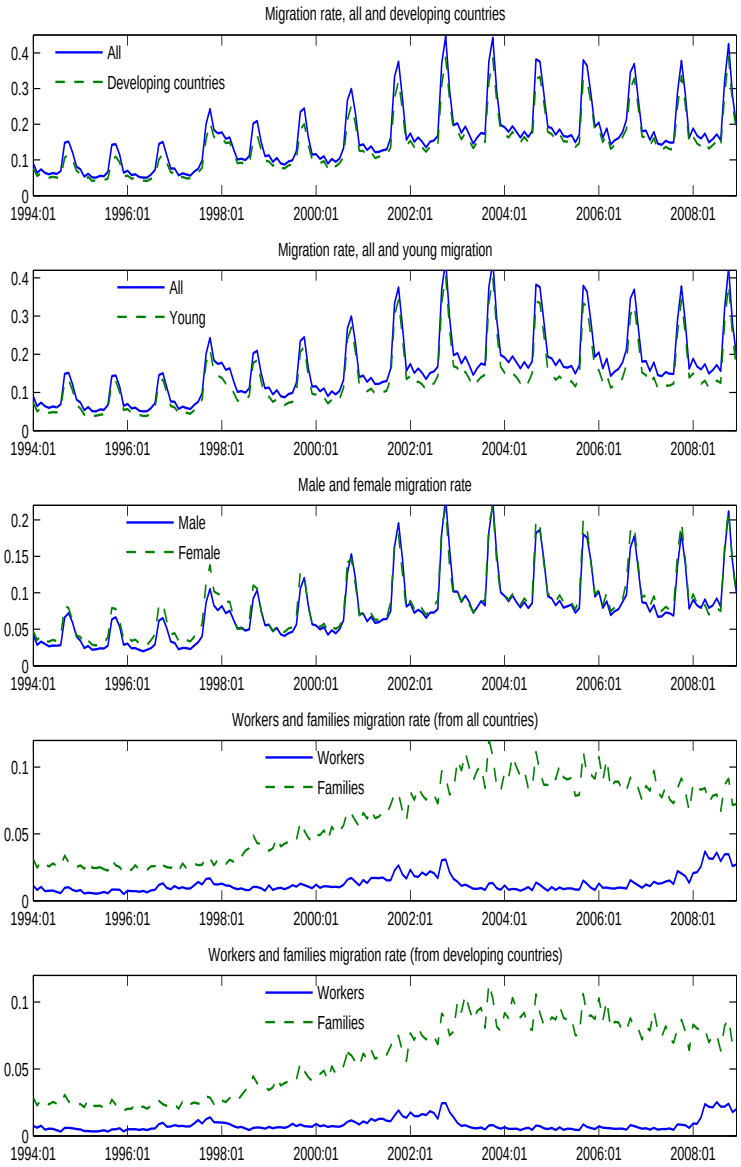
Figure 2: immigration variables



Notes: immigration rate is immigration per 1000 inhabitants. Sources: INSEE, INED.

Table 1: Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max
Real GDP per capita	2,216	151	1,930	2,489
Unemployment rate (in %)	9.55	1.14	7.50	11.30
immigration rate (per 1,000 population)				
total	0.1645	0.0876	0.0503	0.4462
young	0.1371	0.0807	0.0385	0.4064
from dev. countries	0.1435	0.0776	0.0410	0.3884
male	0.0793	0.0445	0.0198	0.2297
female	0.0852	0.0434	0.0276	0.2196
workers	0.0128	0.0065	0.0050	0.0369
families	0.0618	0.0284	0.0212	0.1210
workers from dev. countries	0.0084	0.0049	0.0031	0.0252
families from dev. countries	0.0582	0.0276	0.0189	0.1142

Notes: Real GDP per capita is seasonally-adjusted GDP in volume at chained-linked prices (reference year 2005) divided by total population at the beginning of the month. Unemployment rate is the seasonally-adjusted unemployment rate in percentage. Immigration rate is immigration per 1,000 inhabitants. Source: authors' calculations from INSEE, INED and OECD databases.

4 Econometric Results

This section presents the results of the impulse response functions. We begin with some preliminary diagnostic tests of our series, mainly the unit root and cointegration tests.

To test the stationarity properties of our series, we used the Augmented Dickey-Fuller (ADF) unit root test. The results reported in Table 2 show that at conventional 1% levels of significance, all series are found to be non-stationary in level, but stationary in first difference.

Given this, we performed cointegration tests between the variables in levels. To this end, we employ the Johansen's trace cointegration test. The results in Table 3 show that at a 1% significance level for all models considered, there is at least one co-integrating relationship. As a result, the VAR estimation in level will be super-consistent. Particularly, impulse response matrices can be computed based on VARs (in level) with integrated variables ([Lütkepohl, 2005, chap. 6, p. 258-263]). As stressed by Sims et al. [1990], when a cointegration relationship exists between the variables, not taking the first-difference process avoids loss of information contained in the data.

4.1 Estimates with All Residence Permits

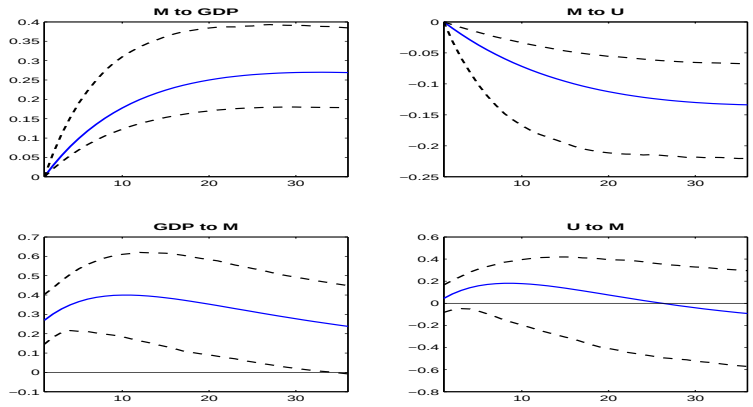
Figure 3 displays the impulse responses of Model 1 which includes the logarithm of GDP per capita, the logarithm of unemployment rate, and the logarithm of immigration (all permits issued, regardless of the administrative reason for issuance)

Table 2: Stationarity test

	Level		First difference	
Variable	t-stat.	p-value	t-stat.	p-value
Y	0.0930	0.9970	-12.3293	0.0000
U	-1.8191	0.6915	-4.9635	0.0000
M	-2.5768	0.2915	-5.8796	0.0000
YM	-2.2670	0.4494	-17.8360	0.0000
MDEV	-2.5579	0.3003	-6.0006	0.0000
MM	-2.4727	0.3413	-6.1418	0.0000
FM	-2.6127	0.2753	-17.8711	0.0000
MW	-1.3337	0.8762	-17.4889	0.0000
MF	0.2921	0.9985	-15.8378	0.0000
MWDEV	-1.3922	0.8602	-16.9173	0.0000
MFDEV	0.2432	0.9982	-15.7051	0.0000

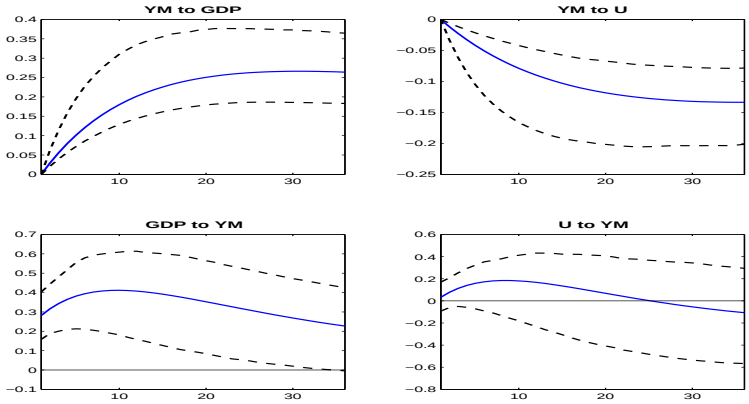
Notes: The test statistic is the Augmented Dickey-Fuller (ADF) test statistic. For variables in level, constant and time trend are included; for the first-difference of variables, only the constant is included. The p-values are MacKinnon [1996] one-sided p-values.

Figure 3: Impulse responses in Model 1



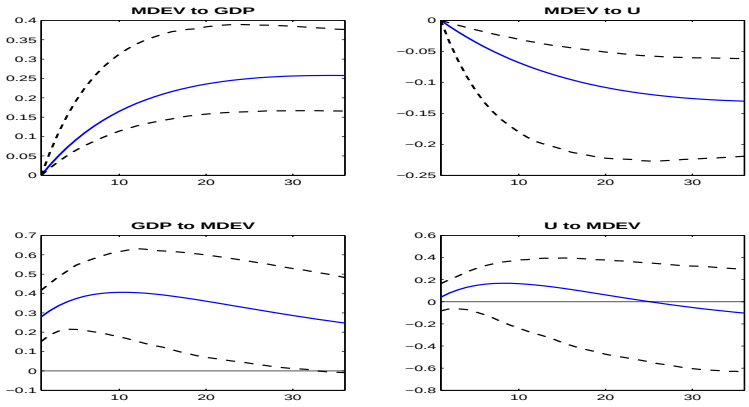
Notes: The variables in Model 1 are, in logarithm, real GDP per capita (GDP), unemployment rate (U) and total immigration rate (M). The identification is based on Choleski decomposition with the following ordering (M, GDP, U). Shocks are scaled so they represent one unit change in corresponding variable. The 90% confidence intervals are computed via with 5,000 bootstrap replications.

Figure 4: Impulse responses in Model 2



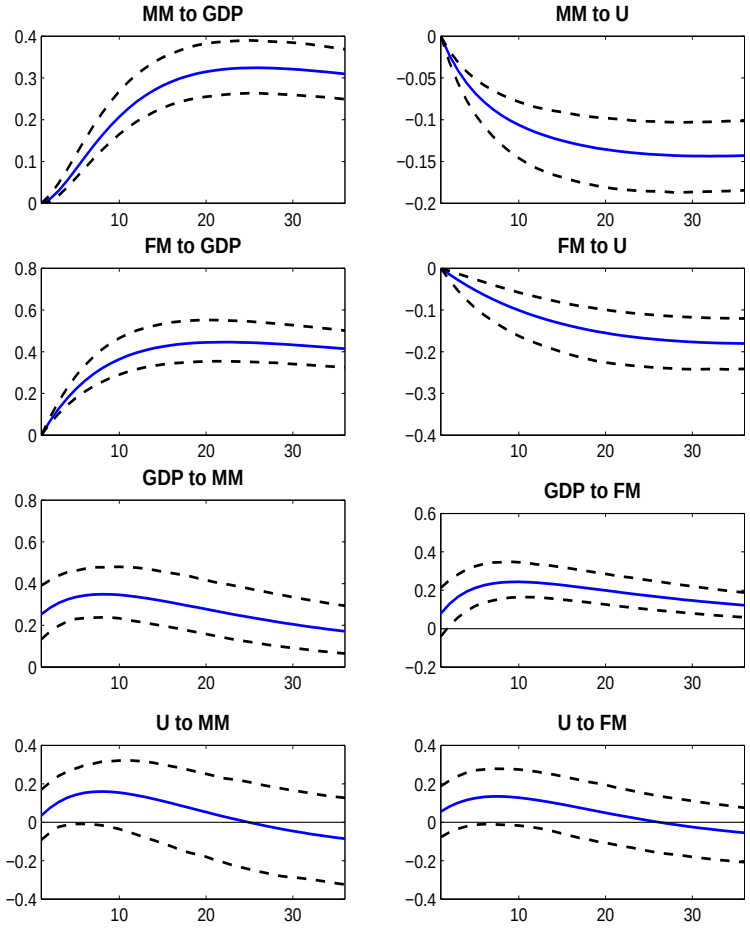
Notes: The variables in Model 2 are, in logarithm, real GDP per capita (GDP), unemployment rate (U), and young immigration rate (YM). The identification is based on Choleski decomposition with the following ordering (YM, GDP, U). Shocks are scaled so they represent one unit change in corresponding variable. The 90% confidence intervals are computed via with 5,000 bootstrap replications.

Figure 5: Impulse responses in Model 3



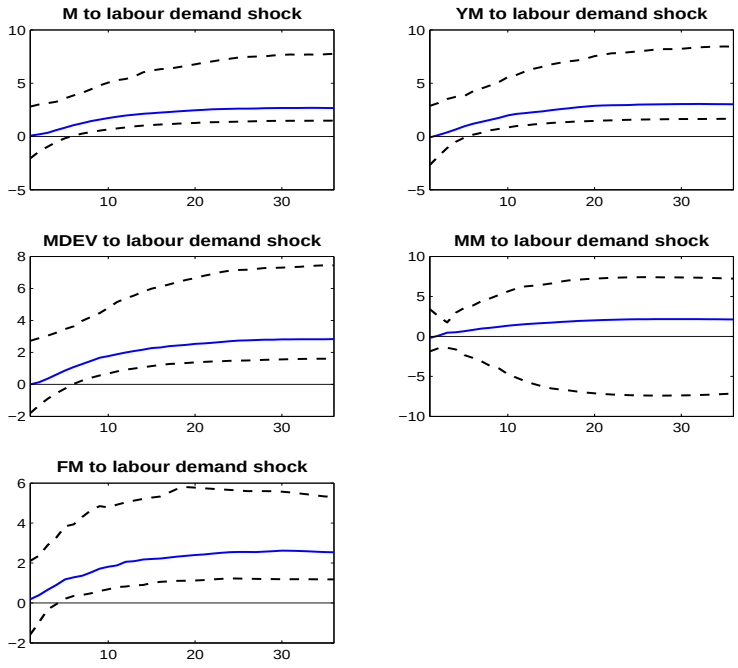
Notes: The variables in Model 3 are, in logarithm, real GDP per capita (GDP), unemployment rate (U) and rate of immigration from developing countries ($MDEV$). The identification is based on Choleski decomposition with the following ordering $(MDEV, GDP, U)$. Shocks are scaled so they represent one unit change in corresponding variable. The 90% confidence intervals are computed via with 5,000 bootstrap replications.

Figure 6: Impulse responses in Model 4



Notes: The variables in Model 4 are, in logarithm, real GDP per capita (GDP), unemployment rate (U), male immigration rate (MM) and female immigration rate (FM). The identification is based on Choleski decomposition with the following ordering (MM, FM, GDP, U). Shocks are scaled so they represent one unit change in corresponding variable. The 90% confidence intervals are computed via with 5,000 bootstrap replications.

Figure 7: Immigration responses using sign restrictions



Notes: GDP, U, M, YM, $MDEV$, MM (FM) are, in logarithm, real GDP per capita, unemployment rate, total immigration rate, young immigration rate and rate of immigration from developing countries, male (female) immigration rate, respectively. Shocks are scaled so they represent one unit change in corresponding variable. The 68% confidence intervals are computed via with 10,000 bootstrap replications.

Table 3: Cointegration test

Model	Hypothesized number of cointegrating equations	Eigenvalue	Trace Stat.	p-value
Model 1	None	0.1698	46.8663	0.0002
(GDP, U, M)	At most 1	0.0683	14.3062	0.0749
	At most 2	0.0109	1.9175	0.1661
Model 2	None	0.1717	46.3465	0.0003
(GDP, U, YM)	At most 1	0.0636	13.3801	0.1016
	At most 2	0.0107	1.8749	0.1709
Model 3	None	0.1688	46.8413	0.0002
$(GDP, U, MDEV)$	At most 1	0.0694	14.4932	0.0704
	At most 2	0.0108	1.9004	0.1680
Model 4	None	0.1966	67.1830	0.0003
(GDP, U, MM, FM)	At most 1	0.0977	28.8845	0.0634
	At most 2	0.0498	10.9037	0.2175
	At most 3	0.0112	1.9646	0.1610
Model 5	None	0.1980	61.3938	0.0016
(GDP, U, MW, MF)	At most 1	0.0875	22.7893	0.2566
	At most 2	0.0293	6.7695	0.6046
	At most 3	0.0089	1.5610	0.2115
Model 6	None	0.1799	60.7119	0.0020
$(GDP, U, MWDEV, MFDEV)$	At most 1	0.1006	25.9961	0.1288
	At most 2	0.0314	7.4440	0.5266
	At most 3	0.0106	1.8616	0.1724

Notes: GDP, U, M, YM, $MDEV$, MM (FM), MW ($MWDEV$) and MF ($MFDEV$) are, in logarithm, real GDP per capita, unemployment rate, total immigration rate, young immigration rate, immigration from developing countries rate, male (female) immigration rate, immigration rate of workers (from developing countries) and immigration rate of families (from developing countries), respectively. The test is the unrestricted cointegration rank (trace) test with the null hypothesis at most r cointegrating relationship. The p-values are MacKinnon-Haug-Michelis [1999] p-values.

rate. We scale shocks so that they represent one unit change in corresponding variable. The response of immigration to GDP per capita is positive and significant for at least 3 years after the shock, whereas it is negative and significant to unemployment rate for the same period. Seen from the other direction, the response of GDP per capita to the immigration rate is also positive and significant for at least 3 years, whereas the response of the unemployment rate is non-significant.

The robustness of this first model is evaluated using only young adult immigrants (under the age of 40 years), which, again, constitute the largest portion of the immigration. The impulse responses of this robustness analysis are displayed in Figure 4. This figure is very similar to what is seen in Figure 3. The response of young immigration rate to GDP per capita (unemployment) is positive (negative) and significant for at least 3 years after the shock. The response of GDP per capita to the young immigration rate is also positive and significant for at least 3 years, while the response of the unemployment rate to this immigration remains non-significant.

If we only use residence permits issued to nationals of developing countries, we obtain very similar results, illustrated in Figure 5. The response of immigration rate from developing countries to GDP per capita (unemployment) is positive (negative) and significant for at least 3 years after the shock. The response of GDP per capita to the immigration rate from developing countries is positive and significant for 3 years after the shock, while the response of unemployment rate

remains non-significant.

A similar estimate was made by distinguishing the permit recipients by sex. The impulse response functions are shown in Figure 6. These results indicate that the response of male and female migrations to an improvement in France's GDP per capita are positive and significant for at least 3 years after the shock. Their responses to unemployment rate are negative and significant, also for at least 3 years after the shock. Seen from the other direction, a shock of male immigration causes a significant increase in France's GDP per capita for at least 3 years, while a shock of female immigration increases GDP per capita non-significantly for the first month and significantly afterward until at least 3 years after the shock. The response of the unemployment rate to male or female immigration shocks are, however, non-significant.

To check the robustness of the Choleski identification, we also employ a sign restrictions approach. Figure 7 displays the responses based on sign restrictions of immigration variables with all resident permits issued to a labor demand shock induced by an improvement in host macroeconomic conditions[9]. The results in Figure 7 corroborate the results from the Choleski orthogonalized impulse responses. More specifically, in response to improvements in France's economic conditions, all the immigration variables, except for male immigration, increase significantly from 1 to at least 3 years after the shock. The response of male immigration to improvement in France's economic condition is non-significant.

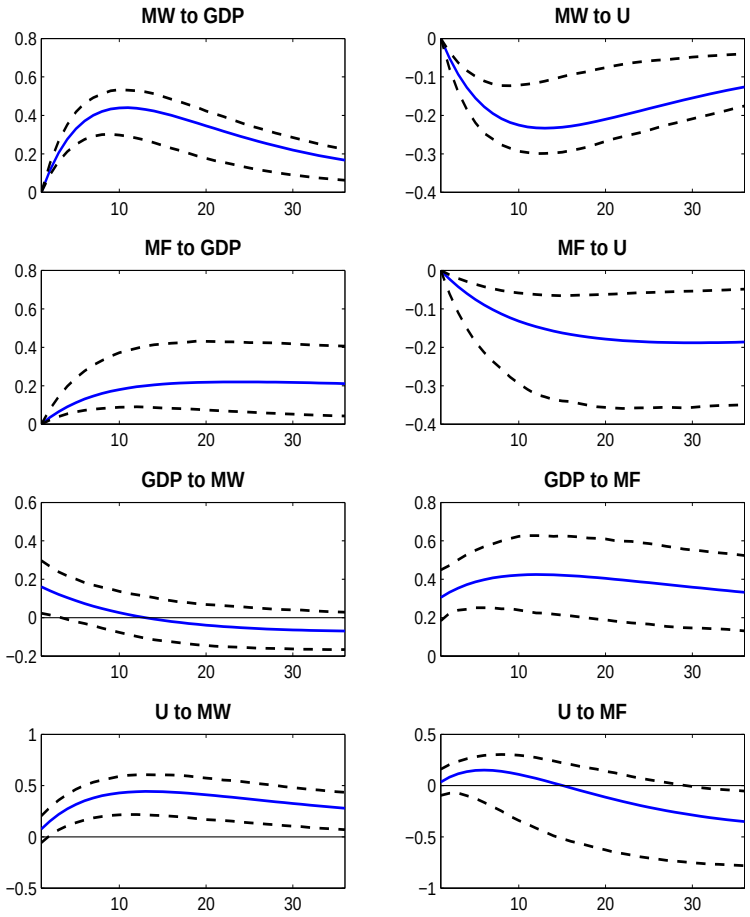
4.2 Estimates with Residence Permits issued for Labor and Family Reasons

The analysis in this section decomposes immigration by reason of residence permit issued, mainly labor and family reasons. Figure 8 reports the impulse responses considering immigration from all countries. We find that in response to shocks on GDP per capita, the immigration of workers increases significantly for at least 3 years after the shock, whereas the immigration of families increases insignificantly for the first 7 months and significantly for the following months until at least 3 years. In response to a shock on unemployment, the immigration for both labor and family purposes decreases significantly for at least 3 years after the shock.

On the other hand, the response of GDP per capita to labor immigration is non-significant (slightly significant only for the 1st month) while its response to family immigration is positive and significant for at least 3 years. The response of unemployment to labor immigration is positive and significant from the 2nd month and until at least 3 years. On the contrary, the unemployment response to family immigration is negative and slightly significant from the 28th month after the shock.

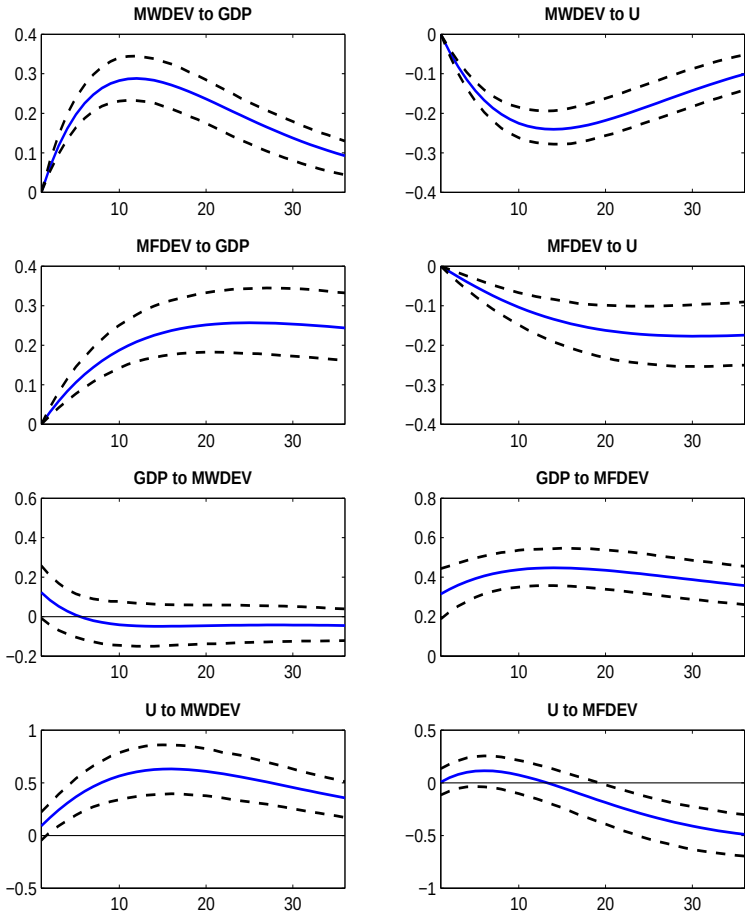
[9]Note that, in the sign restrictions approach, the confidence bands do not have the usual interpretation of sampling uncertainty but, here, they refer to the distribution across models. Following Fry and Pagan [2011], the solid line represents the response from a single model whose impulse responses are as close to the median values as possible. The dashed line represents the 16th and 84th percentiles of the accepted responses.

Figure 8: Impulse responses in Model 5



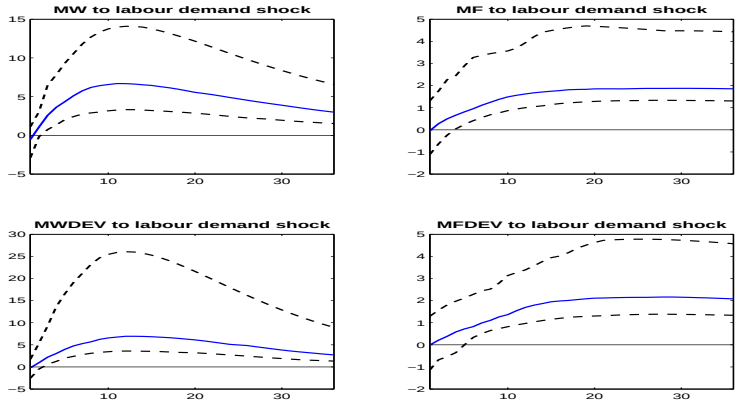
Notes: The variables in Model 5 are, in logarithm, real GDP per capita (GDP), unemployment rate (U), immigration rate of workers (MW) and immigration rate of families (MF). The identification is based on Choleski decomposition with the following ordering (MW, MF, GDP, U). Shocks are scaled so that they represent one unit change in corresponding variable. The 90% confidence intervals are computed with 5,000 bootstrap replications.

Figure 9: Impulse responses in Model 6



Notes: The variables in Model 6 are, in logarithm, real GDP per capita (GDP), unemployment rate (U), immigration rate of workers from developing countries ($MWDEV$) and immigration rate of families from developing ($MFDEV$). Shocks are scaled so that they represent one unit change in corresponding variable. The identification is based on Choleski decomposition with the following ordering $(MWDEV, MFDEV, GDP, U)$. The 90% confidence intervals are computed with 5,000 bootstrap replications.

Figure 10: Immigration responses using sign restrictions



Notes: GDP, U, MW ($MWDEV$), MF ($MFDEV$) are, in logarithm, real GDP per capita, unemployment rate, immigration rate of workers (from developing countries), immigration rate of families (from developing countries), respectively. Shocks are scaled so they represent one unit change in corresponding variable. The 68% confidence intervals are computed with 10,000 bootstrap replications.

As in the previous sub-section, the robustness of these results was tested by focusing only on the residence permits issued to nationals from developing countries. The impulse response functions reported in Figure 9 are very similar to those in Figure 8. More specifically, in response to a shock on GDP per capita, labor and family immigration from developing countries increase significantly for at least 3 years after the shock, whereas they decrease significantly for the same period in response to unemployment shock.

The response of France's GDP per capita to labor immigration from developing countries remains non-significant while its response to family immigration from these countries is positive and significant for at least 3 years. In addition, the response of unemployment rate to labor immigration from developing countries is positive and significant from the 2nd month and until at least 3 years, while its response to family immigration from developing countries is negative and significant from the 20th month to at least 3 years.

In recent years, there has been an attempt to increase skilled-labor immigration and to reduce family immigration in many OECD countries. In line with this, recent changes in French immigration policy, since the adoption of the new legislation on immigration control and foreign residence in November 2003, reflect the wish to shift policies from family immigration (immigration "subie") to selective labor immigration (immigration "choisie")[10]. On the one hand, changes

[10]The first law, adopted on 26 November 2003, represented the beginning of a series of reforms of French immigration policy. On 24 July, 2006 a new Immigration and Integration Act entered into force which was replaced by the law on the management of immigration integration and asylum of 20 November 2007. These laws provide for new measures in order to attract skilled workers and to combat illegal immigration. These laws also introduce restrictive conditions for family reunification, such as higher resource requirements.

in family immigration policy have tended to impose more restrictive conditions such as some residency requirements, some income requirements and integration criteria. On the other hand, labor immigration policy tends to ensure a close link between immigrant worker entries and labor market needs by attracting skilled immigration and temporary immigration.

To evaluate the effects of this policy change, we have re-estimated Model 6, which distinguishes between labor and family immigration particularly from developing countries, over the period 1994-2003. The impulse response results reported in Figure A1 in the Appendix show that considering data before this policy change does not affect our findings except that the unemployment rate does not significantly respond to labor nor family immigration.

Moreover, as in the previous sub-section, Figure 10 reports the response of labor and family immigration to a labor demand shock driven by an improvement in France's macroeconomic conditions, using sign restrictions. The results in this Figure 10 show that labor and family immigration, whatever is the origin country, increases significantly from the 7th month to at least 3 years after the shock.

5 Discussion of the Results

Our VAR analysis on French data for the period 1994-2008 allows for a better understanding of the nature of the relationships between the policy of issuing residence permits to immigrants and national macroeconomic performances. Table 4 reports the Choleski orthogonalized impulse responses at different horizons after the shock between France's economic variables (GDP per capita and unemployment rate) and immigration rates. This table is useful for the comparison of the results from different models.

5.1 Effect of Macroeconomic Performances on Immigration

We note from this paper's findings that the number of residence permits issued in France evolves with the country's macroeconomic conditions. Indeed, in all cases considered, the number of residence permits issued increases significantly following improvements in France's economic condition (increase in GDP per capita or/and decrease in unemployment rate). However, when we restricted the analysis to permits issued for work or family reasons, the results become 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 immigration. 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 immigration, whether from OECD countries or not, to GDP per capita is positive and strong. Calculating the response to 1% increase on the GDP per capita indicates a 0.1993% (0.2699%) increase in the immigration

Table 4: Impact (elasticity) at 1 month, 1 quarter, 1 year and at the peak after the shock

		Impact			
	Model	1 month	1 quarter	1 year	peak
Model 1	M to GDP	0	0.0784	0.1993	0.2699
	M to U	0	-0.0288	-0.0825	-0.1338
	GDP to M	0.2692	0.3495	0.3978	0.3997
	U to M	0.0445	0.1408	0.1663	0.1812
Model 2	YM to GDP	0	0.0796	0.2015	0.2663
	YM to U	0	-0.0327	-0.0898	-0.1337
	GDP to YM	0.2820	0.3649	0.4075	0.4117
	U to YM	0.0330	0.1396	0.1672	0.1839
Model 3	$MDEV$ to GDP	0	0.0721	0.1857	0.2578
	$MDEV$ to U	0	-0.0271	-0.0786	-0.1304
	GDP to $MDEV$	0.2800	0.3575	0.4044	0.4062
	U to $MDEV$	0.0416	0.1312	0.1517	0.1676
Model 4	MM to GDP	0	0.0549	0.2431	0.3242
	MM to U	0	-0.0564	-0.1152	-0.1436
	FM to GDP	0	0.1774	0.3953	0.4458
	FM to U	0	-0.0413	-0.1154	-0.1802
	GDP to MM	0.2529	0.3240	0.3368	0.3492
	U to MM	0.0347	0.1275	0.1401	0.1600
	GDP to FM	0.0791	0.1934	0.2397	0.2436
	U to FM	0.0552	0.1161	0.1162	0.1342
Model 5	MW to GDP	0	0.2760	0.4371	0.4400
	MW to U	0	-0.1274	-0.2325	-0.2333
	MF to GDP	0	0.0906	0.1945	0.2197
	MF to U	0	-0.0600	-0.1465	-0.1882
	GDP to MW	0.1611	0.1039	0.0079	0.1611
	U to MW	0.0757	0.2731	0.4412	0.4430
	GDP to MF	0.3054	0.3718	0.4244	0.4244
	U to MF	0.0343	0.1368	0.0698	-0.3502
Model 6	$MWDEV$ to GDP	0	0.1614	0.2882	0.2882
	$MWDEV$ to U	0	-0.1150	-0.2370	-0.2405
	$MFDEV$ to GDP	0	0.0834	0.2086	0.2567
	$MFDEV$ to U	0	-0.0396	-0.1203	-0.1771
	GDP to $MWDEV$	0.1220	0.0276	-0.0469	0.1220
	U to $MWDEV$	0.0910	0.3078	0.6040	0.6309
	GDP to $MFDEV$	0.3150	0.3777	0.4450	0.4471
	U to $MFDEV$	0.0060	0.0993	0.0307	-0.4889

Notes: GDP, U, M, YM, $MDEV$, MM (FM), MW ($MWDEV$) and MF ($MFDEV$) are, in logarithm, real GDP per capita, unemployment rate, total immigration rate, young immigration rate, rate of immigration from developing, male (female) immigration rate, immigration rate of workers (from developing countries) and rate of immigration of families (from developing), respectively. ^{a} denotes significance at 10% or less, significance being given by bootstrapping.

rate at end of one year (at the peak). This result is consistent with the study of long-term causality between immigration and macroeconomic conditions by Morley [2006] using annual data between 1930 and 2002 for Australia, Canada, and the United States. Labor immigration also reacts negatively and significantly to the unemployment rate. The elasticity of the immigration rate to the unemployment rate equals -0.0825 (-0.1338) at the end of one year (at the peak). The effect of unemployment on immigration confirms the results of Damette and Fromentin [2013], and studies 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 with a study by Beine et al. [2013] based on the estimation of a gravity model. These latter authors showed that relative business cycles and employment rates have an effect on bilateral immigration flows.

The study of the impact of macroeconomic conditions on family immigration 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 immigration 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 condition. However, we find that family immigration reacts persistently and strongly to the GDP per capita. The elasticity of the family immigration rate to the GDP per capita equals 0.1945. This confirms the numerous studies showing that immigration choices depend on the economic conditions of the host country.

5.2 Effect of Immigration Policy on GDP per Capita

The impulse responses built from the estimated models show that GDP per capita responds positively to the immigration rate. This reaction is robust to the decomposition of immigration by age, sex, reason for issuing residence permits, and the immigrant's birth country. These results are different from those obtained from panel data estimations, which conclude a lack of the immigration effect on GDP per capita. Ortega and Peri [2009] had estimated a gravity model using data on 14 OECD countries, including France, over the period 1980-2005. 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 et al. [2014] found that for a panel of 22 OECD countries (including France) over the period 1986-2006, the human capital effect prevailed. This result and our findings show therefore that immigration is more favorable to economic activity in France than in the average of the OECD countries. More recently, Kiguchi and Mountford [2013] used a VAR model to quantify the macroeconomic 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 immigrants 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 impulse response to a shock of 1% on the immigration rate is associated with a 0.3978% (0.3997%) increase in GDP per capita at one year (at the peak). This impact reinforces previous studies that show, using alternative methodologies, that the potential gain from an increase in the mobility of workers is higher than that of increased capital mobility or increased trade (see Clemens [2001], and references cited therein). The long-term effect of immigration on productivity was estimated by Aleksynska and Tritah [2010] using data from OECD countries and more recently by Ortega and Peri [2014] considering data on 194 countries. They found an elasticity of 0.1 and 6, respectively.

Our results also reinforce the recent studies by Alesina et al. [2013] and Ager and Brückner [2013], which showed that the diversity of immigrant birthplaces had a positive effect on growth in rich countries. It is not possible to know, with the information from the INED database, the level of education of immigrants into France, but our results provide further evidence of the complementarity of labor supply of immigrants with the native born population.

When we do consider the immigration of young adults or the immigration from developing countries (which represent the largest part of immigration to France), our results suggest that the response of GDP per capita to shock is of a similar magnitude. To explain the positive effect of younger immigrants, particularly from developing countries, 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 immigration 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 impulse responses also indicate that both the immigration of men and women have positive effects on GDP per capita, the impact being slightly higher for male immigration. Conversely, we find that family immigration has a positive effect on GDP per capita, while labor immigration has, in most cases, no significant effect on GDP per capita. The positive effect of the family immigration was studied, in particular, by Kremer and Watt [2006], Furtado and Hock [2010] and Cortés and J. Tessada [2011] for the United States, Farré et al. [2001] for Spain, Romiti [2011] for Great Britain, and Barone and Nocetti [2011] for Italy. The idea is that family immigration that is generally poorly educated immigration 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 regarding the minimum wage, it is indeed unlikely that immigration leads to downward pressure on wages in this sector. It is important to have in mind that a residence permit allowed for

family reasons gives 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 immigration 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 that 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 immigration 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 immigrants devote a substantial part to remittances.

5.3 Effect of Immigration Policy on Unemployment

The estimated models in the previous section cannot conclude that, in most cases, immigration has a significant effect on unemployment in France. A significantly positive (negative) effect was found only in the case of labor (family) immigration. The effect of labor and family immigration are not significant when the period of changes in France's immigration policies are excluded. The recent shift in France's immigration policy to increase skilled immigration seems to have brought immigrants who might replace resident workers. In other words, residence permits for labor reasons seem to be issued to skilled immigrants.

Our results are in line with previous studies, although sometimes contradictory, which conclude either very moderate effects or a lack of effect of immigration on unemployment[11]. 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 immigration on unemployment. Studies of a range of countries, including France, also lead 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 employment without any effect on native-born populations, and Damette and Fromentin [2013] found that immigra-

[11] See, in particular, Card [2005] for the United States, Dustmann et al. [2005] for the United Kingdom and Kerr and Kerr [2011] for a survey.

tion 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 immigration and unemployment concluded either no causal relationship between immigration 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 [2014] showed that the natives were unaffected by immigration and avoided competition with immigrants by changing profession.

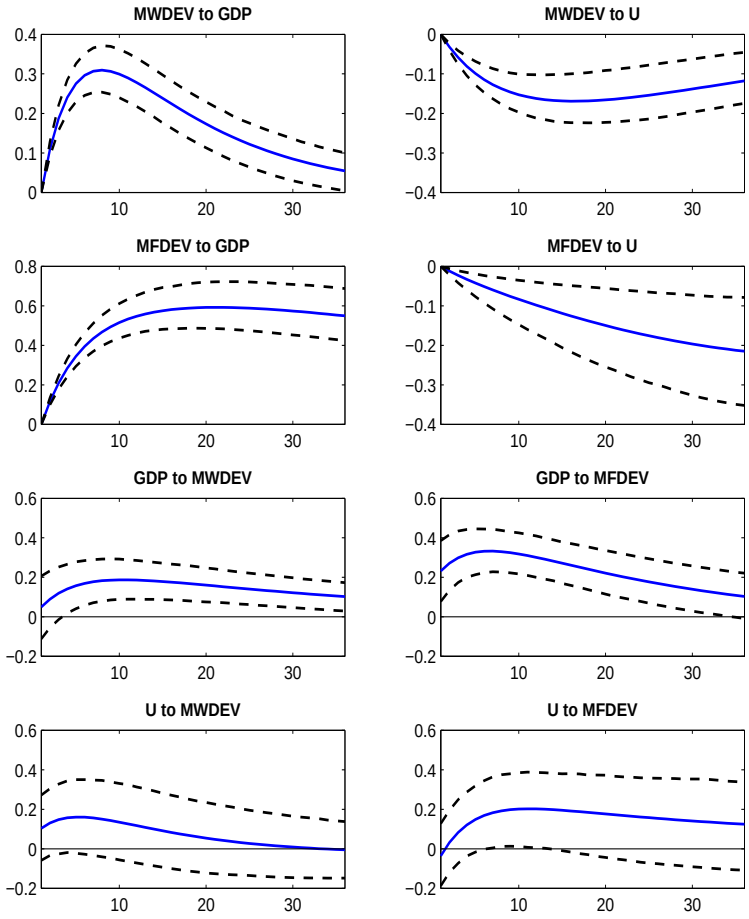
The decomposition of immigrants by the administrative reason for issuing the residence permit has been shown to be useful to assess the labor market performance of immigrants. Concerning European countries, Constant [2005], Constant and Zimmermann [2005b] have studied those performances in Denmark and 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 force participation and employment rates than those who arrive as workers or students.

6 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 [1995a,b], 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 contributed significantly to the growth of GDP per capita, and in some cases, reduced the unemployment rate. This reinforces the idea that some complementarity exists 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 immigrants reacts significantly to the macroeconomic performance: all immigrants react positively to GDP per capita and immigrants 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 immigration policy choices. However, examining the reasons for issuing residence permits confirms that the choice of destination country made by the immigrants is based on its economic conditions.

Appendix

Figure A1: Impulse responses in Model 6 considering data before migration policy change (1994-2003)



Notes: The variables in Model 4 are, in logarithm, real GDP per capita (GDP), unemployment rate (U), immigration rate of workers (MW) and immigration rate of families ($MFDEV$).. The identification is based on Choleski decomposition with the following ordering (MW, MF, GDP, U). Shocks are scaled so they represent one unit change in corresponding variable. The 90% confidence intervals are computed via with 5000 bootstrap replications.

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