



Preparing France for the Increasing International Mobility of Talents

Les notes du conseil d'analyse économique, no 31, May 2016

More than 3 million people born in France have settled abroad. On average they are more skilled than residents and belong to age groups which are principally net contributors to the budget. Is the international mobility of skilled labour increasing in France? Although statistical monitoring of the phenomenon is lacking, fears of brain drain need to be relativized: the net expatriation flows (departures less returns) has doubled over the last few years but emigration levels have remained well below those of our European neighbours. Moreover, net inflows of skilled people born abroad more than offset emigration of people born in France. Finally, departures abroad are an aspect of France's influence and indirectly contribute to its intellectual and trade relations.

However, these facts are only reassuring on the surface. The increasing international mobility of skills appears, above all, to involve outflows of "talents" to a greater extent than inflows. Firstly, "ultra-mobile" talented people are looking for a good environment in order to develop their potential and quality of life in France is not high enough to attract them or make them stay. In fact, France is less successful than other countries in keeping its foreign students after graduation. At the same time, a large proportion of tertiary education is financed by compulsory contributions which ultimately end up promoting the training of "human

capital" that goes abroad, therefore reinforcing foreign economies.

Thus, it is necessary to elaborate a consistent strategy which, rather than attempting to stop the outflows of skilled people, promotes their return and aims at increasing the inflows of people with equivalent skills. Firstly, French universities need to reinforce their attractiveness, not only induced by the absence of fees, but also through better teaching and reception. In the short term, academic fees for non-European Community students could be fixed independently by universities. In return, they would provide for students in a manner measuring up to the level of fees. Secondly, obstacles to mobility need to be reduced. In particular, reception of high-potential foreigners should be improved in terms of effectiveness, predictability and quality of services. The portability of pension rights also needs to be improved, as does the comprehensibility and coordination of the pension system in France. Thirdly, it would be desirable to maintain and strengthen ties with non-resident French nationals. This could be done by improving their statistical monitoring and through the provision of contribution options that result in special entitlements concerning enrolment and fees in French schools and universities.

This Note is published under the sole responsibility of its authors

^a University Aix-Marseille (AMSE), Member of the CAE.

^b Sciences-Po Paris and LIEPP, Member of the CAE.

According to INSEE (French national statistical Institute) estimates,¹ more than three million people born in France are currently living abroad. We know little about them, their ties with France and whether or not they contribute to our country's influence. Have we educated elites "at a loss", contributing to the dynamism of other countries, or do we benefit from their connections, feedback and other intangible forms of benefits to society?

At the same time, census data shows that, at the beginning of 2013, 5.8 million French residents were born abroad with foreign nationality and that 39% of them entering France in 2012 hold a tertiary degree.² Thus, the debate on the expatriation of French citizens needs to take this reverse movement of skilled immigration into account.

After a mixed assessment, which emphasises the increase in gross inflow and outflow, and the considerable decline in net inflow, we highlight the public policy issues induced by this new environment, in particular regarding the financing of tertiary education, the reception of foreign talents and the portability of pension rights.

Brain Drain: The devil is in the details

Expatriation: A much less marked phenomenon than among our neighbours

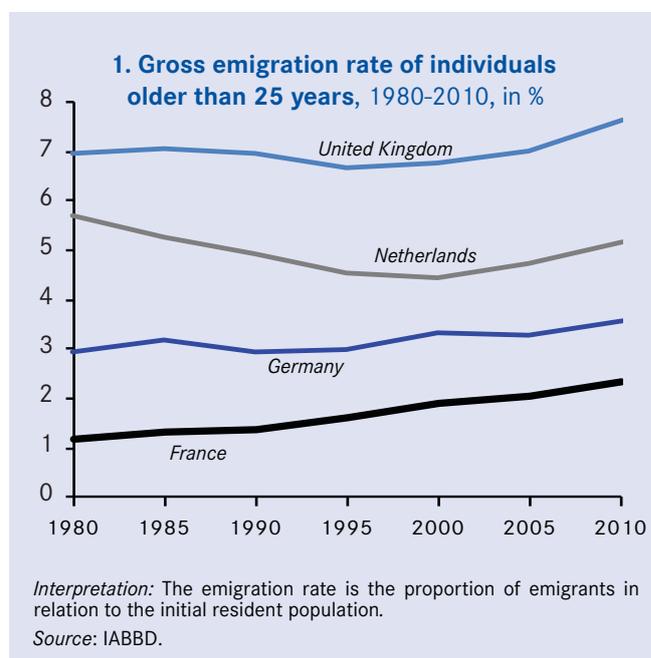
Although several recent reports³ highlight the scale of the expatriation phenomenon of skilled youth, they also note the patchy data available. These statistics do not make it possible to measure and precisely define the character of flows and stocks of expatriates (see box 1).

Censuses, by definition, measure the number of (French and foreign) residents and ignore non-residents. Consular sources are based upon voluntary registration of French citizens abroad and do not constitute a systematic procedure: in 2013, 1.6 million French citizens were registered at French consulates, to which may be added 500,000 non-registered but "reported" persons, resulting in a total population of around 2.1 million.⁴ On the basis of this information, the INSEE estimates the number of people born in France and

living abroad in 2013 at 3.3 to 3.5 million.⁵ These people are mostly between 25-55 years old, and therefore part of the working-age population.

The net annual outflow of people born in France (departures less returns) doubled between 2006 and 2011, amounting to almost 120,000 persons in 2011. The net inflow of people born abroad slightly decreased from 170,000 in 2006 to 155,000 in 2011.⁶ Net migration therefore remains positive in France, but is falling, mainly as a result of the increase in net expatriations.

The flows are steadily increasing in gross terms: between 1980 and 2010, the emigration rate (stock of emigrants older than 25 divided by the population older than 25 residing in France) doubled, but remained much lower than in Germany, the Netherlands and above all the United Kingdom (graph 1).



Observation 1. Expatriation from France is clearly growing, but its level remains markedly lower than the one observed in other European countries.

The authors warmly thank Benoît Rauturier for his numerous contributions and his provision of documentation, which were used in the drafting of this Note. They would also like to thank Manon Domingues Dos Santos, scientific adviser at the CAE who supported this research, Paul Berenberg-Gossler and Marie Garcia for their precious help, as well as Chantal Brutel for data provision.

¹ See Brutel C. (2015): "L'analyse des flux migratoires entre la France et l'étranger entre 2006 et 2013", *INSEE Analyses*, no 22, October. These persons are not necessarily French, as the criterion retained is place of birth. This estimate does not include French citizens born abroad and who are still non-residents.

² Brutel C. (2014): "Les immigrés récemment arrivés en France", *INSEE Première*, no 1524, November.

³ See François-Poncet J. (rep.) (1999-2000): "La fuite des cerveaux: mythe ou réalité?", *Rapport d'information de la Commission économique du Sénat*, no 388 and Chatel L. (Psdt) and Galut Y. (rep.) (2014): *Rapport d'enquête sur l'exil des forces vives de France*, Assemblée nationale.

⁴ See Ministère des Affaires étrangères et du Développement international (MAEDI) (2015): *La communauté française inscrite au registre des Français établis hors de France*, March. Available on www.data-gouv.fr

⁵ See Brutel (2015) *op. cit.*

⁶ The INSEE estimates of these flows cover the period until 2013 and are more fragile for the last two years. See the discussion by Albis, d', H. (2015): *De la difficulté d'estimer les flux migratoires*. Available on www.blog-afse.fr

1. How can mobility of human capital be measured?

It is difficult to gain a reliable view of the expatriation of French citizens, whether in terms of stocks or flows.

According to consular registers, the number of French citizens residing abroad was in the range of 2 to 2.5 million in 2013.^a Since registration on consular lists is optional, this source does not enable the identification of flows in a reliable manner. As an example, this number systematically increases in times of elections.

The second source is a censuses based calculation made by the INSEE. On the basis of births and mortality tables, the INSEE calculates a theoretical stock of persons at a specific date, in the absence of new migrations. By comparing this theoretical stock with the stock of residents born in France (taken from the census), the number of persons born in France and still living in a situation of international mobility is calculated. The INSEE estimated the number of people born in France and living abroad to be 3.5 million in 2013.^b

The third source comes from income tax data. Individuals going abroad have to declare their new address. This source does not take young people into account, as they have usually never made a tax declaration in their own name and the data remains rarely accessible to researchers. The number of departures of tax households liable for income tax amounted to about of 35,000 in 2011 and 2012.^c

Finally, it is possible to combine and compare censuses from several different countries in order to estimate migrant stocks. This is in principle the most reliable source, but it does not cover all countries. Brücker *et al.* (2013) estimate the number of emigrants over 25 years of age, born in France and living in another OECD country in 2010, to be close to one million. Half of them are estimated to hold a tertiary degree.^d

Inward migration of young graduates to France is easier to estimate:

- A census of foreign students is carried out by the Ministry of Higher Education and Research. This

data does not make it possible to distinguish foreign students who have actively chosen mobility from those whose choice is “passive”, in the sense that their arrival in France was posterior to the beginning of their studies. They are estimated to be 299,000 in 2014;

- Census data enables precise estimations of the number of immigrants by level of qualification and therefore a broad assessment of the qualified immigrant stock in France. In addition, certain census files contain information on previous places of residence, which enables estimates of qualified labour inflows to France. By combining this information with the one on the place of birth and nationality, it is possible to gain further knowledge on comeback-phenomena in France after a period of important expatriation since 2010. The recent annual flows are estimated to be composed by an inflow of 80,000 people born in France and 20,000 born with French nationality abroad.^e

Analysis of Internet data: a promising source of information?

The social networking services and Internet in general are a very rich data source for analysing human migration. Users may be located through global positioning in several different ways using the Internet. The degree of data accuracy depends on the social networking service and the manner in which it is collected. The data remains the property of the social networking services and its level of accessibility is thus variable. Data from the most well-known websites is already used in order to conduct migration studies.^f

LinkedIn provides information on employment changes declared by users, thus making it possible to reconstruct yearly professional migratory flows between countries. According to a recent study,^g France is located in the top 20 countries showing the highest levels of (inward and outward) mobility, a slight imbalance (amongst users of LinkedIn) existing in the direction of departures from France, losing about 0.2% of its users each year.

^a Cf. www.diplomatie.gouv.fr/fr/services-aux-citoyens/inscription-consulaire-et-communaute-francaise/article/la-communaute-francaise-inscrite-au-registre-des-francais-etablis-hors-de

^b Brutel C. (2015): “L’analyse des flux migratoires entre la France et l’étranger entre 2006 et 2013”, *INSEE Analyses*, no 22, October.

^c Chatel L. (Psdt) and Galut Y. (rep.) (2014): *Rapport d’enquête sur l’exil des forces vives de France*, Assemblée nationale, pp. 125-128.

^d Brücker H., S. Capuano S. and A. Markouf (2013): Education, Gender and International Migration: Insights from a Panel-Dataset 1980-2010, Mimeo. The countries of destinations correspond to an OECD sub-assembly comprising twenty countries: Australia, Austria, Canada, Chile, Denmark, Finland, France, Germany, Greece, Ireland, Luxemburg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom and USA.

^e Detailed data from the French census 2012.

^f See, for example, Hawelka B., I. Sitko, E. Beinat, S. Sobolevsky, P. Kazakopoulos and C. Ratti (2013): “Geo-Located Twitter as the Proxy for Global Mobility Patterns”, *Cartography and Geographic Information Science*, vol. 41, no 3, pp. 260-271; Zagheri E., V.R.K.Garimella, I. Weber and B. State (2014): *Inferring International and Internal Migration Patterns from Twitter Data*, Proceedings of the 23rd International Conference on World Wide Web, pp. 439-444; Zagheni E. and I. Weber (2012): *You are Where You E-mail: Using E-mail Data to Estimate International Migration Rates*, Proceedings of ACM Web Science.

^g Murthy S. (2015): *The Top 20 Countries Where Professionals Are Moving For Work Based on LinkedIn Data*. Available on <http://blog.linkedin.com/2015/08/11/the-top-20-countries-where-professionals-are-moving-for-work-based-on-linkedin-data/>

Positive net migration of tertiary education graduates

As noted above, the overall net outflow of people born in France has the same magnitude as the net inflow of people born abroad. Are these two flows comparable? The data made specifically available by INSEE for this *Note* enables a partial breakdown by age and skills. Two conclusions emerge: First, people returning to France after a period of expatriation have higher skills than those born abroad and immigrating to France. 44% of the former hold a Master's degree or equivalent, as opposed to 27% of the latter (table). However, people born abroad and immigrating to France have higher skills than the resident population as a whole, of which only 22% of people aged 25-49 years hold a Master's degree or equivalent. Secondly, among the arrivals, people born abroad are younger than those born in France: almost a quarter of the former are under 18 years of age, against 15% of the latter.

Inflow of persons older than 14 years born in France or abroad according to skills, 2013, in %

	Born in France	Born abroad
Lower than A-level/high school diploma (Bac)	18.1	36.7
A-Level/high school diploma	18.6	23.5
A-level/high school diploma + first 2-3 years of undergraduate level studies	19.2	13.0
Master's degree level undergraduate	44.2	26.8
Total	100	100

Field: France, mainline.

Source: INSEE.

Bono and Wasmer⁷ show that the mobility of workers with higher education has been increasing for all countries since 2000. The emigration rate of skilled French workers is also increasing, but markedly less than in other European countries (graph 2). Net migration of people with tertiary education is positive for France, but negative (in the order of 223,000 persons in 2010) when the analysis is limited to the 19 developed countries of the OECD IABBD database. The positive balance of skilled migrants to France is therefore principally attributable to emerging and developing countries.

2. Emigration rate for tertiary education graduates



Interpretation: The emigration rate is defined as the stock of graduate emigrants older than 25 years in relation to the resident graduate population older than 25 years in the country of departure.

Source: IABBD.

Mobility levels tend to increase in proportion to skill levels. Thus, the “professional insertion” surveys conducted by the Conférence des grandes écoles (CGE) show a sharp increase in international mobility after graduation: while 12% of students graduating in 2003 were employed abroad in 2005, the number increased to 17% for the 2014 graduating year one year after graduation.⁸ However, the growing internationalisation of the Grandes Écoles needs to be taken into account: in 2014, 10% of Grande École graduates were foreigners. 30% of those students return to their home countries after graduation. Excluding them yields a departure rate of 15% for the French graduates of 2014.⁹ Unfortunately, we do not know what these graduates become beyond the years immediately following graduation.

In order to measure the loss of “talents”, Campanella (2015)¹⁰ compares the visibility of scientists who remain in their countries with those who leave. In this case, visibility is measured by the impact of their publications. The net gainers are the United Kingdom, the United States and Spain, while the net losers are Italy and Greece. France appears to be neither a winner nor a loser: the “visibility” of foreign-born scientists working in France is equivalent to that of scientists born in France and working abroad. However, Hunter *et al.* (2009)¹¹ find that the most productive physicists-researchers are successively those who leave Europe for the United States, those remaining

⁷ Bono P-H. and E. Wasmer (2014): “Y-a-t-il un exode des qualifiés français?”, *Policy Brief, LIEPP Sciences Po*, no 10, March.

⁸ Cf. www.cge.asso.fr/document/liste/262/insertion

⁹ The results are analogous when limited to a small group of highly renowned schools (Grande école of science and technology, ESSEC, ESCP and ENA), see Bono P-H. (2016): *Analyse quantitative de l'émigration française des très hauts potentiels*, Mimeo LIEPP. With universities, the proportion of foreign students who remain in France varies between 25 and 60% according to a survey conducted in 2005, see Ridha E. and S. Paivandi (2008): “Le non-retour des étudiants étrangers: au-delà de la ‘fuite des cerveaux’”, *Formation Emploi*, no 103.

¹⁰ Campanella E. (2015): “Reversing the Elite Brain Drain: A First Step to Address Europe’s Skills Shortage”, *Journal of International Affairs*, vol. 68, no 2.

¹¹ Hunter R.S., A.J. Oswald and B.G. Charlton (2009): “The Elite Brain Drain”, *The Economic Journal*, vol. 119, no 538, June.

in the United States, and those staying in Europe. Therefore, Europe appears to lose out on the international “market” of scientific talents. A study based on Canadian data¹² shows that, while having the same level of formal education, the immigrant population has lower levels of human capital than native Canadians. Lastly, by using Wikipedia pages on “notable” persons, defined as people having a Wikipedia page written about them in English (around 0.01% of the population), Laouenan *et al.* (2016)¹³ show that individuals leaving France have greater “visibility” than those entering France. Visibility is measured by page length, number of translations, references and notes, etc. Finally, France appears to lose more “talents” than it receives, although the impact on productivity is difficult to assess.

Observation 2. The increase in the emigration rate of French graduates needs to be put into perspective due to the incoming flux of skilled foreigners: net migration of graduates remains positive. However, patchy indications regarding “productivity” of immigration and emigration suggest a negative balance in terms of talents.

Increasing numbers of foreign students, but less than in other comparable countries

Beyond the professional mobility of skilled labour, the question of student mobility, preceding and enhancing professional mobility, imposes itself. Student mobility is actively promoted by policies such as the “Erasmus”, and “Erasmus +” programmes and the 8,000 international bilateral agreements between universities and Grandes Écoles, including 4,500 double degrees.¹⁴

In 2013, France hosted 6% of the total number of internationally mobile students, ranking fourth after the United States, the United Kingdom and Australia. According to data provided by the Ministry of Higher Education (*ministère de l'Enseignement supérieur*), the number of foreign students practically doubled in France between 1990 and 2014, increasing from 161,000 to 299,000 and the majority of this increase occurred between 1990-2005. The share of foreign students increased from 9 to 12% from 1990-2014 (15% at universities, 14% at engineering schools and until 40% for PhD studies). Students principally come from Europe, African countries, in particular the former French colonies, China, the United States and Russia.

The increase in the number of foreign students in France (+ 83% between 1998 and 2012 according to the OECD) is slightly higher than in Germany (+ 70%, i.e. 287,400 students in 2012), but much lower than the progression in Switzerland (where the number of students was multiplied by 2.7 i.e. 64,200 students in 2012), the United Kingdom (multiplied by 2.7 i.e. 568,800 students in 2012) and above all Italy (multiplied by 3.3 i.e. 77,700 students in 2012).

Observation 3. The number of foreign students in France has shown an upward trend since the 1990s, comparable to Germany, but the increase is markedly lower than in Anglo-Saxon countries, Switzerland and Italy.

Challenges linked to the international mobility of skilled labour

Because the mobility of skilled people is an inevitable phenomenon, this raises the question how France can make the best out of it.

Immigration enhances innovation and exchange

Empirical research generally finds that immigration has positive effects on host countries.¹⁵ This impact is of course bigger when talking about high skilled immigration. A study on the United States¹⁶ shows the positive impact of high skilled immigration on innovation and the number of registered patents. In fact, United States business activities essential to the knowledge-based economy show a concentration of immigrants, who are disproportionately present in entrepreneurship and innovation.¹⁷ Other research highlights the positive impact of diversity: at a given level of qualification and labour force, the quantity as well as the variety of immigrants have a positive impact on the level of income per capita. In particular, greater diversity of birth countries appears to increase GDP, which suggests complementarity between native-born and immigrant workers, particularly when the latter come from rich countries.¹⁸

Conversely, emigration of skilled workers (“brain drain”) reduces innovation potential in the country of departure. The short-term effects are limited for high-income countries since emigrants represent a small proportion of the total qualified

¹² Coulombe S. and J-F. Tremblay (2009): “Migration and Skills Disparities across the Canadian Provinces”, *Regional Studies*, vol. 43, no 1, pp. 5-18.

¹³ Laouenan M., O. Gergaud and E. Wasmer (2016): “A Brief History of Human Time Exploring a Database of ‘Notable’ People”, *Sciences Po Economics Discussion Papers*, no 2016-03.

¹⁴ Cf. *Conférence des Grandes écoles*.

¹⁵ Dolado J., A. Goria and A. Ichino (1994): “Immigration, Human Capital and Growth in the Host Country”, *Journal of Population Economics*, vol. 7, no 2, pp. 193-215; Ortega F. and G. Peri (2014): *The Aggregate Effects of Trade and Migration: Evidence from OECD Countries*, Springer International Publishing.

¹⁶ Hunt J. and M. Gauthier-Loiselle (2008): “How Much Does Immigration Boost Innovation?”, *NBER*, no w14312.

¹⁷ Kerr W.R. (2013): “US High-Skilled Immigration, Innovation, and Entrepreneurship: Empirical Approaches and Evidence”, *NBER*, no w19377.

¹⁸ Alesina A., J. Harnoss and H. Rapoport (2013): “Birthplace Diversity and Economic Prosperity”, *NBER*, no w18699.

workforce. Tritah (2008)¹⁹ estimates that, in the 1990s, the stock of skilled French expatriates in the United States represented around 0.5% of French graduates. If they had all returned to their home country in 2000, the increase in French productivity would not have been very large in the short term (+ 0.1%), but would have been much more marked in the medium term (+ 0.7%). In the medium term the departure of high skilled workers, even when they are few in proportion to the working population, is therefore likely to slow productivity considerably down. Moreover, a balance between the number of skilled immigrants and emigrants does not necessarily mean that labour force quality remains unchanged (*cf. supra*).

However, emigration encourages trade (in both directions) between the departure and host countries. Migrants maintain networks which promote the circulation of information and increase trade flows.²⁰ This is a considerably important effect: an increase of 10% in the migrant stock between two countries stimulates bilateral trade by 1%. This is not dependent on the migrants' education level. On the other hand, a link between foreign direct investment and migration only exists for the skilled labour force.

Welcoming foreign students is a mean of attracting skilled immigrants, given that students remain in the country at the end of their studies. However, the retention rate estimated by Felbermayr and Reczkowsky (2012)²¹ (resulting increase in the stock of skilled persons compared to the stock of foreign students) varies considerably from one country to the other: except the United Kingdom (47%) it is greater than 100% in Anglo-Saxon countries (each foreign student present on the territory "attracts" more than one skilled worker) and 23% in the Netherlands, but only 4% in France. For the authors, the French visa policy does not facilitate the employment of foreigners educated in France and, despite the 1998 reform, France still remains far behind the Anglo-Saxon countries and Germany, which has an estimated retention rate of 5%. Since July 2013, foreign students in France have had one year to find employment after the end of their studies. When they find employment, if the latter is paid more than 1.5 times the guaranteed minimum wage (SMIC) and corresponds to the purpose of their course of study, they can apply for a work permit without any possibility of the employment situation being invoked against them. In the opposite case they may be refused a work permit. There are few statistics regarding the paths followed by foreign

students that graduated in France. According to one survey in 2005,²² 30% wanted to return to their country of origin, 25% wanted to remain in France, 9% wanted to go to a third country and 36% did not express any particular preference.

Another key element for retaining high-potentials individuals appears to be the quality of the available work environment. One study made in the United States²³ shows that the best European students tend to remain in the country at the end of their Ph.D., particularly when they have the possibility of being hired by a prestigious university as their first job is decisive for their subsequent career. This suggests that the quality of the first job is a key factor in retaining the best foreign students.

Finally, a recent study²⁴ shows the great sensitivity of "innovators", particularly foreign innovators, to the fiscal context. The upper marginal income tax bracket (in the broad sense) plays a role in location choices. Let us take the example of a country with an upper marginal rate of 60%. If it decided to lower this rate by 10 percentage points, it would be in a position to retain almost 1% of its resident "superstar" inventors, while also attracting 26% more foreign superstar inventors²⁵ belonging to the top 1% of the most talked-about inventors.

Observation 4. Compared to other countries, France does not appear to benefit from a retention effect of students at the end of their studies on the national territory, or from an attraction effect of foreign talents.

Budgetary issues linked to the mobility of talents

France presents the three major characteristics of free primary and secondary education, virtually-free education in a large proportion of tertiary education institutions and a system of public health that provides broad cover. This model is vulnerable to the increasing mobility of skilled workers. Indeed, people born in France who left French territory are for the most part in the 25-55 year age group, an age group whose net contributions to the budget are positive and substantial.²⁶ Conversely, their presence is relatively more common on French territory during their studies and after age 55, life periods in which the net contributions to public finances are negative on average.

¹⁹ Tritah A. (2008): "The Brain Drain Between Knowledge Based Economies: The European Human Capital Outflow to the US", *Économie Internationale*, no 115.

²⁰ See Docquier F. and H. Rapoport (2012): "Globalization, Brain Drain, and Development", *Journal of Economic Literature*, vol. 50, no 3, pp. 681-730.

²¹ Felbermayr J. and I. Reczkowsky (2012): "International Student Mobility and High-Skilled Migration: The Evidence", *IFO Working Paper Series*, no 132.

²² Ennafaa R. and S. Paivindi (2008): "Fuite ou mobilité des cerveaux", *Formation Emploi*, no 103, July.

²³ See Van Bouwel L. and R. Veugelers (2012): "Are Foreign PhD Students More Likely to Stay in the US? Some Evidence from European Economists" in *The Mobility of Students and the Highly Skilled*, Gérard and Uebelmesser (eds), CESifo, MIT Press, Cambridge.

²⁴ Akcigit U., S. Baslandze and S. Stantcheva (2016): "Taxation and the International Mobility of Inventors", *American Economic Review*, forthcoming.

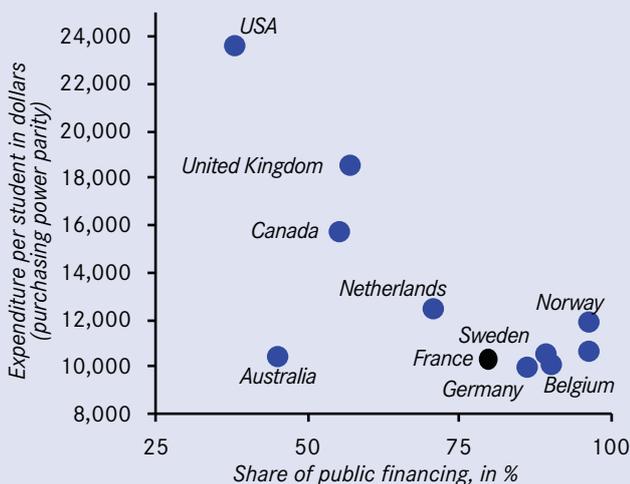
²⁵ Superstar inventors are defined as belonging to the top 1% of the most commonly cited inventors.

²⁶ See Albis, d', H., P.-Y. Cusset and J. Navaux (2016): "Les jeunes sont-ils sacrifiés par la protection sociale?", *Note d'Analyse de France Stratégie*, no 37, January.

Without any consideration about possible limits to international mobility (family ties, company capital, etc.), the optimal life path for a mobile individual would be an education in France, going abroad in order to start a high-level career, and then a return to France to finance their children's studies or receive medical treatment. States are thus at risk of financing education expenditure for individuals not contributing to national growth, and health expenditure for people whose taxes and contributions contributed little to the social system. At the same time, "talented" foreigners may be discouraged by high deductions used for financing an educational system from which they derive no benefit²⁷ and a health system of which they make little use with increasing age.

This situation raises two problems. First, an equity issue as French taxpayers finance the education of individuals who contribute neither to the fiscal system nor to the country's growth. Second, a traditional problem of fiscal competition: because of personal mobility of high skilled workforce, States bearing the cost of their training and education do not receive its total returns, giving them less incentives to invest. This may ultimately lead to underinvestment in tertiary education.²⁸ In fact, there is a decreasing relationship between the share of public funding for tertiary education and the total expenditure per student: countries with tertiary education mainly financed through the public sector (France, Germany and the Nordic countries) have lower levels of expenditure per student, revealing a certain financing constraint (graph 3).²⁹

3. Expenditure per student excluding R&D and share of public financing of tertiary education, 2012



Source: OECD (2015): *Regards sur l'éducation*, OECD Publishing.

Observation 5. The increasing mobility of skilled workers involves risks for the financing of the French model of public tertiary education.

Obstacles to mobility

In the face of increasing outward mobility, it is particularly important to facilitate inward mobility of skilled workers. However, two factors may considerably hinder such inward (or return) mobility: limited portability of retirement rights and administrative complexity for non-EU foreign workers.

Portability and predictability of pension schemes

Difficulties in transferring pension entitlements between countries considerably reduce flows of workers. Today, coordination exists between French and foreign schemes, within the framework of either European Community regulations and directives or bilateral agreements signed with thirty-three countries. These texts make it possible to take into account periods of employment completed in other States in the course of a career, and to add them to periods completed in France, in order to determine pension entitlements. People covered by pension schemes thus benefit from pension entitlements which would not have been granted to them had the various periods of employment in their whole career not been added together and/or from higher pension entitlements (see box 2).

This coordination of pension schemes is likely to facilitate the mobility of skilled workers, although it only provides a partial response to the problem. Indeed, this coordination does not cover so-called occupational pensions, except when such schemes result from compulsory insurance obligations.³⁰ As far as occupational pensions are concerned, European directives³¹ tend towards guaranteeing better protection of entitlements, but do not contain any prescriptions regarding transferability, in the absence of agreements between several Member States, in particular due to heterogeneous fiscal provisions. Construction of pension portability at the European level is therefore mostly incomplete. Outside the European area, France does not have bilateral agreements with all countries and, moreover, these agreements do not enable periods of employment in third countries to be taken into account.

These difficulties fit into the more general problem of individuals with multiple pensions, who have contributed to seve-

²⁷ Tertiary education expenditure represents 1.4 % of GDP in France while the proportion of private financing is only 20%, as compared with an average of 30% in OECD countries, 62% in the United States and up to 71% in Korea (cf. OECD figures 2012).

²⁸ The problem arises even when graduate inflows and outflows are balanced: in the absence of coordination, each country is individually prompted to reduce its expenditure on training and fiscal charges in order to attract workers trained in other countries.

²⁹ See Garcia M. (2016): "L'enseignement supérieur face à des étudiants plus mobiles", *Focus du CAE*, no 12, April.

³⁰ Integration of the supplementary ARRCO and AGIRC schemes [for non-managerial and managerial staff respectively] has been effective since 2000.

³¹ For an analysis of this directive, see Conseil d'orientation des retraites (COR) (2015): *La portabilité des droits dans les dispositifs de retraite supplémentaire : état des lieux et questions nouvelles*, plenary session (*Séance plénière*) of the COR of 8th July.

2. Calculation of basic pensions: An example

Let us assume the example of a woman born at the beginning of 1955 who has contributed for 37 years (148 quarters) in France and 4.5 years (18 quarters) in Austria. This woman with no child wishes to retire in early 2017 at the age of 62. In order to obtain a basic pension in France at the full rate (i.e. 50%), persons with pension cover born in 1955 need to have paid contributions for 166 quarters. Our person is therefore 18 quarters short and, thus, receives the pension resulting from the most favourable calculation between French and EU community rules.

French rules

A reduction of 11.25 percentage points will be applied to the pension as compared with the full rate (18 x 0.625 percentage points, corresponding to the reduction ratio for the 1955 generation), which results in an income replacement rate of 38.75% instead of the full rate of 50%. His basic pension will be calculated as follows:

$$\text{Annual average wage} \times 38.75\% \times 148/166$$

EU Community rules

The contributor has the benefit of the full rate thanks to the 166 quarters of contributions (148 + 18). The basic French pension yields:

$$\text{Annual average wage} \times 50\% \times 148/166$$

In this example, the EU community pension will be allocated since it is more favourable. An Austrian pension is added to this French pension, on a pro rata basis for the period for which contributions were paid.

ral pension schemes in the course of their career, whether abroad or in France, and receive pensions from several different schemes. According to the Pensions Advisory Council (*Conseil d'orientation des retraites*, COR),³² this already applies to more than one in three pensioners of the generation born in 1942 and, of these, 10.5% have contributed to a foreign scheme (i.e. 3.8% of pensioners as a whole). Having multiple pensions is far from having no impact with regard to the total amount of the pension received, due to rules of calculation which vary according to the different schemes and methods of pension calculation, which are not simply proportional to contributions and wages.

In certain countries, compulsory contributions and basic pensions are low, but individuals contribute to pension funds in personal accounts, thus clearly identifying their accu-

mulated credit. In the French system, compulsory contributions are high and lead to higher pension entitlements. However, the multiplicity of basic schemes and occupational pension schemes in France, the pension schemes' high level of dependence upon growth and their lack of visibility regarding changes in the effective income replacement rates make it difficult to individuals to plan their future pensions.³³ This situation is particularly prejudicial for skilled people moving to France on a temporary basis, when they have to decide whether to remain or leave, since their contributions are high and it is difficult to anticipate their pension entitlements. A more understandable public pension scheme, run on more explicit principles (in terms of clearly-defined contributions, for example with notional accounts and conversion ratios that take demographic changes into account), would increase France's attractiveness for temporary work migrations.

Observation 6. The conditions portability and predictability of French pensions are an obstacle to the reception of "talents".

Welcoming foreign workers

Despite successive rearrangements, the complexity of administrative procedures and formalities regarding the reception of non-EU workers, the length of waiting periods for visa obtainment and residence permits and the resulting uncertainty are some dysfunctions which may discourage foreign nationals from coming to work in France.³⁴ In spite of innovations such as the introduction of reception interviews by appointment, the sending of applications by post mail and the establishment of administrative reception facilities in universities, numerous reception centres still have external queues, individuals present in the morning who have still not been received by the end of the day and waiting times exceeding two hours. Moreover, waiting times for the processing of initial applications for residence permits increased from an average of 106 days in 2012 to 122 days in 2014; for renewals, they increased from 34 to 50 days.³⁵ The "skills and talents" residence permit, created in 2006, was intended to "enable the reception of skilled executives, scientists, academics and technicians in order to have the benefit of their skills". However, the measure remained little-known (only 284 permits were issued in 2012); its failure might be attributed to administrative rigidities and excessively restrictive allocation criteria.³⁶

³² Conseil d'orientation des retraites (COR) (2011): *Retraites, la situation des poly-pensionnés*, Neuvième rapport du COR, 28 September.

³³ For a more complete presentation see, Bozio A. and B. Dormont (2016): "Governance of Social Protection: Transparency and Effectiveness", *Note du CAE*, no 28, January.

³⁴ See the 2013 report from the *Inspection générale des Finances* [General Inspectorate of Finances], the *Inspection générale de l'Administration* [General Inspectorate of the French Administration], the *Inspection générale de l'Éducation nationale et de la Recherche* [General Inspectorate of National Education and Research] and the *Inspection générale des Affaires étrangères* [General Inspectorate of Foreign Affairs]: *L'accueil des talents étrangers*.

³⁵ See Ministère de l'Intérieur (2014): *Rapport sur l'accueil des ressortissants étrangers par les préfectures et sous-préfectures*.

³⁶ Report on *L'accueil des talents étrangers* (2013) *op. cit.*

In this context, the law on foreigners in France, promulgated on 7th of March 2016, which created the “Passport for Talent” residence permit, is a notable step forward in our attractiveness policy. Indeed, this permit provides a single long-term residence permit (for a maximum period of four years) for high skilled employees, employees on assignment, researchers, entrepreneurs and investors, performing artists and foreign nationals of renown in a scientific, literary, artistic, intellectual, educational or sportive field. It entitles holders to exercise a professional activity without the possibility of their employment situation being invoked against them and is accompanied by a “Passport for Talents-Family” residence permit issued to the foreigner’s spouse *ipso jure*, also authorising them to exercise a professional activity. Thus, it is necessary to ensure service quality and rapid implementation of the law, with clear and simple procedures for permit issuance, as well as for the principal formalities to be completed on arrival on our territory.

Observation 7. Reception conditions for skilled individuals in France have improved but they still need to be supplemented by an effort to increase rapidity and a quality approach.

Making the tax and social system consistent with the increasing international mobility of skilled labour

The increasing mobility of skilled labour needs to be seen as an opportunity as France disposes of numerous assets. Nevertheless, it requires the creation of greater consistency in our tax and social system and the improvement of reception conditions for foreigners. In particular, three dimensions have to be analysed: the financing of tertiary education, the issue of pensions, and the attractiveness of the French territory for non-residents.

Financing of tertiary education

One might think that in the context of international mobility mentioned above, the most effective manner of ending tertiary education financing problems would be to reconsider its almost free provision. If students financed their studies themselves (potentially by a loan), they would not accumulate debt towards the social and financial system of their study place and their mobility would therefore not pose a problem of financing. However, this overlooks numerous reasons for the non-optimality of exclusively individual financing of studies. First, it may limit access to tertiary education for individuals unable to finance their studies (low family incomes, credit constraints, etc.). In addition, the social benefits (for society as a whole) of tertiary education are greater than the private benefits (for the individual receiving education), which

may lead to excessively low investment by the community. Finally, the individual risk of a difficult labour market insertion may reduce the reimbursement capacity for undertaken studies. Public intervention in the field of tertiary education remain thus necessary.

But the international mobility of skilled persons raises the question of the appropriate level of public intervention. Theories of budgetary federalism teach us that, when public expenditure produces important effects beyond borders, and when choices are relatively homogeneous between States, then shifting expenditure to the federal level may be justified. Tertiary education meets these conditions: given the mobility of skilled workers (which is particularly pronounced within the single market, where individuals are free to settle and recognition of skills is, in principle, guaranteed), expenditure by one Member State has positive effects on the average skill level of workers within the European Union as a whole; moreover, the European Union growth strategy (Lisbon Strategy) is knowledge-based, meaning that Member States should place this objective at the very top of their priorities. The mid-term assessment of the European Union’s long-term budget at the end of 2016 would provide a good opportunity to launch this debate among Member States.

Several options may be considered. One would be to coordinate parts of tertiary education at the European Community level. For example, the European budget could finance leading European universities, selected for a limited (renewable) period of time by international panels.

Another option would be the creation of a compensation scheme for “net educator” countries –those educating more students than the age group born in the respective country. This kind of system has already been in place since 1996 within the Nordic countries (Denmark, Sweden, Norway and Finland). It is based on the principle of a fixed-rate compensation per student in another country part to the agreement (about 4,000 euros per student and per year in 2014), payments being intended to cover 75% of expatriate students. This type of offsetting is positive because it gives each country an incentive to attract foreign students using appropriate educational programmes and reception conditions. It does not rule out private contributions to the financing of universities and schools, but guarantees a minimum resource base in each institution catering for students from other European Union countries.

Recommendation 1. Improve the European-level coordination of public intervention in the field of tertiary education by setting up transfer mechanisms between countries based on student intra-community flows and redirect European budgets towards the financing of human capital.

For non-European Union students, the principle of almost free tertiary education could be reviewed in France based on the British model comprising two categories: “European Union” and “non-European Union” students, the latter being obliged to pay tuition fees close to the cost induced.³⁷ In order to have the benefit of “European Union” status, students need to be EU Member State nationals, and they or their family must have been resident for tax purposes within the EU for five years before the beginning of the study programme. Universities and schools could use resources laid out in non-EU tuition to finance new services aimed at improving quality of education and reception conditions for students, thus increasing their attractiveness, and also to subsidize grants for non-European Union students on the basis of academic excellence criteria.³⁸

The introduction of this kind of co-payment is in line with a recent circular concerning enrolment fees for international students in certain Master’s degrees.³⁹ We suggest following this approach by adapting legislation to the increasing mobility of students. The objective is not to offer different courses for international students, but to ensure that these students fully take part in existing programmes, without obliging French taxpayers to bear the costs induced. The current system, which only allows to set fees for specific diplomas, has triggered a sub-optimal financing situation, to the detriment of admission quality. Conversely, introducing general tuition fees for non-European students would oblige universities to internalise the effect of lower admission standards on their image, under the supervision of the administration and staff.

Recommendation 2. Differentiated co-payments should be introduced for the financing of tertiary education for non-European Union students.

Reducing mobility obstacles

Mobility –inflow and outflow– of skilled workers holds considerable advantages and should therefore not be hindered. Moreover, by the effect of “voting with one’s feet”, this mobility provides a powerful incentive for the implementation of good public policies (public services, health and economic attractiveness). However, as we have seen, mobility in France is currently constrained, in particular, by incomplete portability of pension schemes and inadequate quality of reception for foreign skilled labour.

lity of pension schemes and inadequate quality of reception for foreign skilled labour.

Pensions

The optimal solution regarding portability and predictability of pension schemes would be that all schemes are based on definitively acquired and actuarially neutral⁴⁰ entitlements. Pension entitlements would then be proportional to the contributions made. The actualisation rate would be different for public pension schemes and capitalised pension schemes, but the principle of entitlement acquisition would be the same. However, the idea of international harmonisation in accordance with this principle lacks realism, even at the European level. In the French case, the broad cover provided by the established international agreements with several countries (which include the supplementary ARRCO and AGIRC French pension schemes) is somewhat ruined by the system’s lack of clarity. In the absence of a radical pension system reform in France, which cannot be addressed in this Note, it appears essential, both for mobile persons and those remaining in France, that its clarity be improved, as well as its resilience in relation to economic growth, which is known to be uncertain. This means increased efforts in terms of coordination between schemes, information provision on all schemes to contributors in an entirely accessible manner and greater transparency in terms of actual income replacement rates, while reviewing rules for wage indexing.⁴¹ As far as international coordination is concerned, four paths of progress have been identified:

- Information provision for pension scheme contributors: systematically informing them of secondment options for temporary assignments abroad, incorporating employment periods abroad in individual pension entitlement statements and pension entitlement provision estimates for the purposes of information; this information should be collected, in French and English, and made available on the M@rel (www.marel.fr) platform. Internet users will be entitled to complete the information provided by the administrations;
- International agreements: negotiate the extension of bilateral agreements with our principal non-European Union partners to reach multilateral scope. One objective should be ensuring that accumulated contribution periods in several different countries are taken into account in the same way as in the European Union. Europe and the OECD might usefully take responsibility for this project;

³⁷ The United Kingdom, Sweden, Denmark, Austria, Belgium, the Netherlands and Poland already apply different tuition fees for students born outside of the European Union.

³⁸ Existing research indicates that tuition fees are not a major obstacle to student mobility, reception capacity and quality as well as the cost of student life are the more important variables. See Ragot L. (2013): “Les étudiants étrangers: un enjeu de la politique migratoire”, *La Lettre du CEPII*, no 338, December.

³⁹ *Circulaire DGESIP* [Circular issued by the Directorate General for Higher Education and Professional Integration] A1-5 no. 2015-0066 of 2nd March 2015 concerning the “mise en œuvre particulière de diplômes nationaux de masters dédiés à des étudiants internationaux” [specific implementation of national Master’s degrees dedicated to national students].

⁴⁰ This term is used to designate the fact that, in actualised value, the contributions paid over the working period as a whole are equal to the pensions received over the entire retirement period.

⁴¹ See Bozio and Dormont (2016) *op. cit.*

- Supplementary pensions: relaunch fiscal harmonisation to facilitate the development of pan-European and cross-border supplementary pension systems;
- Short-term mobile labour inflow: extend the right, for workers having contributed for less than two years, to be reimbursed for old age pension contributions, while waiving their entitlements at the time of taking retirement.⁴²

Recommendation 3. Improve the portability of pension entitlements by centralising personal information on a single platform, negotiating multilateral agreements including non-European Union countries, harmonising tax systems regarding complementary pension plans and granting complementary plans the right to contribution reimbursement as far as short-term mobility is concerned.

Welcoming skilled foreign-born labour

The introduction of the “Passport for Talents” and of the “Passport for Talents-Family” (long-term residence permits) is a major step forward in attracting foreign high skilled individuals. However, this measure’s implementation will need to make a substantial contribution to true simplification.

We propose the provision of a specific single contact point for workers applying for “passport for talents” permits within the French immigration agency in charge of the reception of foreigners (*Office français de l’immigration et de l’intégration*, OFII) and the prefecture of the administrative capital of each region. This contact points will ensure a simplified allocation of formalities for the holders of long-stay visas (*visa long séjour*, VLS). This streamlining would also be consistent with the economic authority now assigned to the regions: immigration policy for skilled labour is a major economic issue at the regional level. Such a regrouping would ensure a critical mass of expertise and services, as well as an administrative implementation which is attentive to the requirements of the economic structure. The consulates in the countries of origin would receive applications and supporting documents, according to a national list. They would then pass each application on to the regional OFII concerned, which would be in charge of approaching the relevant administrations and sending its opinion on the issuance of a VLS to the consulate. In case of successful application, the candidates would be issued their VLS and, in liaison with the prefecture, the OFII concerned would offer them a single meeting dedicated to taking fingerprints and issuing the “passport for talents”, the supporting documents being passed on in electronic format

beforehand. The OFII concerned would also be in charge of informing candidates concerning the various different procedures involved in their reception (Social Security registration, schooling of children, employment for spouse, etc.).

Recommendation 4. Create a single regional contact point for the reception of foreign talents; simplify the issuance procedure of “passport for talents” permits by full processing of applications for long-stay visas within consulates; set up a quality procedure.

Although the 2016 Act concerning the law on foreigners in France has considerably improved the issuance conditions of residence permits for students,⁴³ it is important for administrative procedures to be simple and effective. This requires close upstream coordination between consular authorities, the officials of Campus France and higher education institutions to effectively grant visas. This should pass by the generalization of regional contact points and the development of reception platforms for foreign students at the time of enrolment. In the current setup, these contact points could be shared between the universities regrouped in the PRES research and teaching hubs (*pôles de recherche et d’enseignement supérieur*, PRES, groupings of universities and Grandes Écoles). These contact points would enable students to be informed, and even to complete the administrative formalities required for their stay (issuance of residence permits, social security, accommodation, transport, bank, etc.).

Recommendation 5. Develop shared contact points for foreign students between universities and simplify the residence permit application procedure by coupling it with long-stay visa applications.

Increasing attractiveness and creating lasting ties

As we have seen, the quality of the first job is key to create loyalty between high skilled individuals and the respective host country. All measures aimed at enabling skilled individuals to develop their potential are desirable. Creating favourable conditions for business creation and growth, for research and for innovation should contribute to increase the quality and quantity of entrepreneurs, scientists and high-level specialists in our country.⁴⁴ Major upstream efforts need to be made in order to reinforce the renown of French universities and Grandes Écoles and improve the actual reception of foreign students (in association with recommendation 2).

⁴² This provision has recently been introduced for the general social security system (Decree [*Décret*] of 5th February 2016).

⁴³ After having held a long-term residence permit for a maximum period of four years, up to the completion of studies, the issuance of a non-renewable one-year residence permit is possible, on the condition of having been awarded a qualification at least equivalent to a Master’s degree.

⁴⁴ See Toubal F. and A. Trannoy (2016): “The Attractiveness of France for Company Decision-Making Centres”, *Note du CAE*, no 30, April.

On the other hand, the French population abroad constitutes a reservoir of high skilled persons with a non-negligible probability of return to France at one point in time. To better gauge this potential, it is important to gain more detailed knowledge about them. French nationality does not impose any obligations on non-residents, apart from registering on voter lists, although non-compliance is not sanctioned. However, being French constitutes a precious asset for individuals, even when they are non-resident: it implicitly provides an assistance guarantee, in particular in dangerous zones of the world; it also provides a full and integral right to return and the possibility of benefiting from rights pertaining to residents (health coverage, public services, etc.). Yet, we have only a very approximate knowledge of the number of persons born in France and residing abroad. Lacking the possibility to impose an administrative obligation for non-residents based on which reliable statistical data could be elaborated, it would be interesting to exploit the “mirror data” at OECD level (immigration data by origin). One possible approach would be to entrust the OECD with a detailed study of French citizens living abroad (stocks and flows over several years, composition by country, age and qualifications), as Germany did in 2015.⁴⁵ Moreover, outflow data over time could also be regularly used in order to update our knowledge.

Recommendation 6. Improve our knowledge of French nationals abroad. In the short term, this might be done by means of a specific study, in partnership with the OECD, and regular monitoring of migration outflow data.

In the long run, the increasing mobility of graduates involves the rethinking of ties with their country of origin. On the one

hand, regular statistical monitoring, which could be based on consular registers, needs to be carried out. To reach this objective there would be stronger incentives for registration and updating, if necessary supplemented by periodical online surveys. On the other hand, it would be appropriate to look into the basic rights and obligations of French nationals, who have taken advantage of the quality of the public education and health systems and, by virtue of their nationality, enjoy the protection of State services during their time abroad. Social ties require a reinforced system of rights and duties, which may be manifested in priority access (and at preferential fee rates) to French Lycées and the possibility of their children being educated at French universities as “European Union residents” (see *supra*), in return for obligations to be defined, ranging from administrative registration on lists to optional contributions giving access to the entitlements mentioned above. One extreme example of the relationship between the rights and benefits connected with national citizenship and contributory obligations is provided by the United States, where non-resident citizens remain liable for American income tax for all income exceeding 100,000 dollars.

The globalisation of skilled labour employees is an inevitable trend, which may represent an opportunity for France. Thus, strategies to attract high skilled individuals through improved reception conditions, clear and simple systems accompanied with service and academic and entrepreneurial opportunities need to be developed. Conversely, it would be counter-productive to discourage outward mobility: departures contribute to trade and intellectual relations, and the possible returns will bring high benefits to our country. ●

⁴⁵ OECD (2015): *Talent Abroad: A Review of German Emigrants*, OECD Publishing.



**conseil d'analyse
économique**

The French Conseil d'analyse économique (Council of Economic Analysis) is an independent, non partisan advisory body reporting to the French Prime Minister. This Council is meant to shed light upon economic policy issues, especially at an early stage, before government policy is defined.

Chairperson Agnès Bénassy-Quéré

Secretary general Hélène Paris

Scientific Advisors

Jean Beuve, Clément Carbonnier,
Manon Domingues Dos Santos,
Aurélien Eyquem

Research Assistant

Paul Berenberg-Gossler

Members Agnès Bénassy-Quéré, Antoine Bozio,
Pierre Cahuc, Lionel Fontagné,
Cecilia García-Peñalosa, Augustin Landier,
Pierre Mohnen, Corinne Prost, Xavier Ragot,
Jean Tirole, Alain Trannoy, Natacha Valla,
Étienne Wasmer, Guntram Wolff

Associated members

Yann Algan, Anne Perrot, Christian Thimann

Publisher Agnès Bénassy-Quéré

Editor Hélène Paris

Electronic publishing Christine Carl

Contact Press Christine Carl

Ph: +33(0)1 42 75 77 47

christine.carl@cae-eco.fr