Reduce Undocumented Immigration? Evidence from IRCA, *Demography* 40, 437-450
- [39] F. Ortega and G. Peri (2009), The causes and effects of international migrations: Evidence from OECD countries 1980-2005. NBER working paper 14833
- [40] J. Ortega and G. Verdugo (2012), Immigration and the Occupational Choice of Natives: A Factor Proportion Approach. Mimeo

- [41] H. H. Pesaran and Y. Shin (1998), Generalized impulse response analysis in linear multivariate models. *Economics Letters* 58, 17-29
- [42] D. Pope and G. Withers (1993), Do Migrants Rob Jobs? Lessons of Australian History, 1861-1991. *Journal of Economic History* 53, 719-742
- [43] N. Rodriguez-Planas and R. Vegas (2011), Moroccans' Assimilation in Spain: Family-Based versus Labor-Based Migration, *Middle East Development Journal* 3, 119-139
- [44] A. Romiti (2011), Low Skilled Immigrants, Household Services, Labour Supply and Fertility Decisions of British Women
- [45] M. A. Schain (2008), *The Politics of Immigration in France, Britain, and the United States: A Comparative Study*. New York: Palgrave Macmillan
- [46] J. Shan, A. Morris and F. Sun (1999), Immigration and Unemployment: New Evidence from Australia and New Zealand. *International Review of Applied Economics* 13, 253-260
- [47] C. A. Sims, J. H. Stock and M. W. Watson (1990), Inference in Linear Time Series Models with Some Unit Roots. *Econometrica* 58, 113-144
- [48] X. Thierry (2001), Les entrées d'étrangers en France de 1994 à 1999. *Population* 56, 421-448
- [49] United Nations (2001), Replacement Migration: Is It a Solution to Declining and Ageing Populations? Population Division

- [50] G. Withers and D. Pope (1985), Immigration and Unemployment. *Economic Record* 61, 554-563

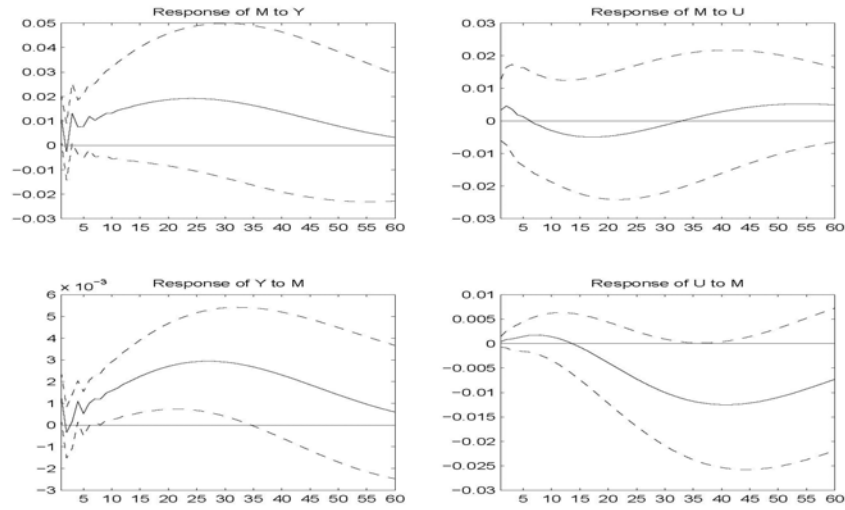
Figure 1. GIRF of Model 1



Notes: Y, U and M denote the logarithm of GDP per capita, unemployment rate and migration rate, respectively.

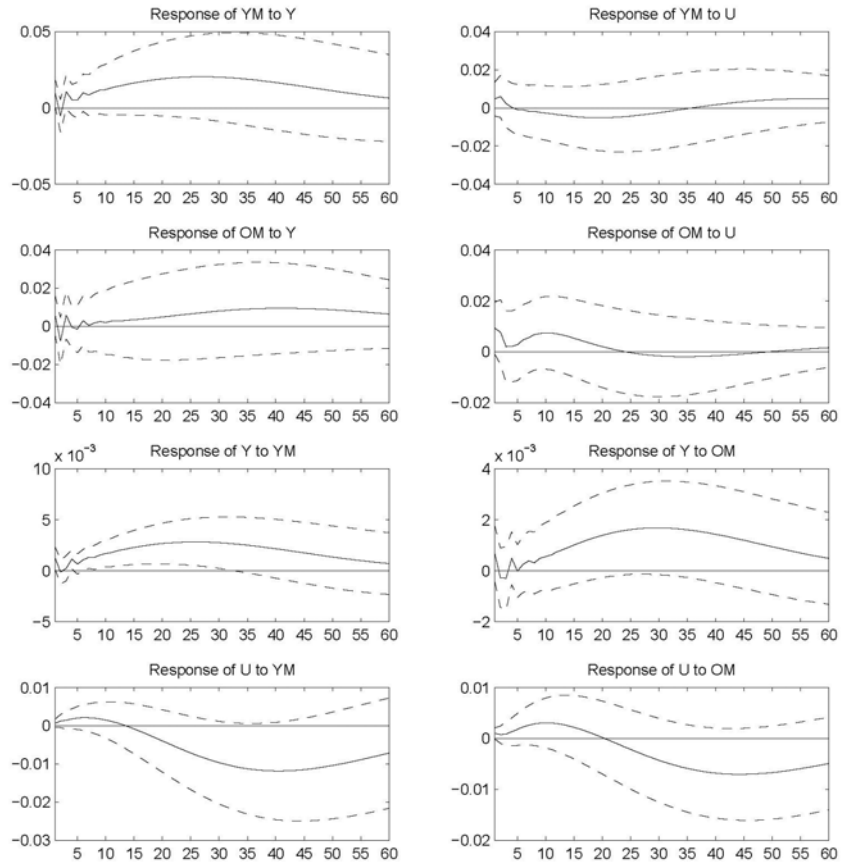


**Figure 2. GIRF of Model 1, immigration from developing counties only**



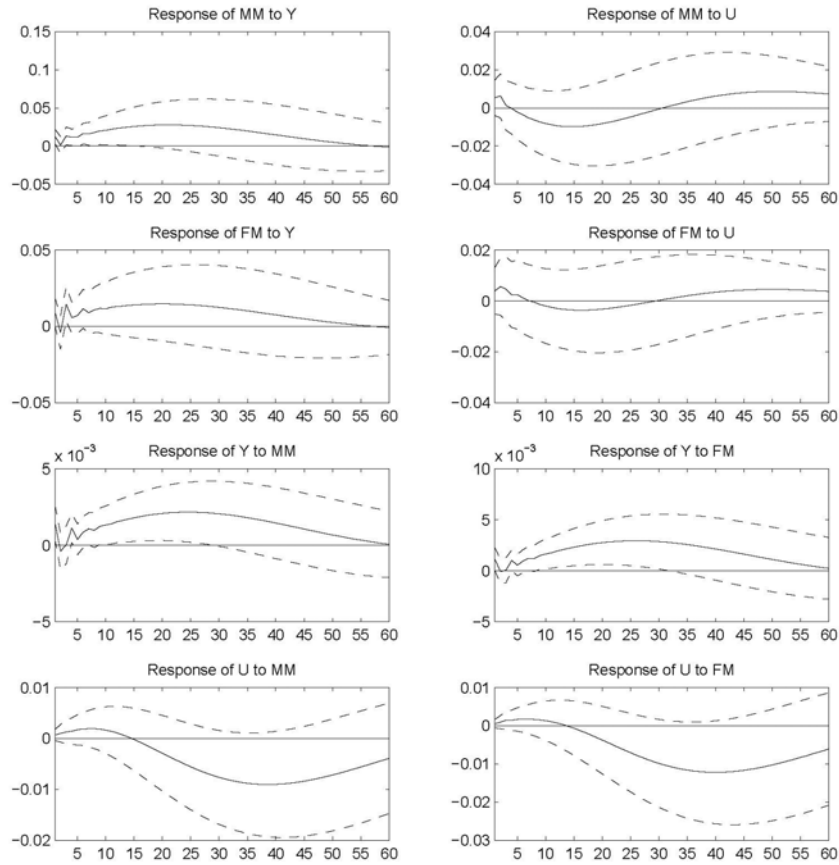
Notes: Y, U and M denote the logarithm of GDP per capita, unemployment rate and migration rate, respectively.

**Figure 3. GIRF of Model 1, decomposition by age**



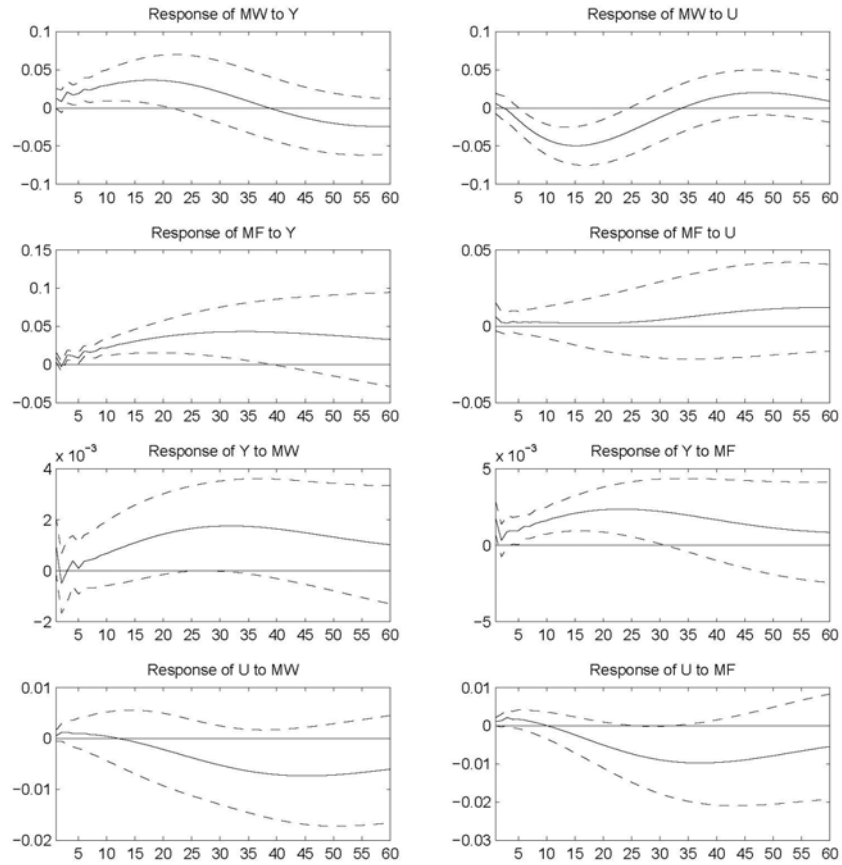
Notes: Y, U, YM and OM denote the logarithm of GDP per capita, unemployment rate, young migration rate and old migration rate, respectively.

**Figure 4. GIRF of Model 1, decomposition by sex**



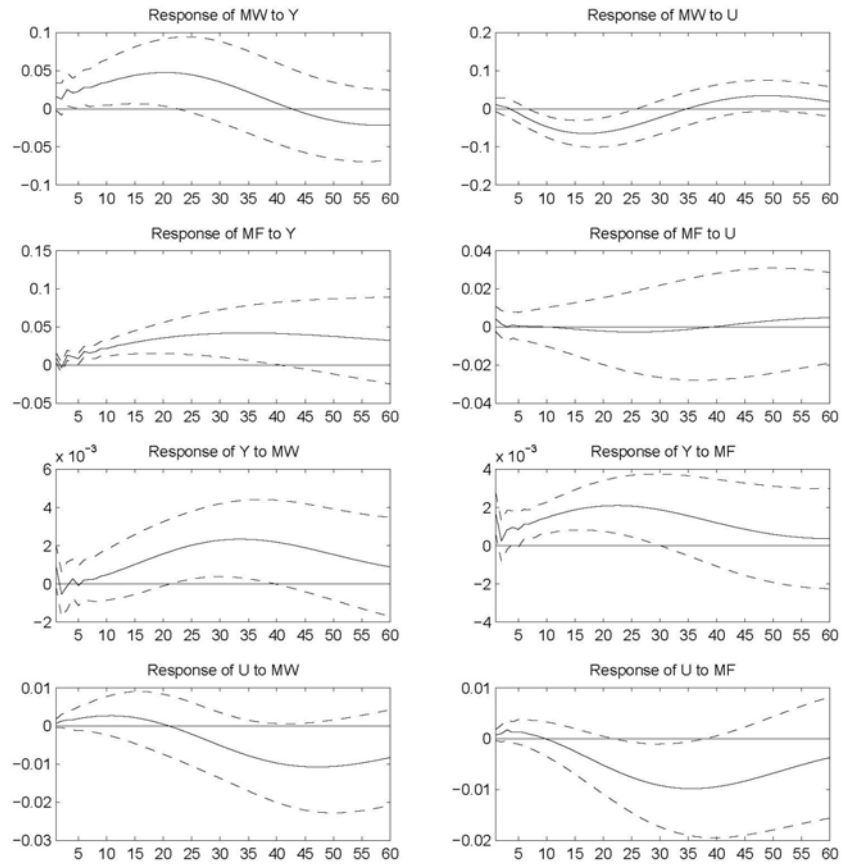
Notes: Y, U, MM and FM denote the logarithm of GDP per capita, unemployment rate, male migration rate and female migration rate, respectively.

**Figure 5. GIRF of Model 2**



Notes: Y, U, WM and FM denote the logarithm of GDP per capita, unemployment rate, worker migration rate and family migration rate, respectively.

**Figure 6. GIRF of Model 2, immigration from developing counties only**



Notes: Y, U, WM and FM denote the logarithm of GDP per capita, unemployment rate, worker migration rate and family migration rate, respectively.