

博士人材の学位取得から労働市場への移行：  
フランスと日本の比較研究

The Transition between Thesis to Labor Market  
in France and Japan:  
a Comparative Exploration

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# 博士人材の学位取得から労働市場への移行:フランスと日本の比較研究

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## 要旨

現在、博士学位取得後の労働市場への移行は、先進国で大きな課題となっている。歴史的には、これらの高度な資格を持つ労働者の主要な労働生産はアカデミア部門であり、一般的には高等教育であった。国家間の競争、世界中の知識社会の発展は博士号の役割を変え、博士課程教育に新たな課題を与えている。実際、現代の社会は博士号取得者が高等教育において吸収されるだけでなく、民間セクターや企業においても活用されることが期待されている。このような目標は、アカデミアにおけるパーマネントポジションの獲得が国際的な激しい競争下にあり、博士課程から労働市場への混沌とした専門性の移行であることによって強化されている。

NISTEP と CEREC の研究者は、フランスと日本、両国のデータを用いて、エビデンスベースの国際比較の視点を示す。日本の博士がフランスの博士よりも就職が困難かどうか、早期キャリアにおける任期制雇用率、民間部門での就業率の視点で明らかにしている。

## Title

The Transition between Thesis to Labor Market in France and Japan: Comparative Exploration

## ABSTRACT

Nowadays, PhDs transition from thesis to labor market is a great issue in major developed countries. Historically, the main labor output of these high qualified workers used to be academic sector and more generally Higher Education. Competition between countries, development of knowledge society all around the world have change the role of PhDs and give new challenges to doctoral education. In fact, now, society expects that PhDs integrate Higher Education but also private sector and firms. This goal is also enhance by the fact that there is now a high and international competition in access to permanent positions in academic sector leading to chaotic professional transition from doctorate to labor market. Comparing two national experiences in France and in Japan and using two original statistic dataset, researchers from NISTEP and CEREC demonstrate these evidences in an international perspective. If Japanese PhDs have fewer difficulties find a job than those from France, both graduates are concerned with fixed terms contracts in their early career and low penetration in private organizations.



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# 概要





OECD や EUROSTAT などの国際機関は、国別の PhD のプロダクトや労働市場状況に関するいくつかの指標を提供している。OECD による KNOWINNO プロジェクト (Auriol 2012) では、労働市場における PhD の状況を国際比較することを試みたが、国際比較可能なデータを持つ国は限られていた。

その後、科学技術・学術政策研究所（以下、NISTEP）では、国際比較研究が可能な日本のデータの構築を目指し、「博士人材追跡調査」(Japan Doctoral Human Resource Profiling, 以下、JD-Pro)を 2014 年に開始した。フランスでは Centre d' Etudes et de Recherche sur les Qualifications（以下、CEREQ）が 1990 年代初頭から大規模な教育から社会への移行調査「Generation」を実施しており、日本の「博士人材追跡調査」はこういった諸外国の調査を参考に設計したものである。

今回、日本とフランスの双方のナショナルデータである、NISTEP「博士人材追跡調査」と CEREQ「Generation」を用い、博士人材の置かれている状況についての比較研究を試みた。NISTEP が実施する「博士人材追跡調査」は、2012 年度に博士課程を修了した者（以下「2012 年コホート」という）について、博士課程修了 1.5 年後、3.5 年後に調査を行っている。また 2015 年度に日本の大学院の博士課程を修了した者（以下「2015 年コホート」という）については、博士課程修了 0.5 年後調査を実施した。2016 年度に実施した、最新調査の 2012 年コホート 3.5 年後調査で、調査依頼数 5,044 名、回答数 2,661 名、有効回答数 2,614 名（回答率：52.8%、有効回答率 51.8%）であった。また、2015 年コホート 0.5 年後調査では、大学からの依頼数 13,517 名（依頼率 87.8%）、有効回答数 4,922 名（有効回答率 36.4%）であった。CEREQ の Generation 調査は 1992 年に開始し、近年では 3 年おきに新しいコホートを開始している。現在までに 7 つのコホートがあり、教育機関を離れてから 3 年後のみの短期で終えるコホートと、3 年後、5 年後、7 年後と続く長期コホートがある。最新の Generation2013 では、対象者は全教育課程で 693,000 人、うち、博士は 1,600 人を超える。

### 国際比較の方法

「Generation」の 2013 年コホートと「博士人材追跡調査」の 2012 年コホートの博士課程修了 1.5 年後調査（JD-Pro2012）から、以下のように条件を統一し、比較可能なサンプルを抽出している。その結果、日本の JD-Pro2012 では 1,059 サンプル、フランスの Generation2013 では 1,641 サンプルとなった。

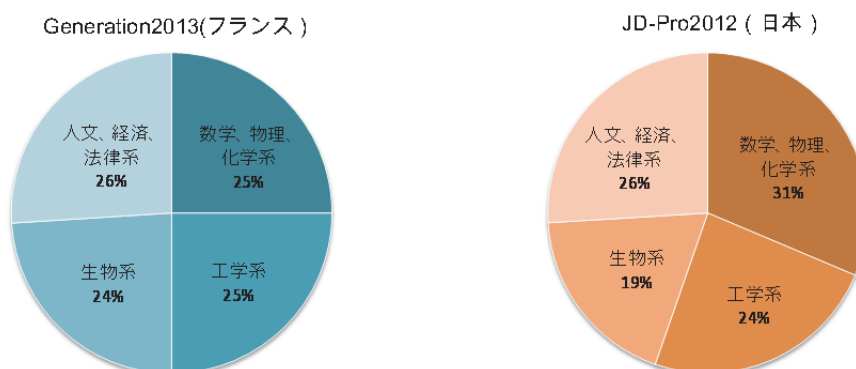
- 1) 2012 年に博士号を取得した修了者
- 2) 調査時点（修了 1.5 年後）に日本に在住している者
- 3) 卒業の時に 35 才以下の者
- 4) 分野が保健系以外の者

## 日仏比較の博士の属性

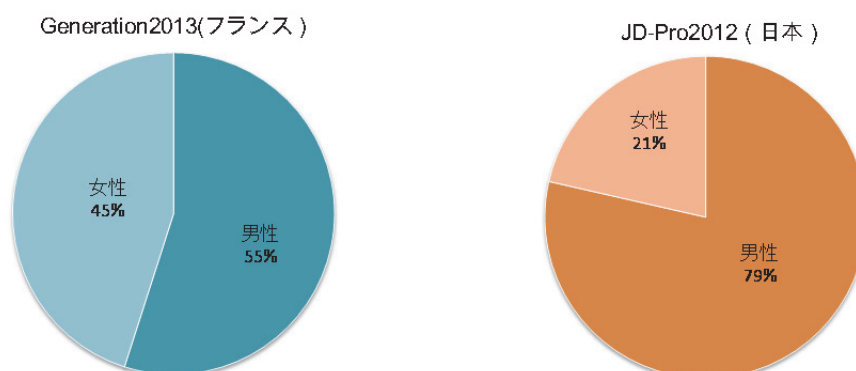
研究分野の構成を見ると、数学、物理、化学系はフランス 25%に対し、日本で 31%とやや多く、生物系は日本でやや少ない。日本で女性比率が 21%と少ないのは特徴的である。

概要図表 1 日仏の博士の属性

### a. 研究分野



### b. 性別



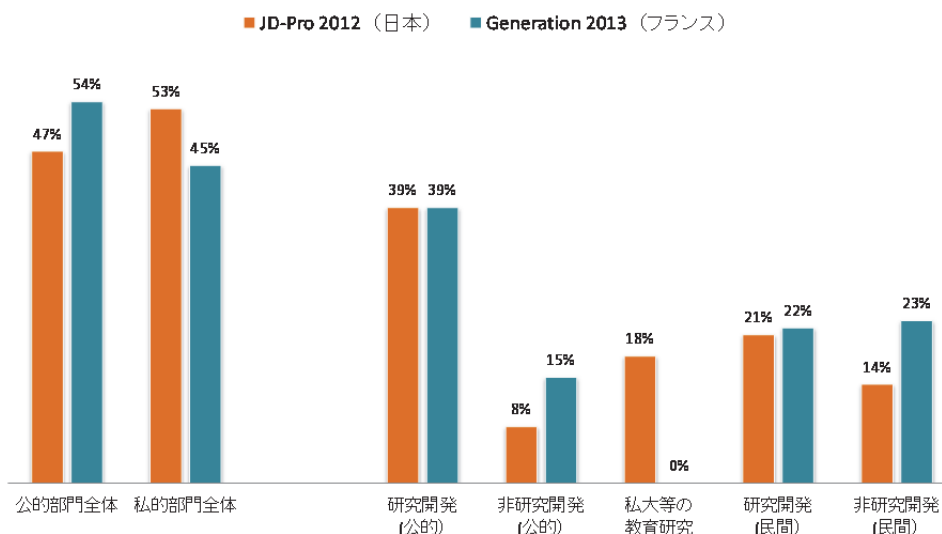
## セクター分類

博士の雇用先セクターは、日本で公的部門 47%／私的部門 53%、フランスでは公的部門 54%／私的部門 46%となっている。フランスのアカデミアは公的部門が大半で、そこに集中していることが分かる。

博士の雇用先セクターについては、通常の 4 分類（公的部門の研究開発、公的部門の非研究開発、民間の R&D、私大等の教育研究）で見る。しかし日本では多数の私立大学があることから、「私大等の教育研究」を追加した 5 分類で見ている。日仏とも公的部門の研究開発職が 39%、民間の研究開発は約 2 割とほぼ同じである。日本独自の私大等の教育研究職は 18%となっており、私立の教育機関で博士人材を多く雇用する日本では、アカデミア（公的部門の研究開発+私大等の教育研究）で働く PhD の比率はフランスよりも大きくなっている（日本 57%、フランス 39%）。

他方、公的部門の非研究開発職はフランスで 15%、日本で 8%、民間部門の非研究開発職はフランスで 23%、日本で 14%と、日本が少ない結果となっている。

概要図表2 日仏博士の雇用先セクター分類

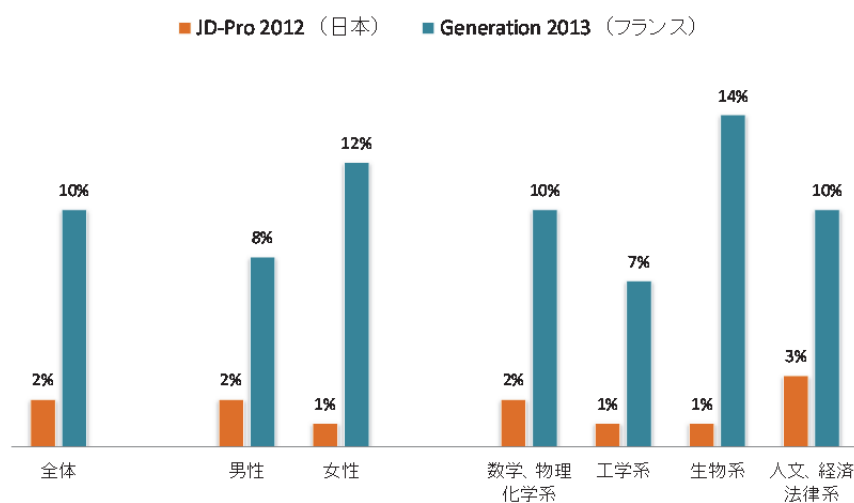


## 雇用状況の日仏比較

### ・失業率

博士課程修了の3年後（3.5年後）の労働市場における最も重要な指標として、失業率を見ている。フランスの2016年の労働市場において、博士の失業率は10%と非常に高い水準である。特に生物学系の失業率が14%と高い。また女性の失業率が男性に比べ高い。このような労働市場の困難は、日本ではあまり見られず、失業率は2015年に2%と非常に低く、研究分野や男女差がない。

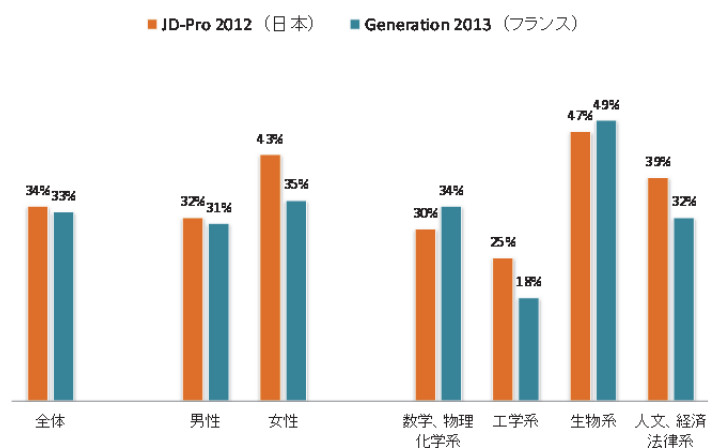
概要図表3 日仏博士の卒業3年後（3.5年後）の失業率



### ・任期制雇用

全体で、日本では 34%、フランスでは 33%が任期制雇用で、両国とも生物系でその割合が最も高く、次いで数学、物理、化学系である。日本では女性で任期制雇用が多いが、フランスでは男女差は認められない。

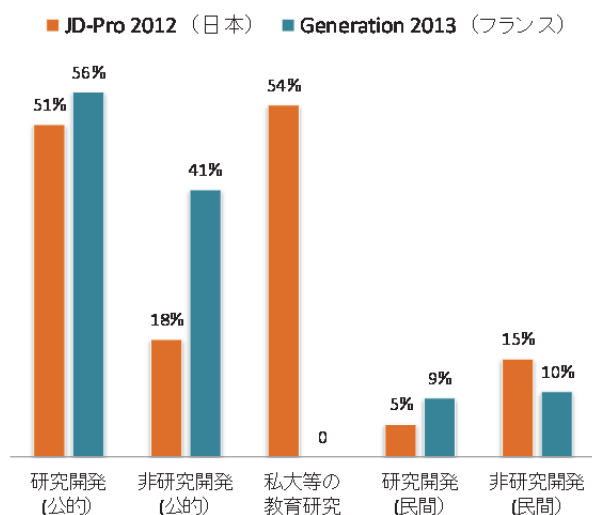
概要図表 4 日仏博士の卒業 3 年後（3.5 年後）の任期制雇用率



### ・任期制雇用（セクター別）

博士の労働市場への移行を検討する際に、パーマネントの雇用であるかどうかは重要な問題である。日本、フランスとも、任期制雇用率は公的な研究開発分野と私大等の教育研究（いわゆるアカデミア）で高く、民間の研究開発、民間の非研究開発で低い。公的部門の非研究開発はフランスでの任期制雇用率が高い。

概要図表 5 日仏博士の卒業 3 年後（3.5 年後）任期制雇用率（セクター別）



なお、巻末に参考として、筆者のジュリアン・カルマンによる NISTEP 所内人材セミナーの記録と資料を掲載している（平成 29 年 2 月実施）

# 本編



# The Transition between Thesis to Labor Market in France and Japan: a Comparative Exploration

Julien Calmand (Céreq<sup>1</sup>), Yoshie Kobayashi (NISTEP<sup>2</sup>), Hiroastu Nohara (LEST<sup>3</sup>)

## Introduction

The doctorate is recognized as one of the most international diploma (Noble 1994; Park 2007) around the world. In fact, compared to other level of study, doctorate is common to every educational system. In every country, doctoral education is the most prestigious diploma and it is linked with high degree of scientific expertise. All around the world, PhD is traditionally a key entry to academia. Nowadays, role of doctoral education changes and there are new challenges for academics who are in charge of doctoral education and also for young PhDs who enter on the labor market. With the development of the knowledge society (Foray 2009), there is a need of high qualified workers in every area on the economy. PhD should be capable to hold positions in academia but also in private companies.

PhD transition and their situation on the labor market are very different under countries. In some of them there is an underproduction of PhD which is dramatic to meet the demands of knowledge economy. In some countries there is a huge production of doctoral degree holders but national state are not capable to keep them on their national labor market. Finally, in some countries PhD holders have difficulties on the labor market, more than graduates with lower education. Despite all this differences, there is a common point; there is a huge competition in access to academic permanent positions, PhDs experience non stable job period in their early working career (Ma and Stephan 2005). Queue line for academic permanent positions depends of the level of the competition.

Such international differences need to be investigated and it is a crucial purpose for scientific researchers in social sciences. International organization such OECD or EUROSTAT give information on PHD production by countries and some indicators on labor market situations. Few years ago, OECD developed the KNOWINNO (Auriol 2012) project in order to compare PhDs situations on the labor market in an international way, but results are constructed on national database. In fact, there is no international survey mainly because researchers face difficulties to construct international and comparable databases. There are some initiatives. In 2018, the National Research University in Moscow<sup>4</sup> launches a study in order to compare doctoral education all around the world. In order to enhance knowledge on this transition process NISTEP (National Institute of Sciences and Technologies Policy) in Tokyo and CEREQ (Centre d'Etudes et de Recherche sur les Qualifications) in Marseille have decided in 2017 to compare PhD transition on the labor market in Japan and France.

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<sup>1</sup> CEREQ: Centre d'Etudes et de Recherche sur les Qualifications, Marseille, France

<sup>2</sup> NISTEP: National Institute of Science and Technology Policy, Tokyo, Japan

<sup>3</sup> LEST: Laboratoire d'Economie et de Sociologie du Travail, Aix en Provence, France

<sup>4</sup> Trends and Issues in Doctoral Education Worldwide: An International Research Inquiry : <https://cinst.hse.ru/en/docedu>

This article presents results of this cooperation between Japan and France. In order to compare PhD transition on the labor market, researchers have exploited two quantitative surveys: the Japan Doctoral Human Resource Profiling and the Generation survey from CEREQ. In the first part of the article we briefly present each national scientific labor market in Japan in France. In the second part, we will focus on the methodological aspects of the statistical comparison of the two surveys. Finally, we will present main results regarding the entrance and the situation of Japanese and French PhD on the labor market.

We investigate some crucial research questions. Are there difficulties in labor market entrance? Are PhD employed mainly in academic sector or in private companies? In academic sector, is there a more or less waiting queue in access to permanent positions? According to different sector access, are there job situations differences in term of job contract or job situations?

### France-Japan scientific labor market, what are the differences?

The aim of this part is to present the reality of the scientific labor market in the two countries. Two points are tackled the transition on the labor market of young PhD and the presentation of statistical surveys which permit to observe this process.

#### France

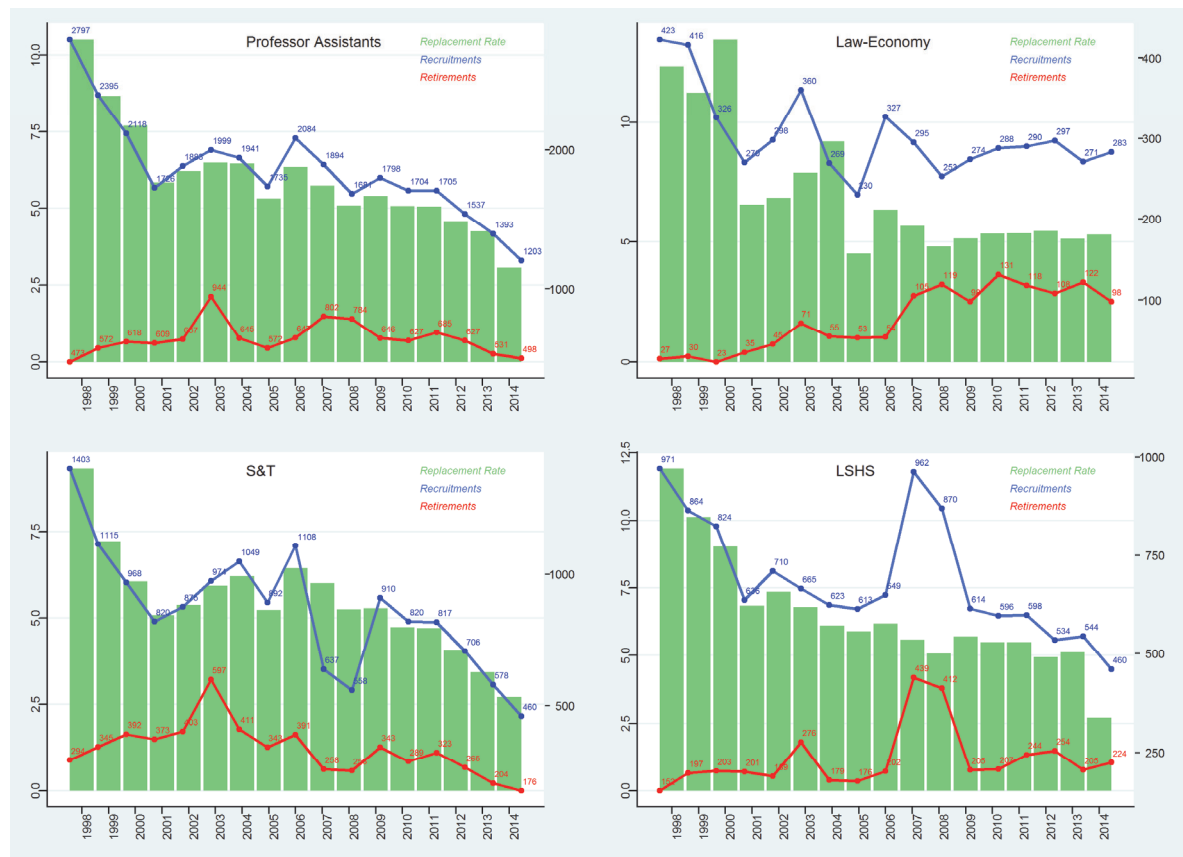
In France, the morphology of "doctorate" audiences evolved over the last 10 years. Thus, the number of PhDs has increased significantly as a result of the massification of higher education and the general rise in the level of education. Compared to OECD countries, as a percentage of an age group, most OECD countries train more doctors than France (Harfi and Auriol 2010) . Administrative data show that the number of doctorates awarded increased from 9,200 in 2004 to more than 9,100 in 2014. However, it is mainly the share of foreign graduates which increased the most from 27% to 44% (2500 to 5500). This data may reflect a stronger internationalization of the degree, less attractiveness of French students for the doctorate course often explained by a disaffection of young people for scientific careers. Distribution by discipline has changed over the same period; the share of graduates in engineering sciences has increased from 10% to 17%. Finally, even if women's share has increased from 41% to 45%, they remain in the minority and are more represented in Humanities.

PhD transition from thesis to labor market used to be described as "difficult" compared to other graduates from French Higher Education. Results from longitudinal statistical survey "Génération" from CEREQ show that, in the early 2000s, three years after their thesis defense, the unemployment rate for PhDs, although low (6.5% for Generation 98 graduates), was higher than that of graduates from "Grandes Ecoles" or than that of the university Master (Calmand 2017). Gradually, this trend reversed, the three-year unemployment rate of PhD increased but stabilized at around 9% in 2013, while under the effects of the economic situation, at the same time, that of university graduates reach 11%. If we witness a reversal, it does not concern all PhDs, there are strong disciplinary disparities and the advantage of graduates from "Grandes Ecole" persists. In addition, the beginnings of PhDs careers are marked by the pregnancy of fixed-term jobs in professional trajectories.



Fixed-terms jobs experiences in early careers can be explained by the regulation of the academic sector which is traditionally the main opportunity for PhDs. In fact, administrative data from National Education Ministry show that permanent positions such as professor assistant (first permanent position in academic) increase drastically over the last fifteen years. As the graphic (1) demonstrates this trend is common to all fields of studies. This reduction of permanent possibility in academic sector has a repercussion on transition on the labor market through higher competition between doctorate and an extent of the access queue line to permanent position. If this phenomenon can be explained by the state regulation of jobs in academic sector, we assume that it also reflects an international science modus operandi with the development of “postdoctoral” experiences (Recotillet 2007). These jobs allow PhD to enhance their thesis (publications, skills development etc.) but especially to wait until new recruitment sessions for permanent positions. From employer side, it allows during a longer period to test the competences of young PhDs (Giret 2011).

**Figure 1 : Professor Assistant position evolution in France from 1998 to 2014**



Source : Bilan des recrutements au postes de Maitres de Conférences, MENESR, 1998-2014, Calmand, 2017

PhDs difficulties on the labor market are also enhanced by their low integration in the private sector. In France, highly skilled jobs in the private sector, and more specifically in R&D, are traditionally fueled by engineering school graduates. While a large literature explains the preference of doctors for academicism (Merton 1973; Menger 1989), very few materials focus on demonstrating the lack of interest of private recruiters for doctoral graduates. The existing one

insists, on the one hand, on a lack of knowledge on the part of employers of PhDs and doctoral training (d'Agostino et al. 2009) and on the other hand on a preference for graduates of “Grandes Ecoles” who would have a more developed culture of the company and more transferable skills acquired by their training (Mason, Beltramo, and Paul 2004). PhDs are therefore poorly represented in companies and especially in R&D jobs. The administrative data of the MENESR / DGRI (Perrain and Boinet 2017; Perrain 2016) show that over the period 97-2013, the share of researchers in companies with a doctorate as the highest degree has decreased.

In order to face these difficulties, French public authorities have launched a large set of reforms since the middle of the 2000's. Lots of them are related to doctoral education. The ministerial order of August 2006 marked a turning point in the history of doctoral education in France. First, it made an explicit reference to professional integration of the graduates as a central issue of doctoral education. The point had never been mentioned in the numerous regulations passed on the subject since the 1970s. Second, it stated clearly the doctoral programs do not prepare exclusively for careers in the public sector of academic research, as it was traditionally considered, but also for employment in the private sector. Consequently, doctoral schools were assigned the new mission of fostering the integration of new PhDs on the labor market. Nowadays, doctoral studies does not have much to do with what in was twenty years ago. Now doctoral students should prepare and secure their professional entrance in the labor market in addition to thesis writing. On the other side, doctoral schools have emphasized student supervision in order to avoid chaotic scholarship and professional pathways.

One of the initiatives settled by French Public Authorities is related to higher observation of the PhD transition to the labor market. Recently, in an article (Calmand 2016), we demonstrate that there are more than thirties devices (at local or national level) that gives information on PhDs' professional pathways. Data used in this article from Génération national survey plays a great role in this environment.

## Japan

Before the description of the Japanese labor market for PhD graduates, we may have to refer to the Graduate School reforms and the evolution of PhD students in recent years.

In accordance with the emergence of knowledge economy, Japanese policymakers in charge of the higher education system projected to reform the educational and professional pathway constituted by PhDs, with a common aim of speeding up scientific knowledge production and innovation.

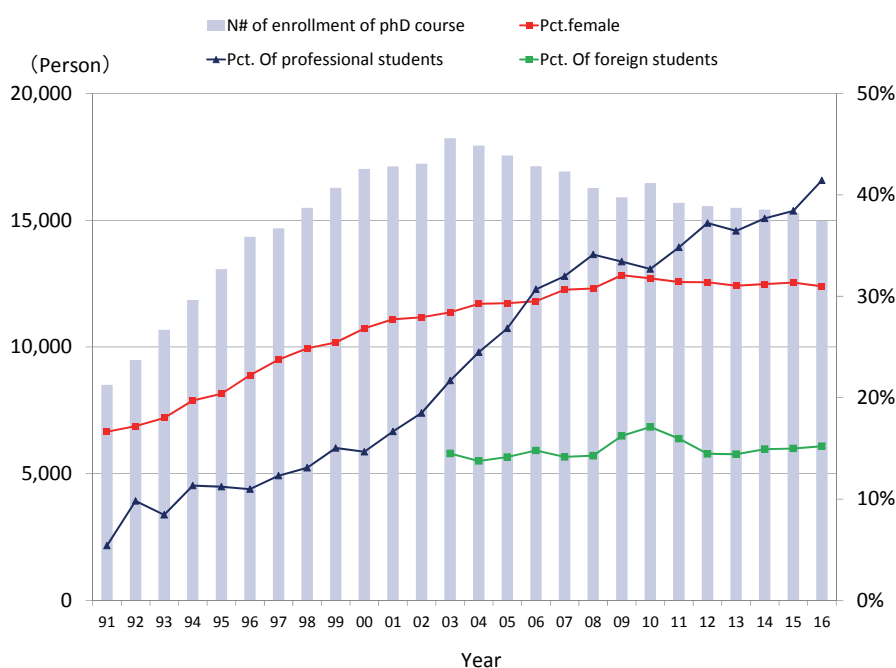
While PhD programs are highly valued within the Japanese university system, they remained traditionally under the hierarchical control of the ‘chair system.’ In the early 2000s, the Ministry of Education tried to radically reform the system by introducing a greater degree of competitiveness into it. The national universities became autonomous agency in 2004: teaching staff and researchers, previously civil servants, were then employed on private open-ended contracts. At the same time, academic research institutions and Graduate Schools were required to undergo competitive tendering procedures before their research program could be funded. Subsequently, around 30 world-class university ‘centers of excellence’ were to be created: these

benefit from substantial financial resources, which are distributed to fund equipment and provide financial support for PhD students and post-docs. This increasingly selective funding is reinforcing the existing university hierarchy and creating a marked split between research universities, regarded as producers of scientific excellence, and the teaching universities. Consequently, the conditions under which PhD students are working are diversifying further, depending on whether or not they belong to doctoral schools that are beneficiaries of the 'center of excellence' programs.

The PhD training remains very heterogeneous: the reforms have not completely dislocated the 'chair system,' even though it has been replaced by an American-style 'principal investigator system. Graduate schools continue to be governed by the professors in charge of the research institutes, in such domains as the organizational structure of courses and, primarily, the future careers of PhD students themselves. As a result, the PhD qualification has a high symbolic profile in academy, but a low profile among private employers who are not part of the academic establishment.

As far as the conditions of doctoral study are concerned, we must mention the fundamental difference, when one compare the two countries Japan-France. In fact, Japanese PhD students are considered fundamentally as 'students in training', whereas their French counterparts are virtually 'research workers' remunerated either by academic grants, fellowships or research contracts. It's why there are few PhDs recipients of fellowships in Japan (25%: Mext, 2012), and a part of them ought to often fund their studies through casual works and/or by bank loans. Consequently, more than half of young primo-students (who go directly to the doctoral courses after Master degree) carry about, on average, 4.4 million yen of student loan, when they achieve their courses. So, we must keep in mind such difference of 'status' between France and Japan.

Figure 2 General Information of Doctoral Course



Source : Developed based on the School Basic Survey, Ministry of Education, Culture, Sports, Science and Technology, and other MEXT survey.

[http://www.mext.go.jp/b\\_menu/shingi/chukyo/chukyo4/004/gijiroku/\\_icsFiles/afieldfile/2010/09/27/1297248\\_04.pdf](http://www.mext.go.jp/b_menu/shingi/chukyo/chukyo4/004/gijiroku/_icsFiles/afieldfile/2010/09/27/1297248_04.pdf)

As to the evolution of PhD students, they are by definition the holders having cutting-edge knowledge and skill who may have to play a central role in the creation of new knowledge and promote the innovation through the development of science and technology. Yet the PhDs production is declining in Japan for a decade, which means a certain falloff of reservoir of talented young people.

According to the figure 2, the number of young students enrolled in Japanese doctoral courses increases up to the early 2000s and starts to decline afterwards. In 2016, they account for 14,972 persons, while they reached a peak in 2003 where 18,232 students were registered in the different graduate schools all over the nation. This means that they dropped off under the 15,000 line for the first time in 19 years since 1997. Between the two moments, the number of young PhD students has declined by more than 3,000. In terms of PhDs density as to the population, Japan is also one of the nations which produce the fewest doctors among the OECD countries. From this point of view, Japan is left behind the main European and American competitors.

The composition of PhD students is also changing. This category experiences a great diversification:

In recent years, PhD students constitute a more and more heterogenic category composed of different groups. Also, they have various motives for engaging in a

doctoral course. We can distinguish three groups: young primo-students, mature adult students -who have returned to university after some years of professional experience - and foreign students.

The most striking phenomenon is that the proportion of mature adult PhD students is steadily increasing, while the primo-students is decreasing. The former has grown up rapidly to represent up to 40% of all category in 2016. The latter is highly interested in research itself and much more academy-orientated, while the mature adult students are rather applied science-orientated and sometimes recommended by their employers. Their behaviors during the study and the professional choices after graduation are quit logically very different. As to the foreign students, who account for less than 20%, their number remains relatively stable. Many foreign students come to Japan from Asian countries nearby -China, Korea, Vietnam, Indonesia etc., as they usually receive a fellowship program or tuition fee exemption. However, after graduating from the doctoral course, more than half of foreign students are said to return to their home countries. Japan is expected to use them more effectively to provide the domestic industry or the research institutes with highly skilled people, in order to fill the gap between demand and supply. Finally, the number of female PhD students is also increasing, but the percentage of around 30% is still under the average rate of the OECD countries. This talent pool and its effective use are one of big challenges Japan must address in the near future.

Back to the labor market situation for the young PhD graduates, supply-demand equilibrium is becoming less and less favorable for them. Mainly the academic tenure jobs are reducing, as the universities don't offer any more stable posts due to the declining demographic problems (shortcoming of young teenagers). The government also tends to reduce the budget and posts destined to the national institutes of research. This phenomenon however has happened not only in Japan but also all over the world (Cyranoski et al. 2011). Thus, increasing numbers of young PhDs are often obliged to pass through an intermediate and 'precarious' stage in their careers before gaining stable jobs in academia. The transition between graduate school and academic job becomes tortuous and difficult. Equally, the efforts of governments to interest large Japanese companies in the skills of PhD graduates have seemed to meet with only small success.

The fact is that in the late 1990s, the Japanese government put in motion a policy to triple the number of postdoc positions with non-permanent contract up to ten thousand and stepped up PhD recruitment to meet that goal. This policy aimed at bringing Japan's science capacity up to match that of the American and European countries, by providing the universities and research institutes with the talented but flexible labor force. But this measure became quickly disapproved because, although the objective attained, it lacked a long-term consideration about where all those postdoc young researchers were going to end up. Universities don't need more academic staff, as the number of young students entering higher education has been

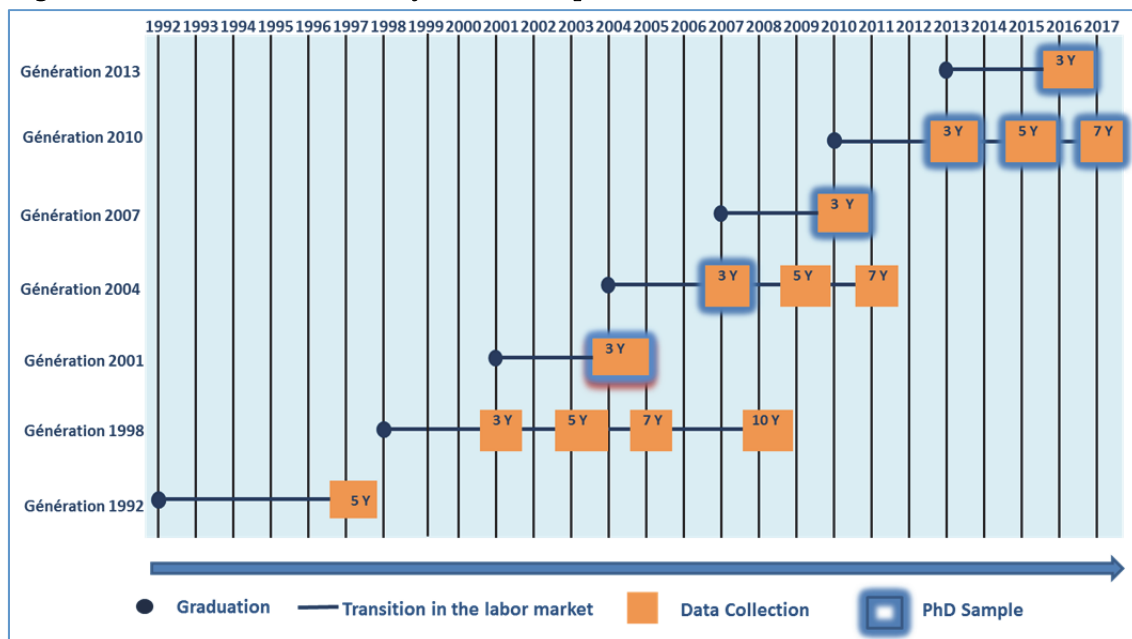
reducing. Japanese industries, which have traditionally preferred master's graduates who can be trained on the job, continue to hesitate the recruitment of PhDs graduates. This means that fewer jobs -particularly stable jobs- remain for the current generations of PhD students. A great majority of them have to get through the post-doc position which means that their jobs are maintained only on the basis of 'soft money'. The main characteristics of such precarious jobs are uncertainty, instability, and insecurity which directly reflect on the work-life balance of postdocs.

Such discouraging prospects may have triggered the drop-off of number of young students entering PhD programs after the year 2008. In an era of knowledge economy, the volume of talent pool and its distribution remain of high importance for the society, as it is an essential producer and diffuser of knowledge.

### Generation Survey from Cereq

The Generation survey is labelled as a national statistic system. The longitudinal aspect of Generation is one of the best advantage. Since 1992, the Céreq has launched 7 waves of the Génération survey. Since the 1998, there are data collection about transition from school to work of young people who enter on the labor market three years before. As the graph shows, the Génération device is structured around a regular entanglement of surveys at 3 years, but also at 5, 7 and sometimes 10 years. The young people who came out in 1998 were, for example, re-interviewed in 2001, 2003, 2005 and 2008 in order to be able to study career developments and mobilities and thus enrich the analyzes carried out on entering the workforce. The presence of regular surveys every three years makes it possible to take into account the effects of the economic situation on school to work transition..

**Figure 3 The Generation survey from Cereq**



Source : Calmand, 2016

The Génération system is based on the concept of first-time outgoing students in a given year. This definition, which has changed somewhat since 1998, allows the comparability of the surveyed populations and is based on the following criterias:

- To have been enrolled in a training establishment in France during a given school year n.
- Leaving the education system between October n-1 and October n.
- Have not interrupted studies for one year or more before year n (except for health reasons).
- Not returning to school during the school year following entry into the labor market.
- 35 years old or younger in year n.
- To be located in France (Metropolitan + DomDOM) at the time of the survey.

The last survey Génération 2013 is used in this research. From April to July 2016, Céreq surveyed a representative sample of the 693,000 young people who left the education system for the first time in France during or at the end of the academic year 2012-2013. Some 19,500 young people of all levels of education responded to this telephone survey; the average interview duration was 30 minutes. As a basis for investigating the differences in the conditions of access to employment depending on the initial education completed and various individual characteristics (gender, social background, national origin), the survey gathered information on each respondent's educational trajectory and its specific characteristics (such as time spent abroad, for example) but more particularly on their month-by-month employment situation from the time they left the education system to the spring of 2016.

The “Génération” survey is a great device when one wants to address the question of PhD transition from thesis to labor market. In fact, since 2001 there is a “PhD module”, it means that there are some specific questions addressed to PhD and this population is overweighed in the “Génération” sample. In 2016, more than 1600 PhDs<sup>5</sup> who have finished their doctoral training in 2013 have been interviewed about their scholarship and their first three years on the labor market.

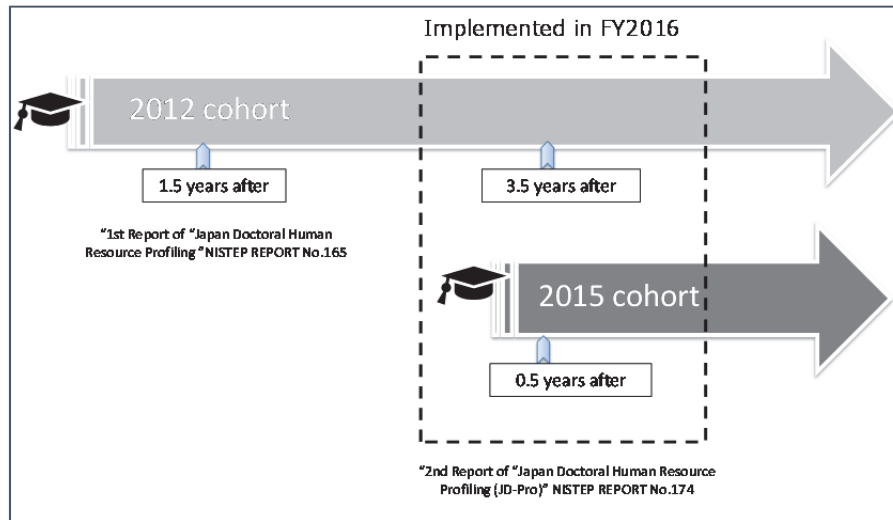
### Japan Doctoral Human Resource Profiling

In view of that, the National Institute of Science and Technology Policy (NISTEP) has been conducting the Japan Doctoral Human Resource Profiling (JD-Pro) survey since 2014 with the aim of capturing information concerning the status of doctoral course graduates prior to their enrollment in doctoral courses, their experiences during the period of the course, and their current employment status and status of their research activities. Through this survey, NISTEP aims to continuously capture information about the career path of doctoral course graduates, and to build evidence toward the realization of policy formulation that is based on objective grounds.

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<sup>5</sup> PhDs from Health, Pharmacy are excluded in the Generation sample

**Figure4: Implementation of the Japan Doctoral Human Resource Profiling Survey**



Source : NISTEP, Kobayashi, 2018

In 2016, the survey was conducted on graduates who had completed their doctoral courses at graduate schools in Japan in FY2012 (hereafter, “the 2012 cohort”) 3.5 years after the completion of their doctoral courses, and on graduates who had completed their doctoral courses at graduate schools in Japan in FY2015 (hereafter, “the 2015 cohort”) 0.5 years after the completion of their doctoral courses (Figure4). The contents of the survey include the following: reasons for pursuing a doctoral course, educational/research experience during the doctoral course, financial support during the doctoral course, status of obtaining the doctoral degree, employment status, career consciousness, status of research, and state of households. With regard to the response status, in the 2012 cohort survey conducted 3.5 years after the completion of the doctoral courses, the number of subjects to whom surveys were sent was 5,044; 2,661 responses were received, of which 2,614 were valid responses (Response rate: 52.8%, Effective response rate: 51.8%). In the 2015 cohort survey conducted 0.5 years after the completion of the doctoral courses, the number of subjects to whom surveys were sent from universities was 13,517 (Request rate: 87.8%), and 4,922 valid responses were received (Effective response rate: 36.4%).

#### A comparative observation of PhD transition to labor market: methodological issues

This explanatory incentive between CEREQ and NISTEP stands on the comparison between two surveys: the “Generation 2013 cohort, interrogation 3 years later of leavers from French Educational System in 2013” in France and the “Japan Doctoral Human Resource Profiling (FY 2012 doctoral course graduates\_3 years later)” in Japan. The aim of this part is to present the two surveys and to explain how we make them comparable.



### Methodological approach

The previous sections show that there are some differences in the database that we are using in this report. As a consequence we need to adjust fields of the two samples in order to make them comparable. In fact, as the field of the Japan survey seems to be wider we need to restrict it on special aspects:

- PhDs who are graduated in 2012
- PhDs who live in Japan at time of data collection in 2015
- PhDs who are aged under 35 years old at time of graduation
- PhDs who are not been graduated in Health.

**Table 1: JD-Pro 2012 sample evolution**

	<b>Initial JD-Pro 2012 Data</b>	<b>Graduated in 2012</b>	<b>Live in Japan in 2015</b>	<b>Under 35 years old</b>	<b>Not graduated in Health</b>
	n	n	n	n	n
<b>Sample size</b>	5052	4371	2061	1434	1059

*Source : JD-Pro 2012, Calmand, Kobayashi, Nohara, 2018*

Table2 shows the decrease of Japan Doctoral Human Resource Profiling sample after restrictions. As a final sample, we retain 1059 individuals in the Japan database; it means that only 21% of the overall initial Japan sample is used in our exploitations. Using weights, the Japan sample is around 3045 individuals and the French sample is around 7814 individuals. The table () shows the repartition by fields of studies for each sample. There are some differences, PhDs from Math, Physic and Chemistry is more represented (31% against 25%) and those from Biology is less represented (17% against 24%) in the Japan database. One major difference between the two databases affects the repartition between men and women. Women are underrepresented in the Japanese sample, only 23% of the sample against 50% in the French sample.

**Table 2 :JD-Pro 2012 and Generation 2013 comparable structure**

	<b>JD-Pro 2012</b>			<b>Generation 2013</b>		
	n	N	%	n	N	%
<b>Fields of studies</b>						
Math, Physic and Chemistry	332	935	31%	437	1896	25%
Engineering field	254	771	25%	343	1973	25%
Biology	198	529	17%	412	1899	24%
Humanities, Economics and Law	275	810	27%	479	2046	26%
<b>Gender</b>						
Men	832	2342	77%	918	3918	50%
Women	227	704	23%	753	3898	50%
<b>Total</b>	<b>1059</b>	<b>3045</b>	<b>100%</b>	<b>1671</b>	<b>7814</b>	<b>100%</b>

Source : JD-Pro 2012 & Generation 2013 , Calmand, Kobayashi, Nohara, 2018

## Exploratory results

The aim of this section is to present exploratory results about PhDs transition from thesis to labor market in Japan and in France. Before starting, we have to precise that in Japan data PhD from 2012 are interviewed in 2015 and in the French survey they are interviewed in 2016. We only focus our analyses at time of interviews, which means that we do not consider professional trajectories during the first years on the labor market. We will present main indicators that are important when once need to consider PhDs transition on the labor market process.

### Employment/Unemployment

PhD situation on the labor market three years after graduation is fundamentally opposed in France and in Japan. French PhD situation on the labor market in 2016 is characterized by a high level of unemployment rate. In fact, the unemployment rate is 10% in 2016. PhDs in Biology, Math, Physics and Chemistry, Humanities, Economics and Law are those who are the most unemployed at time of data collection. Men are more often employed than women in France. These labor market difficulties do not exist in Japan. The unemployment rate is very low in 2015 and there are no fields of studies or gender differences.

**Table 3 : Labor market situation three years after graduation**

	JD-Pro 2012				Generation 2013			
	Employment	Unemployment	Out of Labor market	Unemployment rate	Employment	Unemployment	Out of Labor market	Unemployment rate
<b>Fields of studies</b>								
Math, Physic and Chemistry	98%	2%	1%	2%	87%	10%	3%	10%
Engineering field	98%	1%	9%	1%	90%	6%	4%	7%
Biology	97%	1%	9%	1%	82%	13%	5%	14%
Humanities, Economics and Law	96%	3%	0%	3%	86%	10%	4%	10%
<b>Gender</b>								
Men	97%	2%	6%	2%	88%	8%	4%	8%
Women	96%	1%	8%	1%	85%	12%	4%	12%
<b>Total</b>	<b>97%</b>	<b>2%</b>	<b>7%</b>	<b>2%</b>	<b>86%</b>	<b>10%</b>	<b>4%</b>	<b>10%</b>

Source : JD-Pro 2012 & Generation 2013 , Calmand, Kobayashi, Nohara, 2018

### Job Contract

As we wrote in introduction, access to permanent position is one major difficulties of PhD. Comparison between Japan and France seems to confirm this trend. In these two countries, a third of a cohort does not have a permanent contract at the time of the survey. PhDs from Biology and Humanities, Economics and Laws are the most concerned by non-stable positions three years after their graduation. The situation of PhDs graduated in Biology in Japan and in France suggests that there is an international type of labor market regulation in these particular fields of studies. Our results show that there are more gender differences in Japan than in France.

**Table 4 : Job contract among PhDs who are in employment three years after graduation**

	JD-Pro 2012			Generation 2013		
	Long term	Fixed term	Other	Long term	Fixed term	Other
<b>Fields of studies</b>						
Math, Physic and Chemistry	68%	30%	2%	64%	34%	2%
Engineering field	74%	25%	2%	81%	18%	2%
Biology	50%	47%	3%	50%	49%	2%
Humanities, Economics and Law	58%	39%	3%	62%	32%	6%
<b>Gender</b>						
Men	66%	32%	2%	67%	31%	3%
Women	54%	43%	3%	62%	35%	3%
<b>Total</b>	<b>64%</b>	<b>34%</b>	<b>2%</b>	<b>64%</b>	<b>33%</b>	<b>3%</b>

*Source : JD-Pro 2012 & Generation 2013 , Calmand, Kobayashi, Nohara, 2018*

### Sector repartition

One major point of the PhD transition on the labor market is to consider sector repartition at time of data collection. Two results need to be identified: the repartition between public and private sector and the repartition between the academic and R&D activities.

#### Public/Private repartition

In France, PhD integrates more often the public sector than in Japan (54% in France against 47% in Japan). There are some interesting differences. In both countries, PhDs in Biology and in Humanities, Economics and Law are those who are working in the public sector three years after graduation. Graduates from engineering fields in France are working are more recruited in the private sector than in Japan (34% in France against 45% in Japan). Do we can conclude that PhDs in France have more difficulties to integrate firms? It is not simple to respond to this question as far as we know that in Japan there are a large number of private universities, it means that among the 53% of PhDs who are working in the private sector a large number of them are not working in firms but rather in Higher Education.

**Table 5 : Sector repartition among PhDs who are in employment three years after graduation**

	JD-Pro 2012		Generation 2013	
	Public	Private	Public	Private
<b>Fields of studies</b>				
Math, Physic and Chemistry	45%	55%	52%	48%
Engineering field	45%	55%	34%	66%
Biology	51%	49%	61%	40%
Humanities, Economics and Law	48%	53%	71%	29%
<b>Gender</b>				
Men	46%	54%	50%	50%
Women	52%	48%	59%	41%
<b>Total</b>	<b>47%</b>	<b>53%</b>	<b>54%</b>	<b>46%</b>

Source : JD-Pro 2012 & Generation 2013 , Calmand, Kobayashi, Nohara, 2018

#### **Academic, R&D activities repartition**

The aim of the next exploitation is to figure the repartition between research activities and type of organization. Generally we can split into four categories: public research, public non research, R&D and private non research. We cross the nature of the organization of the job activities in order to have this classification. For Japan, activities such as Researcher (natural sciences, humanities, and social sciences), Manufacturing engineers (development) and Schoolteacher (university, graduate school) are considered as research activities. For France, we use the Frascati classification in order to have the research/non research repartition. Considering Japan Higher Education specificities (a great importance of the private educational sector) we decide to add one more category for this case which is private educational research. This category is not relevant for France because there is a few PhD who are working as a research in private schools.

**Table 6 : Sector, activities repartition among PhDs who are in employment three years after graduation**

	JD-Pro 2012				
	Public Research	Public Non Research	Private Educational Research	R&D	Private Non Research
<b>Fields of studies</b>					
Math, Physic and Chemistry	39%	6%	9%	34%	12%
Engineering field	37%	9%	12%	25%	18%
Biology	45%	6%	12%	20%	18%
Humanities, Economics and Law	36%	11%	39%	2%	11%

Gender					
Men	38%	8%	16%	24%	15%
Women	42%	10%	24%	12%	13%
<b>Total</b>	<b>39%</b>	<b>8%</b>	<b>18%</b>	<b>21%</b>	<b>14%</b>
	Génération 2013				
	Public Research	Public Non Research	Private Educational Research	R&D	Private Non Research
<b>Fields of studies</b>					
Math, Physic and Chemistry	42%	10%	N.S	28%	20%
Engineering field	28%	6%	N.S	36%	30%
Biology	38%	22%	N.S	19%	21%
Humanities, Economics and Law	47%	24%	N.S	6%	22%
<b>Gender</b>					
Men	39%	11%	N.S	24%	26%
Women	39%	20%	N.S	21%	20%
<b>Total</b>	<b>39%</b>	<b>15%</b>	<b>N.S</b>	<b>22%</b>	<b>23%</b>

Source : JD-Pro 2012 & Generation 2013 , Calmand, Kobayashi, Nohara, 2018

Results exposed before are really different than those before which only consider a public/private repartition. In fact, in Japan as in France, there is the same figure of PhDs who are working as a researcher in a private company (around 20%). In Japan, PhDs from Math, Physic and Chemistry as those who are working in this sector, in France it is PhDs from Engineering field. In France; a larger PhDs are employed in private sector without doing research activities (23% in France against 14% in Japan), the same result appear when we consider employment in public sector. If we consider that in Japan, a lot of PhDs can be employed in private educational organization, then PhD who work as an educational researcher is greater than in France (57% in Japan against 39% in France). In Japan PhDs from Humanities, Economics and Law are more recruited as researcher in private educational organization. As the final result, we can assert that recruitment in academic sector (public or private) is maybe higher in Japan than in France.

#### Fixed-terms contract by sector repartition

Access to permanent position is a crucial issue when we consider PhDs transition on the labor market. In France as in Japan, part of fixed terms contract is higher in academic sector than in private sector. Considering PhDs who have research activities in both countries, non-stable positions are lower in the private sector than in academic (private or public in Japan). Graduates who work in private R&D have the smallest part of fixed terms contracts in France or in Japan. For Japan is especially low around 5%.

**Table 7 : Fixed terms contract by sector, activities repartition among PhDs who are in employment three years after graduation**

	JD-Pro 2012				
	Public Research	Public Non Research	Private HE Research	R&D	Private Non Research
<b>Fields of studies</b>					
Math, Physic and Chemistry	55%	15%	62%	3%	11%
Engineering field	36%	10%	70%	3%	7%
Biology	70%	27%	64%	14%	21%
Humanities, Economics and Law	44%	23%	45%	0%	24%
<b>Gender</b>					
Men	49%	18%	53%	4%	13%
Women	58%	19%	55%	12%	22%
<b>Total</b>	<b>51%</b>	<b>18%</b>	<b>54%</b>	<b>5%</b>	<b>15%</b>
	Génération 2013				
	Public Research	Public Non Research	Private HE Research	R&D	Private Non Research
<b>Fields of studies</b>					
Math, Physic and Chemistry	62%	23%	N.S	13%	7%
Engineering field	50%	32%	N.S	3%	2%
Biology	75%	53%	N.S	17%	24%
Humanities, Economics and Law	41%	38%	N.S	15%	13%
<b>Gender</b>					
Men	60%	38%	N.S	7%	6%
Women	53%	42%	N.S	12%	16%
<b>Total</b>	<b>56%</b>	<b>41%</b>	<b>N.S</b>	<b>9%</b>	<b>10%</b>

Source : JD-Pro 2012 & Generation 2013 , Calmand, Kobayashi, Nohara, 2018

In academic sector, in both countries, we find a high share of non-permanent positions three years after graduation. In Japan, in public academic sector, more than half of PhDs are not employed as a permanent researcher. In the private academic sector, this share is equivalent. In France, 56% of the PhDs who have left the educational system in 2013 and who are employed in academic sector have a fixed terms contract in 2016. In France as in Japan, graduates from Biology and Mathematics, Physic and Chemistry are those who are the most concerned by non-stable positions in public academic sector.

## Conclusion

Exploratory comparison of Japan and French PhDs transition from thesis to labor market is a fruitful exercise for researchers that want to understand this process in an international perspective.

Exhausting statistical data limitations, national labor market and doctoral training particularities, first results from this research work shows rather similitudes than differences. If PhDs from Japan are less concerned by unemployment situations in their early professional careers than those from France, in both countries they faced difficulties to access permanent positions in academic sector (public and private in Japan) and most of them have fixed-terms contracts three years after graduation.

The comparison does not limit to entire population but also when fields of studies differences are taking in account. In fact, PhDs graduated in Biology, Mathematics, Physics and Chemistry experience more often these chaotic pathways in their early career. These results suggest that there is an international trend in these particular fields of studies characterized by a higher competition for access to permanent positions in academic sector.

There is also a common point in France and in Japan when considering PhDs transition from thesis to labor market. PhDs in Japan and in France integrate jobs in private organization in the same proportions. Only a fifth of them are employed as private R&D researchers at time of interviews. Contrary to those who integrate academic sector, in Japan as in France, PhDs who occupied these particular professional occupations are more concerned by long-terms contracts. Fewer research question need to be addressed in the future. The next steps of this work will focus on the role of doctoral training in the transition from thesis to labor market and also the satisfaction on the job.

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博士のキャリアに関する日仏比較研究を実施するために、筆者の Julien Calmand が NISTEP に滞在していた間（平成 29 年 2 月 5 日から 2 月 9 日）に所内人材セミナーを開催した。ここではその内容、及び使用した資料を掲載している。

題目： 博士人材の論文生産から実業への転換：フランスの場合  
PhDs transition from thesis to labor market: the French case

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NISTEP 国際客員研究官

日時： 平成 30 年 2 月 8 日（木）13:30～15:00  
場所： 文部科学省 科学技術・学術政策研究所 大会議室 16B

主催： 科学技術・学術政策研究所

### 概要：

フランスではすべての教育段階を終えた（離れた）者について、大規模な「教育から社会への移行調査（ジェネレーション調査）」を 1980 年代から実施している。ジュリアン・カルマン氏はそのプロジェクトリーダーを 10 年以上に渡り担っており、特に博士の労働市場への移行状況については詳しい知見を持つため、ジェネレーション調査の概要、フランスの博士の就業状況、調査等から得られたエビデンスによる政策評価、政策立案への活用についてお話を伺った。

### 講師略歴

2004	フランス バーガンディー大学修士号取得
2004-2007	Cereq 研究所 DEEVA 調査研究 担当
2007-現在	Cereq 研究所 DEEVA 調査研究部 高等教育 主任
2015	フランス バーガンディー大学博士課程

講演言語：英語（通訳あり）

(司会) アメリカでは 70 年代、また、欧州諸国では 1990 年代から追跡的な調査データを用いた研究が行われているのですが、日本の場合は 2000 年代になって、しかも最近になってようやく研究が加速したということで、フランスの先進的な事例について少しご紹介いただきながら、今後のわれわれの調査研究計画にも生かしていきたいという趣旨で、初回セミナーを開催させていただきたいと思います。それでは、ジュリアン、よろしくお願いします。

(カルマン)

Hello, thank you very much. I am Julien Calmand, Senior Researcher in Cereq, French Center for Research on Education, Training and Employment. I am an economist by training. I graduated with master at University of Bourgogne, and in parallel to my work I am doing the PhD. Before beginning this lecture, I would like to thank NISTEP for hosting me and especially Yoshi Kobayashi who make this collaboration possible.

今日は、このような機会を頂きまして誠にありがとうございます。私は Cereq のシニアリサーチャーをしているジュリアン・カルマンと申します。Cereq はフランスの資格調査研究センターです。私はエコノミストなのですが、フランスのバーガンディー大学で修士号を取得しています。また、現在、仕事と並行して PhD の勉強をしています。このような機会を頂きましたことを、心より御礼申し上げたいと思います。

(以下、スライド併用)

スライド#4

This is the summary of my presentation. The aim of this picture is to present Cereq researches and PhD transition from the labor markets in France, and I will emphasize with presentation on the Cereq follow-up survey called generation.

私の本日お話しする内容です。まず、Cereq の概要についてお話しします。それから、Cereq というのは調査研究所ですが、特にこの Cereq で行われている Generation 調査という調査についてお話ししたいと思います。

スライド#5

I will give you a brief picture of the Cereq. Cereq is an independent public entity under aegis of Ministry of Education and Ministry of Labor. The center is based in Marseilles and around 100 person work there. The mission of Cereq is to inform training, labor, employment policy maker and stakeholders; to provide decision support to public action based on the outcomes of its studies and research; to advise accompany and equip actors in the implementation of its observation and evaluation systems; to carry out surveys, which I will present; to develop statistical survey mechanisms; and finally to do some research works.

Cereq はフランスの資格調査研究センターですが、これはフランスの労働省と教育省の教えを受けている団体です。本部はマルセイユにありまして、大体 100 名ぐらいの研究員

がここに勤めています。主なミッションは、政策立案者、あるいはステークホルダーに対して研修、労働、そして雇用についての情報を提供すること、それから、公的機関等の意志決定のサポートを行うこと、さらに、調査研究の結果を使ってサポートを行うということです。それから、その測定やと評価システムを実施する準備のためのアドバイスをしています。また、さまざまな実地調査を行い、統計調査のメカニズムをつくること、そして幾つかの調査研究の仕事をしています。

Cereq is in Marseilles. Cereq is also based on scientific network composed by 12 universities social science laboratory, for example, Prof. Hiro Nohara is a researcher from one of them called LEST.

Cereq はマルセイユに本部がありますが、実は 12 の大学あるいは科学研究所等とネットワークを組んでおり、そこに Cereq の研究員が常駐している状態です。例えば、野原先生はその一つである LEST という研究所の研究者です。

#### スライド#6

I will give you a brief picture of the Cereq. Cereq is divided in three departments which has specific research topic related to training to employment relationship. One department which is mine, is department to deal with school transition of young leavers, level education, types of degrees, fields of qualification. There is also another department which deals with lifelong learning. And the last one is dealing with evolution of jobs and how it impacts worker trainings and skills.

Cereq ではトレーニングと雇用の関係について、リサーチトピックごとに三つの部門に分けられます。私が担当しているのは、学校の教育から労働への移行、特に若い教育制度を離れた人たちがどのような学位を持って、どのような分野での資格を持って労働市場へ移行していくのかについてのリサーチです。それ以外に、例えば生涯学習、あるいは職業の発展とトレーニングやスキルの関係について研究をしている部門があります。

My position in the department is I am in charge of surveys and transition of higher education graduate students to labor markets.

私自身のポジションは、特に PhD を取得した人たちがどのようにして労働市場へと移行していくのかについて調査を行っています。

#### スライド#7

Cereq has a specific position because it is public administration, so we do report for the ministry, but also we do some research and we participate to ANR projects, which is research project in France, and we have to publish in ranked peer-reviewed journal such as Formation Emploi which is the scientific journal of Cereq.

Cereq の立ち位置ですが、公的行政機関でありますので、例えば省庁への報告を行ったり、それから、もちろんリサーチそのものも行っています。そして、さまざまなプロジェクトへの参加、この分野の査読付き学術誌（ジャーナル）のようなものも発行しています。

#### スライド#8

Cereq is also known for its statistical expertise. Cereq provides statistical expertise and is in charge of two surveys labeled by the National Statistical Information Commission, and the results that I will present to you in a few minutes are expectation from Generation survey.

そして、Cereq は統計業務における高い専門性を持っており、今現在、国家統計情報協議会（公的情報監査機関）の名前の下で行っている二つの調査があります。一つが DEFIS サーベイというもの、もう一つが Generation 調査というものです。こちらの Generation 調査の方について、後ほど詳しくお話ししたいと思います。

#### スライド#10

Before pushing forward major results of my research, I will give you a rapid overview of the French educational system and of the PhD environment.

この調査の内容をお話しする前に、フランスの教育制度と PhD についてお話ししたいと思います。

The French higher education system is composed by a diversity of higher education degree. As you all know there is a dual system, the system of universities, but also we have the system of Grandes Écoles. There was a rapid expansion of student number during the last decades of the twentieth century; especially there is massification in the 1960s and in the 1990s, and now more than two million students enrolled in higher education.

フランスの教育の制度では、非常に多様な高等教育の機関があります。皆さんご存じかと思いますが、大学と、その他にグランゼコールという高等職業教育機関という、二つのシステムがあります。特に 20 世紀の最後の数十年間に、爆発的に学生の数が一気に増えました。60 年代、90 年代ごろに教育の大衆化が進んだことで、今現在、高等教育に在籍している学生数は全部で 200 万人以上です。

We cannot say it's easy about transition between schools to work. In France there is importance of dropouts in higher education, that means that a lot of students go to higher education, but also there are a lot of dropouts, they do not get a diploma. Unemployment and precariousness affecting more and more young people, we can say on the labor market there is a very big importance of diploma in the transition process, and there is heterogeneity in terms of transition, level of diploma; university versus elite, university versus Grandes Écoles, vocational versus general, and also fields of studies.

それから、学校を卒業して労働市場へ移行を行う段階ですが、まず一つ、高等教育においては、高等教育へ進む学生はたくさんいるのですが、フランスの場合には、中退者が多いという大きな問題があります。そして失業率、社会の不安定性、不確かさといった状況が、より若い人に影響を与えているという状況です。また、労働市場へ移行する際に、ど

のような学位を持っているかというディプロマが非常に重要になってきます。このディプロマに関しては、例えば、どのようなレベルの学位を持っているのか、大学卒なのか、グランゼコールを出ているのか、いわゆる職業課程を出ているのか、普通課程なのか、あるいはどのような分野の学問をしたのかなど、非常に多様性に富んでいます。

We can also say that since 15 years there were major reforms in the higher education system. In 2002 there is the Bologna process, the transformation of higher education programs into the European model. In 2007 there is another reform, will give the autonomy to university, and also they give to university the mission of employability, that means that now university has in charge the transition from school to work of their student. They change their program and put more vocational programs, more loyalty to labor market program in the university.

この 15 年、高等教育の幾つかの改革が行われました。例えば、2002 年にはボローニャ・プロセスというものがあり、ヨーロッパ各国の教育制度を「ヨーロッパ基本モデル」という同じ教育制度に変換させています。それから、フランスでは 2007 年に別の改革が実施され、大学に自治権を持たせる（大学の独立行政法人化）とともに、学生に対して就職しやすいように、より職業的、あるいは実践的な仕事につながるような教育をする、つまり、学校から労働市場に移行しやすいようにするプログラムをつくるよう義務付けるようになりました。

What is so important for our lecture is that now universities have to give information to their student about the transition from school to labor market. They have to produce their own data in order to inform students and also parents about the transition.

今の大学では、学生に対して、大学を卒業してから労働に就くまでのトランジションに対する情報をきちんと提供しなければいけないことになっています。自分の大学で独自のデータをつくって、そのデータに基づいた情報を学生、またその学生の親に対して提供することが義務付けられています。

スライド#11

For example, I give you a figure about the diversity of higher education. Here you have the health studies which produce medicine doctors, here you have the universities who produce PhD, which is at the top of this level, here inside the university, you have also short vocational program such as BTS and DUT, here you have the system of Grandes Écoles, and then you have other programs in arts and paramedical, social and arts.

そして、フランスの高等教育なのですが、非常に多様性に富んでおり、いろいろな種類があります。例えばここでは一つの例として、一番左側が医科大学、左から 2 番目が PhD（博士課程）、その中に、よく見ますと、例えば短い職業プログラム（短期職業大学）といったようなものを組み入れているところがあります。その右がグランゼコールで、ビジネススクールやエンジニアリングスクールなど、そして一番右が、例えば芸術、アーツ、パ

ラメディカルといったようなところを養成する高等教育機関です。

#### スライド#12

Can we say about the PhD environment? In, France we produce around 14,000 PhDs per year compared to master is 122,000 and bachelor is 168,000. In recent scientific article from \*\*\* (0:18:46) and looking \*\*\* (0:18:47) using the OECD data, they show that France produce less PhD in the same age group works than other country, but more than in Japan. You can find the figure from Japan. Some specificities of the PhD environment, there is an importance of foreigners; that means in 14,000 PhD that are produced each year, 40% come from foreign country. Mainly we have countries such as Tunisia, Algeria, and Morocco. PhD there is less feminized than other higher education graduates that means that there is less women than in other higher education level. There is a geographical disparity, 25% of 40,000 PhD come from Paris area, and also there is importance of science and technical diplomas. What we can say also that production of PhD and also the transition to the labor market in France is historically and traditionally linked to academic professions and the needs of universities. Bourdieu has demonstrated these things.

フランスのPhDの環境ですが、まず、毎年1万4,000人のPhD取得者が輩出されます。ちなみに、修士は12万2,000人、学士が16万8,000人です。他のOECD諸国と比べると、同じ年齢でPhDを取る人の数が少ないという観察がありますが、日本よりは多いということが、日本の調査から分かります。それ以外に、先ほど申し上げた1万4,000人のうち、外国人（留学生）が40%を占めています。彼らの多くはフランスの旧植民地である、例えばチュニジア、アルジェリア、それからモロッコなどの国籍の人たちです。それから、他の高等教育機関に比べて女性の数が少ないというのも一つの特徴です。また、地域格差がありまして、パリ近郊の出身者がほぼ25%を占めています。また、自然科学と工学系のディプロマが非常に重要性を帯びているということがあります。また、1984年のBourdieuの観察によりますと、伝統的にフランスにおいては、元々PhDを取る人は、ディプロムを労働市場価値へ変遷するプロセスに関して、アカデミー分野での職業として見なされている学術研究や大学機関に仕事を求めることが典型的であると見られているという説があります。

#### スライド#13

In order to demonstrate the link between the production of PhD and also the needs of university, I put four graphs. Here you have the evolution of enrolment in the university, and you have this classification of higher education, one is around the 1960s and one in the 1990s. You have also the evolution of teaching staff in universities, and evolution of permanent teaching staff in the universities. Finally, you have the evolution of number of PhD, and if you look at these four graphs, you see that there is a link between the needs of universities, the needs of teaching staff in order to teach all these new students, and also there is an increase of evolution of number of PhD

大学教員需要にかかわる部分でもあります。PhD の輩出の数と大学側からのニーズにもリンクが見られます。それをグラフを使ってご説明したいと思います。まず左上のグラフは、大学への入学者数の数を表しています。60 年代と 90 年代に急激に増えた時期があります。その下のグラフが大学での教員の数推移です。その右側が、大学における常勤の教員の推移、その上が PhD の数の推移となっています。この四つには実はリンクがあり、大学側で教員のニーズが出ることにより、新たにそれぞれのグラフの数が増えていくということがお分かりいただけたと思います。

#### スライド#15

In this section I will give you some result of the scientific literature and difference among the PhD transition on the labor market.

では、PhD のコースから労働市場に移行するまでにはどのような関係性があるのかについてお話をしたいと思います。

What scientific literature says? We can say that the transition between PhD and labor market is different and much longer than other higher education graduates. Why it is much longer, because if you consider that the transition finish when you get a permanent job for PhD graduates it takes much longer to arrive to a permanent position.

他の高等教育に比べて、PhD が労働市場に移行するまでにはかなり時間がかかるといわれています。なぜなら、いわゆる定職、常勤職として仕事を得るために PhD は非常に長く時間がかかるからです。

We can also say that there are blurred lines between initial training and labor market. In fact most of PhD had ever worked because they are on wages and most of them have wages during their thesis, because during their PhD they get funding to do their PhD. Therefore, they are between initial training and also worker.

もう一つ、最初にトレーニング、教育を受ける期間と、実際に仕事をしている間の境界線が非常に曖昧であるといわれています。例えば多くの場合、実際に研究の仕事をしながらファンディングを受けて PhD を取るということで、PhD の博士課程にいるのだけれども、その間にはもう実際に賃金を得ているという状態もあるので、その間の線が非常にぼやけているということが見られます。

In this figure, I try to scheme the transition which is compared to trial pathways. So, they are here for PhD, they are here in higher education, they do their PhD, they got on the labor market, and for those who want to work in academic, they get permanent job. First job of academic is mentor for the conference, which is professor assistant, and here you have professor with university. During this pathway there are three roads. When you enter in PhD you have to find a funding, you have to find thesis supervisor, and you have to find a subject of thesis. At the end of your PhD, you have to write your thesis, you have to defend your thesis. And then another three years, if you want to get a permanent job in university, we

have this CNU Qualification which is an examination will give you the right to pass recruitments in university. Also, when you get this examination, you pass the recruitment in permanent academic position.

このトランジション・スキームの中で、例えば教員になる、あるいは仕事を得ようとする、PhD の高等教育段階から見て大きく分けて三つのパスを通らなければいけません。例えば、一番最初にその一般大学教育機関を出て、その後に PhD へ進学するわけですが、PhD の課程に入る段階で、資金の調達を証明しなければならない、ファンディングの活動を行わなければいけないということになっています。その後で博士論文のサブジェクトを決めて、実際に博士論文を書いて認めてもらうという段階があります。その後、大学で何らかのポジションを得ようとする、CNU クオリフィケーションという大学教授員の資格委員会の試験を受けて、それに合格しなければなりません。その CNU の資格を得て初めて大学におけるアカデミックな常勤のポジションに就くための試験を受けることが認められます。その後が右側で、MCF（准教授、プロフェッサーアシスタント）になってから、一番右側の PU（大学教授）の資格を取ることができるという、この昇進パスを通らなければいけなくなります。

#### スライド#16

In this specific sector which is universities, we can say that since 20 years there is a large reduction of permanent job. I put four graphics which is the permanent first job in academic which is professor assistant. You have the total and by fields of studies. The blue lines is the recruitment, the red line is the retirement, and the green blocks is the replacement resume, and you see that since 20 years, there is a huge decrease of first permanent job in academics.

こちらの棒グラフは、今の大学における雇用状況がどうなっているかを表しています。四つの棒グラフと線グラフを併せて提示しています。左上が准教授の数です。この中の青線グラフが、実際に准教授として就職する人の数です。また、赤い線がリタイアする人数です。緑の棒グラフが置き換え率、リプレースされる人の率です。ご覧いただけますように、この 20 年の間で大幅に数が減っているということが分かると思います。

#### スライド#17

In this specific sector, we can conclude that there is tension on the academic sector. There are two types of tensions, quantitative tensions, because there is less and less permanent job, there is high competition to access academic permanent job. There is a longer queue line for access to this permanent job, and as you know and as it is the case in Japan, there is multiplication of post-doctoral experience. Also, because there is a big competition, there is also an importance of scientific criteria in the recruitment with the obligation for PhD to publish in very, very good scientific review during their thesis. There is also another tension which is more qualitative, is the tension during recruitment trials, because some sociological research shows that candidates reveal that during this recruitment there is subjectivity and discrimination, for example, against women, and the pathway to



permanent position in academic appear less successful for women. For example, women \*attend(00:35:27)\* less possibility to do post doctoral experience, because this experience appear when they have a baby for example.

アカデミックセクターに関しては、二つのタイプのテンションがあると思います。まず一つが、定量的なテンションです。先ほどもお見せしましたが、大学の常勤職の数が減っていますので、それだけ競争が非常に激しく、大学における常勤職に就くための長い待ちの列があるので、ポスドクを何度も繰り返さなければいけません。これは日本も同じかと思っています。それから、特にサイエンスなどの分野では、非常に質の高い論文を發表することが求められるという定量的なテンションもあります。また、定性的なテンションとしては、例えば就職の試用期間等で、主観、あるいはいろいろな差別に遭ってしまう。例えば女性に対する差別といったものです。もう一つは、例えば女性であれば、ポスドクを経験する時間に妊娠したりするような年齢に差し掛かっているということで、非常に不利であるということがいわれています。社会学的な諸研究調査の結果、このようなことが觀察されています。

#### スライド#18

There is tension on academic labor market, but for PhD there is also tension on the private sector. In France, jobs in private research and development firms are more open for graduates for engineering school. If you take data from INSEE which is the National Statistical Institute in French, and you look at the higher diploma of scientist in private firm in 2013, you can see that half of them have an engineering school degree, and only 12% of them are PhD, but it is not for just young people, its old scientists independent of their age who works in private firm. Therefore, there is high competition with graduates from engineering school and PhD We can explain that with two reasons; there is preference from recruiters for engineering schools, because they are more used to work in fields or they are better in understanding of how it works firms, and also, we can say from a study that we have done a few years ago in Cereq that \*with quantitative(00:39:02)\* interview of recruiters that there is also a lack of knowledge from recruiters of doctoral training. For example, they do not know which are the competencies of PhD students.

先ほどのスライドでは、アカデミックな分野におけるさまざまな PhD の学生が直面するテンションについてお話ししましたが、これは民間部門でも同じで、やはり PhD はさまざまなテンションに直面します。例えば、エンジニアリングスクールでディプロマを取った学生との競争が非常に厳しいという現実があります。INSEE というフランスの経済統計研究機関の調査結果によりますと、例えば民間企業が採った科学者のディプロマの内訳をご覧くださいと、半分近くがエンジニアリングスクールで学位を取っており、PhD 取得者はわずか 12%になっています。これは若い人に限らず、比較的歳を取った人でも状況は同じです。ですから、エンジニアリングスクールを卒業した人と PhD とでかなり競争が激しいということがあります。それ以外に、例えばリクルーターの雇用の好みも指摘されています。つまり、一般的に雇用側は、エンジニアリングスクールを卒業した人の方が企業でどのような仕事をするのかをよく理解していると見ています。そしてリクルーター側に、例

えば博士課程における研究過程でどのような能力を PhD の学生が身に付けたのかということに対する知識がないということも、我々の行うインタビューで判明しました。

In order to cope with these major change, French data set up a few reforms and follow up surveys has an important role in this.

この状況を受け、フランス政府が幾つかの対策と、フォローアップの調査をする制度を確立しました。

#### スライド#20

We can say there is in France since 20 years vocationalization of doctoral training. In 2006, it is written in the law that PhDs must consider their professional pathways not only in academic, but also in the private sector. There are incentives that help PhD to enter into the labor market with higher PhD program supervision, now in France almost all the PhD have to find funding for their PhD There is a reduction of thesis duration, and also there is additional training during the thesis, and training related to the labor market. Also, now it is written in the law that states, university, doctoral school must give information on transition from school to labor market for students and their families.

最近、先ほど申し上げた問題を受けて、博士課程の中で、より職業にフォーカスを置いたプログラムを組むようになっており、教育の職業化が進んでいます。20 年ぐらいこの傾向が続いていますが、2006 年にできた法律では、PhD は自分たちの職業の道筋として、アカデミックな分野だけではなくて、民間部門に行くことも考えるべきであるということが明示されています。それから、PhD が労働市場で働く上でのインセンティブも幾つか提示されています。例えば、ほとんどの PhD 生に対して、PhD に入るときにファンディングのソースを見つけ、資金をどのようにして調達するのかということを証明するような義務付けがされています。それから、博士課程そのものの期間を短くしたり、あるいは民間で働きやすいようにするための追加のトレーニングといったようなものもつくられています。また、これも法律で決められていることですが、大学あるいは博士課程の大学院大学では、労働市場に移行する際の情報を学生とその家族に対して提供しなければいけません。

#### スライド#21

There is a lot of PhD follow-up survey in France, in 2016. I demonstrate that there are 25 follow-up surveys in France on the transition from thesis to labor market, 16 at university or regional level, four at doctoral school level, four made by private organization, and four at the national level. At the national level there is one from ANRT is institution which is more like NISTEP and also from the Ministry of Education, and also from Cereq, which is Generation. The difference between the fourth one is that the survey from Cereq called Generation is the only one which can permit to compound PhD transition from school to work with the transition of all the graduates from French educational system and from higher education.

また、PhD に関する数々のフォローアップ調査がフランスで行われています。例えば、

2016 年のある論文で書かれていますが、28 のフォローアップ調査がフランスで行われています。これは先ほど申し上げた博士課程から労働市場への移行に関するフォローアップ調査です。16 が大学自体あるいは地域のレベル、4 つが博士課程大学院で行われたもの、4 つが民間の組織が行ったもの、そして 4 つが国のレベルで行われた調査です。国家レベルで行われた調査の中に、例えば ANRT という、NISTEP と似たような機関が行ったもの、それから教育省で主催したもの、そして Cereq が行った Generation 調査があります。Cereq が行った Generation 調査が他と違うのは、PhD と他の高等教育の卒業生の違いについて比較した唯一の調査になっている点です。

#### スライド#22

I will present the Generation survey. Cereq has expertise follow-up survey. First survey was in 1983, but was survey by level of education. Now since 1988, Cereq has set up the Generation survey, which is labeled as part of the national statistics framework, which is very important, because it means when you call somebody to answer to the survey, he has the mandatory to respond to this survey. The targeted population of Generation is all initial education levels from young dropouts without education to PhD students. It is a sampling survey representative of the whole French generation of education leavers. The field is leavers; it means that the people that we survey no return to education within one year. When we survey in is on the labor market, is under 30 years old, so young people, and who live in France at the time of data collection. I will present you we interviewed maybe three years after graduation, but in some case five, seven and 10 years after graduation. The method of collection is by telephone, but in the future, we want to interview by internet. There is a large sample between 15,000 to 75,000 individuals.

我々の Generation 調査ですが、かつて 1983 年ごろは、教育レベルによって異なる調査を行っていました。1988 年以降、Generation 調査は国家の統計の枠組みに位置付けられるようになりました。これは非常に重要なことです。国家の統計の枠組みに位置付けられることにより、例えば調査の電話を掛けたときに、その電話に出た調査対象者が必ず答えなければいけないという義務が課せられることになったからです。対象者はさまざまな学歴の持ち主です。本当に初等教育しか受けていない人から、PhD を持っている人に至るまで、あらゆる人が対象になっています。それから、サンプリングを行います。これは、われわれは教育のリーバーと呼んでいるのですが、何らかの教育制度を離れてから 1 年以上たっている人のことを指しています。それから、分野、フィールドは、教育制度から離れて 1 年以上たっている人で、35 歳未満、そしてこのデータを収集した段階でフランスに住んでいた人が対象になります。卒業、あるいは学校から離れてから 3 年たった団体のインタビューもありますし、5 年、7 年、あるいは 10 年たっている人を対象にすることもあります。

それから、調査のメソッドとしては、今は電話を掛けて調査をしていますが、将来的にはインターネットを使った調査をしたいと考えています。また、サンプル数は 1 万 5000 人から、時として 7 万 5000 人ぐらいの個人を対象とする大規模なものもあります。

#### スライド#23

For one individual, we have three parts of questionnaire. In first part we are asking about the sociodemographic characteristics and prior education. You can find information about gender, nationality, parent education, profession of parents, age, type of secondary education, geographic mobility. You also have a part which describes the diploma characteristics for PhD. We find thesis durations, the funding, the type of laboratory of the PhD, the field of study, the number of publications he has made during their thesis also.

このインタビュー、調査は三つのパートに分かれています。まず一つ目は、調査対象者の社会人口動態的な特性、それから、どのような教育を受けてきたのかということです。例えば性別、国籍、親の教育、学歴と親の職業、生まれた場所、それから、どのような中等教育を受けてきたのか等々です。二つ目に、ディプロマの特性です。例えば、どのくらい長く博士課程にいたのか、ファンディングがどうであるのか、あるいは研究所のタイプや研究の分野、論文の数等々です。

#### スライド#25

The most important things in the Generation survey is the professional calendar. Every interview by telephone has to describe their professional pathways between the end of initial training to the date of collection. Typically you have four situations; initial training, employment, unemployment, out of labor market. Unemployment means that you do not have a job but you are looking for a job, and out of labor market, inactivity, for example. Individuals can have different state, different situation between these two dates. He can be in his initial training, he go out of the educational system. For example, this one has a state of unemployment, then in employment, then out of the labor market, unemployment, and in employment. For each situation, we ask for information. Major information for employment, we ask is wages, the type of profession, satisfaction about work, contract of work, duration of work, if he has management position, and also we have a lot of information about his organization, the name, the place, the size and also the sectors.

そして、最も重要な部分はプロフェッショナルカレンダー（職歴経過カレンダー）と呼ばれる三つ目のところです。調査対象者が一番最初に教育を受けた教育の期間をイニシャルトレーニングと呼んでいます。その時点からこの調査を行うデータ収集日までの間にどのような経緯をたどってきたのかということを調査します。例えばこの例ですと、黄色の部分がunemploymentとなっています。これは職業を探しているけれども仕事がない、いわゆる失業状態の段階です。それから、赤が雇用されている段階で、緑が労働市場の外側、何らかの理由で仕事をしていない活動の時期です。この例ですと、黄色のところは失業状態、仕事を探し始めてまだ仕事に就いていない状況です。そしてもう一度、このデータの一番右側の雇用の状態になっているということです。個人によってこのパターンはさまざまです。仕事をしていたときに関しては、内容としてどのようなことを聞くかということ、賃金が幾らであったのか、仕事の種類、職務満足度、どのような契約で働いているのか、マネジメントのポジションにあるのかどうか、その期間、また、組織で働いている場合は組織そのものの名称、場所、規模等々です。

#### スライド#24

What is the strength of the Generation survey is it is longitudinal approach. Every three years, we do the survey since 1998. The point is the type of regression, here you have the transition of the labor market, and the orange one is when we collect the data. The blue one means that there is a lot of PhD in the sample. With this follow-up survey, this approach, we can compare data from 2001 to 2013. We can compare situation of PhD during more than 10 years. Also, what is important is that for some survey, for example, 2010 we collect data after three years after graduation, five years after graduation, and seven years after graduation. We have information of professional pathway during the seven first years.

長期的なアプローチでこういった調査を行うわけですが、こちらのグラフは水平の線が労働市場への移行の期間、そして年数です。赤い箱がデータを実際に収集した時です。このようなデータを 1992 年からずっと取っています。オレンジの箱の周りが青くぼんやりとなっているところは、PhD のサンプルがたくさん取れているときの調査です。ですから、2001 年から 2013 年までの間は、PhD のサンプルがたくさん取れた調査が行われていますので、10 年以上にわたって PhD の実態について比較することができます。また、2010 年を見ていただきますと、労働市場に移行してから 3 年後、5 年後、7 年後と調査を行っています。

#### スライド#27

Okay, now I will present the use of Generation data.

それでは、次にこの Generation 調査がどのように使われているのかについてお話しします。

#### スライド#28

The first one is information and monitoring policy, so the publication in Cereq collections and report for French education ministry. It is a longitudinal approach, three and five years, comparison between type of higher education diplomas, comparison between thesis fields studies, and explore professional trajectories.

まず、情報とモニタリングポリシーというものがあります。Cereq でのさまざまな刊行物、それから教育省への報告に使います。また、卒業後 3 年、5 年と長きにわたるアプローチを取りますが、そのことでさまざまな他の高等教育のディプロマとの比較を取ることができます。また、異なる学術分野間の比較ができます。そして、社会人としての軌跡をたどることができます。

#### スライド#29

I have four graphs which are four indicators and it is a comparison between indicators for engineering school, master at the university and PhD, and here you have the five Generation. 2004 for graduates who go on the labor market in 2001, three years before, and until 2016, the first one is unemployment, three years after graduation you can see that at the beginning of the PhD, unemployment rate was higher

than the unemployment rate of master two, and in the last years the unemployment rate is lower than master two in the university, but for older generation the unemployment rate three years after graduation is higher than engineering school.

What is also important for PhD, we can see that after three years, the share of non-permanent position is very higher for PhD than other graduates from university, and it rises since 2004 to 2016; it goes to 24% to 33%. We can say that when they are employed PhD graduates in France manage to find very good position of the labor market, because 19% of them occupy professional position three years after graduation, and also we can see that wages after three years after graduation is higher than master two and at the same level than engineering school.

こちらは、卒業して労働市場に就いてから3年後にそれぞれこの調査を行っています。例えば2004年、2007年といった節目で行っています。薄いブルーがエンジニアリングスクールの卒業生、濃いブルーが修士、そして緑がPhDです。左を見ますと、これは失業率ですが、2004年の段階では修士よりもPhDの卒業生（卒業して3年後）の方が失業率が高かったということが分かります。一方、右側を見ますと、これは非常勤のポジションの数で、PhDが非常に増えています。2004年と2016年の間を見ますと、非常勤のポジションの数が24%から33%に増えています。また、左下はプロフェッショナル（フランスではカードルという職業上のポジション）ということで、PhDの90%以上がプロフェッショナルのポジションを得ています。また、賃金、月収に関しても、修士よりもPhDの方が高いということが分かります。

#### スライド#30

Now, if we look only on the situation for PhD in the same graph, you have five Generation, and we have put some indicators, the sector repartition three years after graduation. We can see that since 2013 almost 50% of PhD graduates find three years after graduation a job in the public research. For the last Generation in 2016, there is a decrease; maybe, we can think it is because of the vocational policy on PhD. We can see the non-stable position by sector three years after graduation, and you can see that non-permanent position is higher in public research and now of the last cohorts, 57% of PhD were employed in the public research are in a non-permanent position. Also, Generation can give information by fields of study, and in a general way we can see that transition is more difficult for PhD who are graduates from biology or humanities, and especially for biology, if you look at non-permanent position in public research, for the last Generation, almost 80% of them three years after graduation are in a non-government position.

こちらは、卒業してからまず3年たったところから、セクター別にどのぐらいの人が仕事に就いているのかについて調べたものです。民間の研究機関、公的な研究機関、民間の非研究職、公的機関の非研究職と分かれています。左上を見ますと、2013年にPhD取得者で公的な研究職に就いた人が非常に多いということが分かります。しかし、これが2016年に向かって少し下がっています。これは、政府の職業訓練ポリシーによる影響かもしれません。それから右側が非常勤のポジションですが、2016年の段階では、公的機関におけ

る非常勤職に PhD の人が 57% ぐらい就いているということが分かります。また、左下の失業率に至っては、例えば専攻別に見ますと、生物学、人文学の人の失業率が高いということが分かります。3 年後には、生物を専攻した PhD に至っては 80% が非常勤の仕事にしか就いていないということが分かります。

#### スライド#31

We can also compare in this one Generation, in 2010; with graduates we have worked in graduating in 2010, we collect information three years after graduation, and five years after graduation. We can compare employment rates in this two point in 2013, three years after graduation, and five years after graduation. You can see that for the all indicators the situation on the labor market five years after graduation is almost the same that master two and PhD

こちらは 2010 年に卒業した人を対象に、3 年後と 5 年後を調査したものです。左上は 2013 年における失業率、それから 2015 年における失業率です。その右が、非常勤の仕事に就いている人ということで、2015 年の段階で失業率に関しても、非常勤に関しても、修士、PhD 共にほぼ同じであることが分かります。

#### スライド#32

What is the strength of the Generation survey is what we can do is the professional calendar, what I explained to you a few minutes ago. For the Generation 2010, this is the year; first year, second year, three years, four years, five years, and you have the evolution of professional situation on the labor market during the first five years of the PhD. Here, you have the non-permanent contract in public research. One year after graduation, the share of this position is 36%, and after five years, it decreased to 11%.

The government one is the permanent contract in public research sectors. One year after graduation, the share is 10%, and it goes to 31%. At one time, in September 2012, there is an inversion because more and more PhD who was in this situation find a permanent job, and what it looks like is an escalator, because at this moment it is the beginning of the year school when there are recruitments in the public sectors. Here, you have also the non-employment line, it drives from 20% to 9%, and these two lines, the red and the blue one is the private sector, and it goes to almost 20% after five years.

卒業してから最初の 5 年間で労働市場での PhD の状況です。まず、黄土色の線ですが、これが公的機関における研究職の任期制の仕事を表しています。卒業して 1 年目、2011 年が非常に高く 36% あります。5 年後になると、任期制の仕事が 11% にまで下がっています。

期限の定めがない雇用契約の仕事に関しては、1 年目はまだ 10% ですが、5 年目の 2015 年になりますと、これが 31% にまで上がります。このようなことが分かるのが、Generation 調査の強みです。そして、失業の状態はオレンジ色の線で表していて、下がっています。また、緑と青緑の 2 本はプライベートセクターで、これも徐々に増えて 20% になっています。

す。ちょうど 2012 年 9 月に先ほど申し上げた期限の定めがない雇用の仕事と任期制の仕事がクロスする時点が表れています。終身雇用の仕事に就く人の率が段階的にステップアップして、エスカレーターのように上昇しているということが分かると思います。

#### スライド#33

After when you join we can use the Generation survey for scientific purpose, and the aim is to explore the transition from thesis to labor market, especially construct typical trajectory using data analysis method. This method will aggregate PhD trajectories that have the similar professional pathway.

このような調査をいろいろな科学的な目的に使うことができますが、このようなデータを分析することにより、さまざまな PhD の職業の軌跡をたどっています。

#### スライド#34

With this method we find eight trajectories. These two trajectories are in the private sector. These three are related to the research private sectors. And the difference between these three is, in this one, PhD finds the permanent job one year after graduation. In this it takes two or three years, and in this one people stay in limited contract in public research during the five years.

こちらの上の二つは、民間部門に関連したものです。こちらの三つは、公的部門における研究職に関連するものです。この三つの違いですが、こちらは、卒業後 1 年以内にパブリックセクターの期限の定めがない雇用契約の研究職を見つけることができたケースです。こちらは 2 年から 3 年かかった人、そしてこちらは 5 年間の間は限定的な契約の下で仕事をしていた人たちです。

#### スライド#35

In these eight trajectories, and for example, for engineering or laws/economics or humanities are the most represented in the best trajectories, rapid access to stable researcher in academic centers. On the contrary, people who have PhD from biology are more represented on the trajectory which describe unstable research job in the public sector.

こちらを見ますと、分野ごとにどのぐらい早くパーマネントの仕事を見つけることができたのかということで、例えばエンジニアリング、それから法律・経済、そして人文の PhD を持っている人たちは比較的早く公的部門の研究職に就くことができています。反対に、生物を専攻した人に関しては、パブリックセクターでの研究職でなく、どちらかというと短期的な任期制の仕事にしか就くことができないということが分かります。

The trajectories related to private companies are more represented in math, physical, chemistry or engineering. And trajectory is not related to non-research job in private sector, we can see that the PhD graduates from law economics are quite numerous in these trajectories. Finally, the situation for PhD in biology is very difficult because they are most represented in this trajectory, non-permanent



contract researcher in the private sector, but they are also well represented in the trajectory to describe situation of out of work and limited employment system.

民間企業に関連する職歴では、数学、物理、化学、工学の分野でより多く表れています。それから、民間の非研究職では、例えば法律・経済などの PhD を取った人が比較的早くアクセスすることが分かります。生物を専攻した PhD の人が最も苦境に立たされています。公的部門の研究職でも任期制の不安定なリサーチの仕事が多い一方で、民間においても限定的な期間契約の下で仕事をしている人が非常に多いということが分かります。

#### スライド#36

The last use of the Generation study is Policy Evaluation. It is a work we make with my colleague from University of Burgundy. We make analysis for the France Strategie which is establishment under the aegis of Prime Ministry cabinet. In 2008 in France there is a policy incentive to employ more PhD in the R&D private sector called the Dispositif Jeunes Docteurs. Fields in this policy fields who recruit PhD have tax benefit, so the question is that does it have an effect on recruitment of PhD in R&D? Therefore, we compare different publication PhD in engineering field, PhD both graduate from engineering school and PhD, and graduates from engineering school, and we compare two Generation cohorts, 2004 and 2010. The cohort in 2004 has not benefit from the measure because it appears in 2008, and the second cohort in 2010 which has benefit from the measure.

政策評価ということで、バーガンディー大学の協力を得て、この評価を行っていますが、首相府の支援を受けて設立されているフランスの戦略諮問機関でその分析を行いました。実は、2008 年に、多くの PhD を民間部門により採用してもらうためのポリシーインセンティブが実施されました。「Dispositif Jeunes Docteurs」と呼ばれるもので、このプログラムに参加した企業は税の優遇措置を得られるというものです。これで R&D における PhD のリクルート面で効果があったのかということを調べました。工学分野における PhD 生で、エンジニアリングスクールの学位を持っている人と、エンジニアリングスクールと PhD の両方を持っている人の、二つのコホートを調べました。この二つに対して Generation の 2004 年と 2010 年の 2 回の調査を行い、先ほどのポリシーインセンティブが 2008 年に施行されているので、2004 年コホートに関してはまだ何のベネフィットも得られていませんが、2010 年コホートでは、この政策の効果があるということが裏付けられました。

#### スライド#37

We compare the cohorts. This is graduates from engineering school and PhD in engineering field, and here we compare the same engineering school with PhD and engineering school who have both diplomas. We can see that the reform has benefit most for the PhD who is also in engineering school. You see the cohort 2004 and 2010, there is more graduates who are employed in private R&D.

これは二つのコホートを比べたものです。エンジニアリングスクールを出た人と、エンジニアリングスクールと PhD の両方の学位を持っている人で、2004 年コホートはまださほど影響を受けていませんが、2010 年コホートは、先ほどのポリシーインセンティブのおかげ

げで、かなり民間部門において多く雇用されていることが分かります。

#### スライド#38

Finally, the last use of the Generation survey is international comparison that is why I am here, because we want to compare the Generation data with NISTEP data. We plan to compare the 2012 NISTEP cohort with the Cereq Generation cohort 2013. We can produce indicator three years after graduation about thesis condition, unemployment rate, repartition between sectors, limited contract in research public sector, R&D, wages, work satisfaction. As every time we have to compare things or data, we have a comparison problem because the recent data in the Cereq Generation are not the same, there is a limitation of population, same field of studies.

Generation 調査を用いて、他の国と国際比較をするために私は今、日本に来ています。Generation 調査の結果と NISTEP のデータを比べたいと思っています。具体的には 2012 年の NISTEP のコホートと Cereq の 2013 年の Generation コホートの比較です。卒業後 3 年の段階で調査する内容は、PhD の要件、失業率、セクター間ごとの状況、公的部門における R&D の任期制の雇用の契約について、それから賃金、また職務満足度についての比較ですが、比較する上でいろいろな制約、問題があります。例えば、同じ分野の人を比べようと思っても、母集団そのものが違う、あるいは調査報告も違うということで、若干の問題を抱えています。

I have finished. Thank you for your attention.

以上です。ありがとうございました（拍手）。

#### ～質疑応答～

（司会） ありがとうございました。せっかくの機会ですので、何かご質問等があれば。

（質問者 1） Could you explain why it is the engineering schools; it is one of the graduate school, Grandes Écoles or…?

大変ありがとうございました。最初にエンジニアリングスクールの定義を教えてください。

（カルマン） ご質問としては、グランゼコールとエンジニアリングスクールは同じものかどうかということで、エンジニアリングスクールはグランゼコールの中の一つで、もう一つビジネススクールがグランゼコールにあるということです。グランゼコールは非常に親の教育水準、あるいは社会的・職業的バックグラウンドの高い人が多いということです。

（質問者 2） Thank you very much. Saito from NISTEP. In order to save time I would like to ask three questions in English.

One is that today we focus on the career path analysis of doctoral holders in the public sector as well as in the private sector, but in our case, in Japanese

case, sometimes it is quite difficult for us to keep tracking the career path data of PhD holders who are working in the private sectors and sometimes many of them will not like to disclose career path status or their current job situation or employment status. I would like to know that in France, is there any kind of mandatory type of mechanisms to keep track of the career path of the doctoral holders even in the private sector, or is there some kind of incentives for those doctoral holders working in private sectors to submit their data to a survey institutes? That is one question.

Second is, today we focused on private sector, academics, but we recognized that there will be a kind of students' category of doctoral recipients career path that is, for example, high school science teachers and also science communicators who is working in the science museums or science centers or something like that.

I heard that in France a kind of societal status of those science teachers in high schools are very high including and also many of them can keep up research works even while they are working in high schools, but in our case, frequently, most of the science high school teachers will not be able to continue their research works in terms of keeping the status of academic society. For example, when they try to submit a proposal for the research grants, like funding agencies such as JSPS or JST, they have very strict limitations for the applicant status. In many cases, high school teachers cannot submit their proposals, so such kind of barriers or limitations we have. Do you have any kind of benefits or incentive mechanism for the doctoral holders to choose such kind of category of career path such as science teachers or science communicators?

The last one is international mobility of doctoral holders. You explained that about 40% of the total doctoral course students are from foreign countries such as Tunisia or Morocco, but also you have said that your career tracking survey, you only pursue the career paths of those who are living in France, so I am wondering how much portion of those foreign students study in France remain in the domestic France. Do you have any ideas to track their career paths of those who left France and go back to their own country or working in other countries? Do you have any measures to track them?

どうもありがとうございました。NISTEPの斎藤です。時間を節約するために、英語で3つの質問をしたいと思います。今日、我々は公共部門だけでなく、民間部門における博士のキャリアパス分析に注目しています。しかし日本では、民間の部門で働いている博士のキャリアパスを継続的に調査することが大変難しい状況です。彼らの多くは、キャリアパスや雇用の状況、仕事における地位を明らかにするのが好きではありません。フランスでは民間部門で博士号取得者のキャリアパスを把握するために、強制力のあるメカニズムがありますか。または、民間部門で働いている博士が、調査によってキャリア状況を提供するインセンティブがありますか？これが一つ目の質問です。

二つ目は、博士のキャリアパスとして、民間部門だけでなく、公的部門でのキャリアパス、例えば高校の科学の教員や、科学館やサイエンスセンターで働くサイエンスコミュニケーターという人に注目しています。フランスでは多くの博士が高校の科学の教員になると

聞いていますが、日本の場合、高校の教員は研究をすることが認められておらず、学会の中で地位を維持することが難しい人が多いようです。例えば JSPS や JST の研究費を獲得するためのプロポーザルに制限があるのです。フランスでは、博士が高校の科学の教員やサイエンスコミュニケーターという進路を取るためのベネフィットやメカニズムは何かありますか。

最後の質問は、博士の国際的な流動性です。博士課程学生の約 40% がチュニジアまたはモロッコのような外国から来ていると説明がありましたが、キャリア追跡はフランスに住んでいる人々のみであるとのことでした。フランスではこういった留学生がどのくらい国内に残るかについて、私は分からないということです。

フランスを出て自国に帰った人々、他の国に行った人のキャリアパスを知るための試みについては何か方法がありますか。

(カルマン) For the first question, I have to say that compared to other graduates from lower level, it is very easier to find in the first time to find PhD graduates and also they respond very, very easily.

最初の質問ですが、この調査では博士号取得者については、より下位の教育レベルからの卒業生と比較して、彼らの就職先や住所を見つけること、また彼らから回答を得ることは相当容易なことです。

(質問者 2) Measure is email address, or physical address?  
調査の方法は E-mail ですか、実際のアドレスですか？

(カルマン) No, first we collect the data directly from universities, so they give us the nominative addresses, nominative information of the graduates, then we call them and then they respond. Maybe you have advantage to do data collection with internet because it is cheaper, but by telephone, I mean when you call somebody, you can say, “Let us talk about your future,” but if you are on internet, you will send a mail and the people say, I put the email in the garbage. The telephony is good because the interviewers try to make them to respond.

いいえ、最初に、我々は大学から直接データを集めます。大学は我々に卒業生の基礎情報とアドレスを提供します。それから、我々は卒業生に電話をし、彼らは電話で回答します。しかし、インターネットの方が安価で良いのではないかと思います。しかし電話の場合は、「あなたの将来について話しましょう」と言うことができます。しかし、インターネットで実施したとすれば、送信した電子メールは、直ぐにゴミ箱に入れられてしまうでしょう。インタビュアーへ反応することを試みるので電話による方法は良いのです。

Further, there second question. In France, PhD is not recognized in the public administration. It means there is no value to do a PhD for your wages in secondary education. I understand your question also. One of the inconvenience of the Generation Survey is that we do not manage to identify the activity of work.

さらに 2 番目の質問ですが、フランスでは、博士号は産業別労働協約で確立した地位を

持っていません。企業は博士号取得者にたいして、どの職階・賃金水準に就職させるかについて社会的な規制を受けません。極言すれば、中等教育出身者レベルの賃金で博士号取得者を雇用できることを意味します。また、上級国家行政職（16 の分野においておおよそ 12,000 人いるといわれる）登用試験を受ける資格も持ち合わせていません。

For the last question, referring to the mark of the Generation Survey is that we do not survey people in foreign country, but I have to say that in France, even if there are a lot of follow-up survey, nobody managed to do that because it is very difficult when you try to collect a data of people who are away. Your response rates decrease.

最後の質問で、Generation 調査では外国にいる人を調査していないということですが、フランスにおいてです。しかし、多くのフォローアップ調査があったとしても、そのような調査を実施できる機関はあまりないのではないのでしょうか。国を離れた人々のデータを収集するのは非常に難しいからです。回答率は落ちるでしょう。

（質問者 2）Understand. So you only have a formulated data of the nationwide or systematic survey.

分かりました。全国的で組織的な調査の形式があるということですね。

（カルマン）Now, it is like we want to transform the follow-up survey and for higher education graduates, we want to have this information to have the information of people who have growth after 3-5 years that we have this problem of data collection, response rate.

現在、我々は、高等教育の卒業生についての追跡調査を改善したいと思っています。我々はデータ上制約のある 3 年後よりも、より長い期間（例えば 5-7 年）のデータ収集を行いたいと思っていますが、当然、回収率に問題が出てきます。

We have also the problem of job classification because, for example, civil servant, like public administration, is a huge category in France, but it does not exist in this, that is the same in Japan, that is the same in the United States, for the contract is the same, so we have all these difficulties. It is not very easy to collect data from people who are abroad, so there is limitation and we have to think about that, and internet, I think, is the best way to find these people.

フランスではまた職業・職務分類上の問題もあります。たとえば、公務員職（行政職のような）は複雑かつ巨大なカテゴリーであります。ですから、職務実態を把握するのはとても困難です。それは日本も同じことかも知れませんが、またアメリカ合衆国でも同じことでしょう。また、実際の雇用契約条件も同様で、我々は統計データを収集・処理しようとする、いろいろな困難に会います。海外にいる人々からデータを集めることはそれほど簡単ではないので、多くの制約があります。そのための方法について考えなければなりません。インターネットはこれらの人々を追跡するには最高の方法ではないのでしょうか。

(質問者2) If you can fully utilize gmail address, you do not have to care about where they are.

Gmail アドレスを完全に利用することができるならば、あなたは彼らがどこにいるかについて、気にする必要はありません。

(司会) 他にいかがでしょうか。ジュリアン、一つ、日本語でいいですか。今日は定量的なデータをどうもありがとうございました。ジュリアンの講演の中に、エンジニアリングスクールと PhD の比較、特に民間への転出の比較があったと思いますが、その点に関して質問させていただきます。わが国の場合も、PhD の取得者の民間への転出をキャリアパス多様化ということで進めていますが、そのときに大きな問題となるのは、企業の受け入れ側の問題だけではなくて、博士自身のマインドセットだと思っています。

各国でも、例えばイギリスや、わが国でもそうですが、PhD の教育改革が進められていて、その中で職業教育訓練というか、雇用適性の増進が図られていると思います。フランスでは、特にエンジニアリングスクールの方が非常に企業に受けないというお話があったと思いますが、教育課程において、そういった民間への雇用適性を増進させるような取り組みに違いがあるのでしょうか。

(カルマン) Yes, historically, engineering school are more labor market oriented and they have a lot of training program oriented to the labor markets, but in France, there is a large movement of vocalization of university which are big in the 60s, but nowadays it accelerates, and in doctoral training now, there is more and more program, training related to the labor market.

歴史的に見て、エンジニアリングスクールの方が、より民間の労働市場に転出するための、労働市場に合った形での教育をしてきたわけです。より労働市場に向けたトレーニングプログラムをたくさん持っていました。ただ現在では、フランスの大学でも、職業訓練教育化が大きくなっているんです。これは 60 年代くらいから始まっていたのですが、昨今、その動きが大変加速しています。ですから博士課程においても、民間に転出することを意識した職業訓練が、その課程の中で大変多くプログラムとして存在するようになっています。

(野原) 今の質問について、非常に面白い問題なので日本語で補足しますと、エンジニアリングスクールはバカロレアを取ってから 5 年間の教育課程がありまして、その一番最後の年は、大体が半年、あるいは 8 ヶ月ぐらいの企業のインターンシップがないとエンジニアリングスクールの卒業要件になりません。ということは、彼らは卒業する前に企業に入って、企業と一緒に仕事というか、ある一つのプロジェクトのようなものを成し遂げることが卒業要件です。それに比べると、大学の博士課程の人たちは、分野によっても違うのですが、工学系の博士号の人たちを見ても、若干、企業と交流しながら博士論文を書いている人もいます。特に工学系の場合には、企業の方からのフェローシップ給付をもらって、企業の要望に応える形での論文を書くといった学生たちももちろんいます。でも、大体見ると、物理、生物、ライフサイエンスというところは全く企業に関係なく博士課程の 3 年間で過ごしてしまいます。そうすると、企業との接触があまりないというこ

とで、その辺がすごく問題だということになっているわけです。フランスの大学改革の中で一つの大きな問題は、そういった博士号の人たちに関しても、例えばインターンシップとか、企業をもっと知ってもらうような形でカリキュラムの組み方、組み替えなどをやっているということが、日本と比較すると非常に面白い点だと思います。確かに非常に複雑な問題ですが、面白い、興味のある点ではあります。

(司会) ありがとうございます。他にいかがでしょうか。

(質問者 3) 文部科学省の伊藤(注：文部科学審議官)と申します。大変興味深いプレゼンテーションをありがとうございました。私の質問は一つで、最後のところで、employment in private R&D rateがあったと思いますが、コホートの結果、2008年の税制改正の効果によってPhDを持っている方の雇用率が上がったと理解しました。

(カルマン) No. It is not an employment rate. It is not \*\*\* (01:51:42) rate so the shares of the cohort who find a job in the private R&D sectors and we compared two cohorts, 2010 and 2004, so we have the different cohorts, so this is the most. What we want to do in this presentation, in this research, we compared the civil engineering school with the PhD in engineering field; this is one graph. We wanted to compare the same profession with the graduates from PhD who have also in engineering school because in France, now for 10 years, more and more engineering school graduates continue their training in PhD. It is a huge evolution, now graduates from engineering school pursue their training in a PhD. Therefore, we compared these two lines as the same, and with this comparison, we can see that the purple one, the cohort from 2010, is higher, so we are seeing that this policies reform has benefit to PhD but not all the PhD, the PhD who also have an engineering school grades.

まず、民間部門の研究開発の部門における雇用状況を二つのコホートを比べています。2004年と2010年です。上は、エンジニアリングスクールの学位を持って卒業した人と、PhDで工学を勉強した人、つまり両方を持っている人ではなくて、それぞれ単独で持っている人たちの雇用率、それから下のグラフは、エンジニアリングスクールを出た後にそのまま引き続き博士課程で勉強を続けて、両方の資格を持っている人の雇用の改善の状況を表しています。フランスではこの10年ぐらい、エンジニアリングスクールを卒業して、そのまま続けて博士課程で工学の勉強を続ける人が非常に増えており、これは非常に大きな変化です。われわれが調査した結果、先ほどの税制改革は、2004年と2010年を比べた場合、全てのPhDの人たちに効果があったのではなくて、エンジニアリングスクールを出ていて、なおかつPhD、博士課程修了の資格を持っている人にとって効果があったということが分かりました。

(質問者 3) ありがとうございました。少し関連で確認だけなのですが、もう一つ、2006年の法律で、「PhDs must consider their professional pathways not only in academy」というものがあるのですが、この政策の効果については何か検証された結果はありますか。

(カルマン) This is the subject of my PhD thesis. My thesis is about how this reform has changed the professional transition that also would change the PhD training, how it has changed the way as PhD do their thesis.

私自身が今、博士課程の勉強をしています、それがまさに私のテーマです。私の論文のテーマですが、特に先ほどの法律の施行によって、どのようにして職業の選択に変遷があるのかだけではなくて、博士課程の教育そのものにどのような変化を与えたかといったようなことを調べていきたいと思っています。

(質問者 3) 楽しみにしています。

(野原) この件について補足して説明したいと思います。フランスでは2006年と2007年に大学改革がありまして、いわゆる日本の国立大学の法人化という動きと同様なものと考えてよいでしょう。2007年に、日本と同じような形で、大学にいわゆる自治権というかオートノミーを与えたということで、非常に大きな大学改革でした。それに関連して大学院の改革も行われました。2006年、2007年から大学院というものをもう少し大学とは違った形で運営しようということになりました。ファイナンスにしても、大学のカリキュラムにしても各大学が独自性を打ち出さなければならないということで、そこからすごく大学院改革の大きな流れになってきました。そういった意味で、実際問題、2007年の法的な措置が、大学院の現在の姿に対してどういった影響を与えたかということは、今、非常にフランスでも興味を持って、いわゆる政策効果を考えようということが行われています。

確か2007年の法律で大学院という大学とは別の機構を初めてつくったのです。そこで本来に行政として大学が責任を持って大学院を運営していくということが、法的に明らかになりました。そこで一番変わったと思えるのは、それまでは一般的に大学院生は自分で研究課題を選べたというか、自分が興味を持ったものを持ち込んで大学で研究をするという伝統的な大学院の姿でした。しかしその2007年の改革以降、非常に競争が激しくなったところもあります、全ての学生がファンディングを持たなくてはいけないということになりました。そのファンディングを持つためには、もちろん高等教育省から学生個人に出る博士課程研究給付金もありますが、大学院が積極的にそのファンディングを出してくれる企業あるいは地方自治体を探すということも積極的に行われています。学生だけの責任ではなくて、大学自体がそういうファンディングを探すということを、大学院自治の中でかなりやっているわけです。これは、フランスの大学が世界の大学ランキングで好位置につけるためには、学術研究を強化して、より多くの研究成果を出していくことが重要であると認識し、そのための優秀な学生を集めていることに関連しているということです。

これは非常に大きな問題で、議論をするところは本当にたくさんあると思います。いろいろなそういった興味深いところがあるので、カルマン氏がそういういわゆる政策効果を論文の中に書いてくれると、われわれにとっても良いことだと思います。楽しみに待っています。

(司会) ありがとうございます。他に何かありますか。

(質問者 4) 同志社大学の藤本です。興味深いお話をありがとうございました。二つ質



間があります。この表の「Rapid access to stable research job」という、ここにはビジネススクールの人が多いのですか。マスターなどだとビジネススクールの人が非常に多かったのですが、エコノミーやソシオロジーやフィロソフィなどの人たちが本当に早く就職できているのかなというのが少し気になりました。多くはビジネススクール出身者なのでしょうか。

(カルマン) Yes, 26% of this trajectory are composed by people from humanities. I could figure study that we can say that also thesis condition, funding, the type of laboratory as an effect of \*under the middle name to the trajectory(02:03:47)\* in one trajectory.

はい、パブリックセクターの研究職の仕事にすぐアクセスがあった人たちの26%が、いわゆる人文科学、純粋にアートや文学、哲学、社会学などの博士課程の人です。

分野ごとに分けていますが、どのような職業軌跡の範疇に入るかは、例えばその論文の刊行要件（ジャーナルの名声等）やファンディング、研究室のタイプなどによってもかなり大きな影響はあると思います。

(質問者 4) もう一つは、エンジニアリングスクール、グランゼコールの中で、難関グランゼコールと呼ばれるエコール・ポリテクニクなどの人たち、いわゆる準備クラスを経由して難関グランゼコールに入った人と、準備クラスを経由しなくてグランゼコールに入った人、それから、準エンジニア資格のようなものもありますが、難関グランゼコールを出た人の多くが公的機関や国際機関に就職していることが多いです。しかし、経済的な報酬は民間に行った人の方が多かったりします。組織のレピュテーションがやはり大きく影響していると思いますが、経済的報酬が果たして本当にインセンティブになるのでしょうか。

公的機関や国際機関に難関グランゼコール出身者が行っているということは、そちらの組織のレピュテーションが高いと評価されていると思いますが、そちらに行った人たちは、データを見ると、例えば金融保険業に行った人より、経済的には決して高い報酬を受け取っていません。出身校や PhD を増やすということと、フランスなので組織のヒエラルキーがまだまだ影響が強いのではないかという感じがしますが、いかがでしょうか。

My question is with regards to engineering school or Grandes Écoles. I think there are competitive Grandes Écoles, the most prestigious ones and also what you would call a quasi-engineering school if you were to name the second tier type of engineering school and those who have graduated the most competitive or prestigious Grandes Écoles normally work for public sectors or international organizations whereas those who graduate from less prestigious schools go to privates mostly; however, if you compare the income or salary paid, those who work for public institutions or international organizations are paid lower than those who work for, for example, private sector financial institutions or other institutions. Do you think that those with the higher academic background being graduates of the most prestigious Grandes Écoles, the fact that they preferred to work for public sector or international organizations although the pay is lower is just because of the

reputation of the organization?

(カルマン) Yes, it is very difficult to respond to this question because in Generation, we cannot make a different type of Grandes Écoles. When there is this category of Grandes Écoles, we cannot distinguish the level of the Grandes Écoles, but that is true that in the public administration, there are a lot of polytechnician and yes because still in France, polytechnique and also ENA (École nationale d'administration) for example, are the best way to access to prestigious profession in the public sector, in top ministry, top cabinet of ministry, but the wages are quite the same that in private company in this type of job.

グランゼコールのいろいろなレベルの違いに応じた調査ができないので、非常にお答えするのが難しいのですが、おっしゃるように、ポリテクニク、それから ENA などを卒業するのが、やはり例えば省庁や内閣、政府関係の仕事へのアクセスとしては一番良い方法であるとみなされているのは同じです。ただ、今、申し上げている省庁、例えば内閣府といったようなところに就職する人たちは、そんなに民間部門の人たちと給料の差はないのではないかと思います。

(司会) それでは、そろそろ時間になりましたので、今日のジュリアンさんの講演はこれで一応終わりにしたいと思います。皆さん、拍手をお願いします (拍手)。

(司会) ありがとうございました。

スライド



# PhDs transition from thesis to labor market: the French case

Julien Calmand- Senior Researcher

8 february 2018

NISTEP-TOKYO-JAPAN

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## Summary

1. CEREQ Overview
2. Brief scheme of french Higher Education
3. PhD transition : tensions on the labor market
4. Generation in the french follow-up survey system
5. Multiple uses of Generation survey

# 1. CEREQ Overview

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## Centre d'Etudes et de Recherche sur les Qualifications

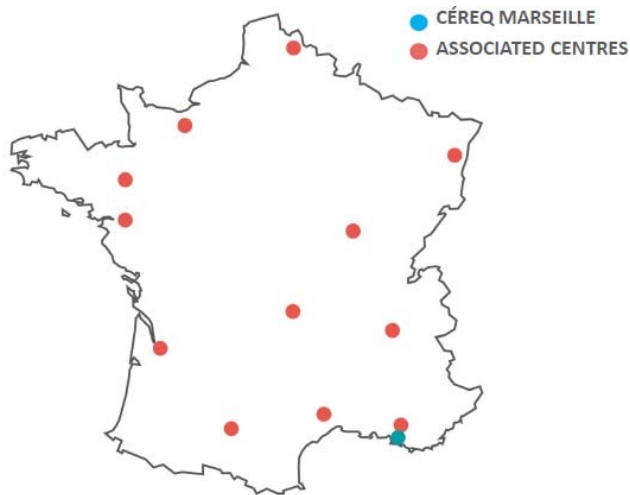
### Missions

- **To inform** training, labour and employment policy makers and stakeholders;
- **To provide** decision support to public action based on the outcomes of its studies and research;
- **To advise, accompany and equip** actors in the implementation of observation and evaluation systems. **Activities**
- carry out field **surveys**;
- develop **statistical survey** mechanisms;
- **Research works**

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## Key date and location

- **1971** : Foundation of the *Centre d'études et de recherches sur les qualifications*.
- **1975** : the way is paved for the creation of the Céreq's **associated centres** network (7 centres this year).
- **1985** : Céreq becomes an independent public entity under the aegis of the Ministry of Education and the Ministry of Labour.



## Research Topic

- **School to work** transition of young leavers : levels of education, types of degrees, fields of qualification.
- **Lifelong learning** through the observation of main continuing education regulation, their impact on career paths and the analysis of qualification systems
- **The evolution of jobs** and how it impacts worker's training and skills

# Céreq's expertise

## A scientific approach to the training - employment relationship

- **Research and production task forces** Internal and external researchers, covering the following areas:
  - apprenticeships and work-study arrangements;
  - qualifications and developing & assessing competencies;
  - organisations, businesses and how to motivate the workforce;
  - regional dimensions of the relationship between training, employment and work.
- **Various study and discussion groups** : Higher Education Working Group (GTES), Work analysis workshops (SEMAT), data exploitation groups, seminars, conferences supporting exchange and discussion among the scientific community
- **Participation to “National Agency for Research” (ANR) projects**
- **Publication of a ranked peer-reviewed journal : “Formation Emploi”**

# Cereq Statistical Expertise

- Two open-access data bases, one on technical and vocational courses (“**Reflets**”) and the other on business sectors (“**Portraits Statistiques de Branches**”).
- **European survey CVTS** on work-based continuing vocational training at european level.
- **Two surveys** labelled by the National Statistical Information Council :
  - the “**DEFIS**” survey on the impact of lifelong training and skills update on employees’ career paths
  - the “**Generation**” survey on youth employability and early careers



## 2. Brief scheme of french Higher Education

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### About French Schemes


- **French context**
  - Diversity of higher education degree
  - Dual system (University and “Grande Ecoles”)
  - A rapid expansion of the students number during the last decades of the twentieth century
  - Massification in 60's and 90's, now more than 2 000 000 of enrolled students in Higher Education
- **Transition between school to work**
  - Importance of dropouts in HE
  - Unemployment and precariousness affecting more and more young people
  - Importance of the diploma in the transition process
  - Heterogeneity in terms of transition (level of diploma; university vs elite, vocational vs general, fields of studies...)
- **Legal aspect**
  - 2002 Bologna process, transformation into LMD
  - 2006 LOLF : large importance of indicators into governance's universities
  - 2007 'Autonomy' Law ('LRU' law) : employability ('insertion professionnelle') is a core mission
  - 2013 'HE & R' Law ('ESR' law) : producing available data about 1-& 2-year employability is a must for universities

**Expansion of “professionalization” of the HE system since 60's, HE institutions play a key role**

# Diversity of higher education degree

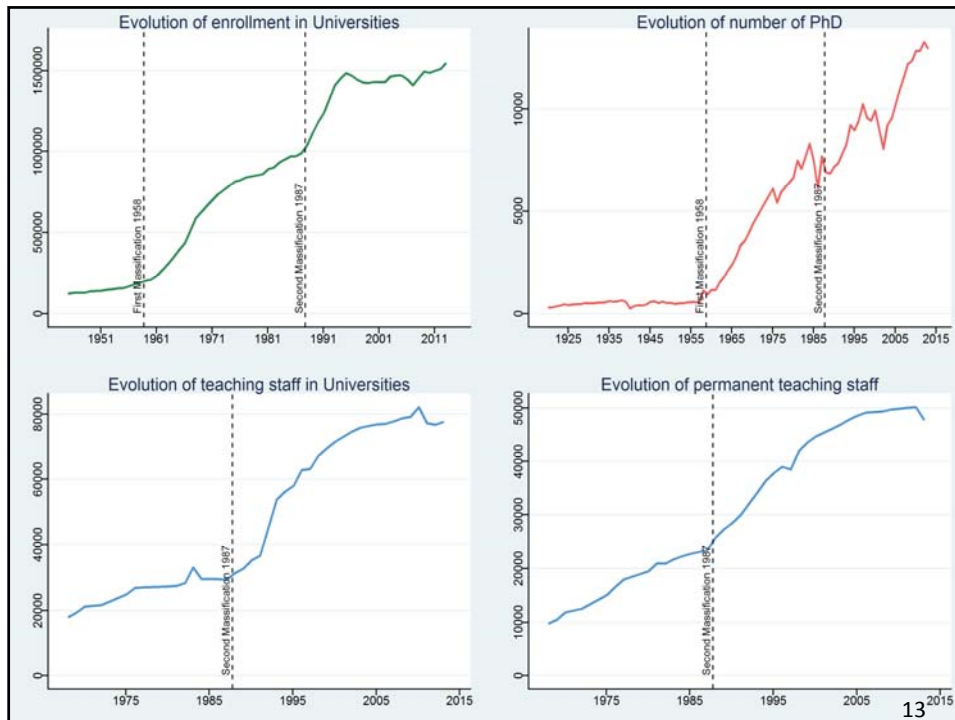
# Phd environnement

- Production of 14 000 PhDs per years (Master 122 000, Bachelor 168 000) (RERS-2014)
- Less PhDs in same age group than other OECD countries (CAS, 2010)
- Some specificities (PAPERS – 2014)
  - Importance of foreigners (40%)
  - Less feminised than Higher Education
  - Geographical disparities (25% in Paris Area)
  - Importance of S&T diplomas
- Production and transition is traditionally linked to Academic Professions and needs of universities (Bourdieu,1984)



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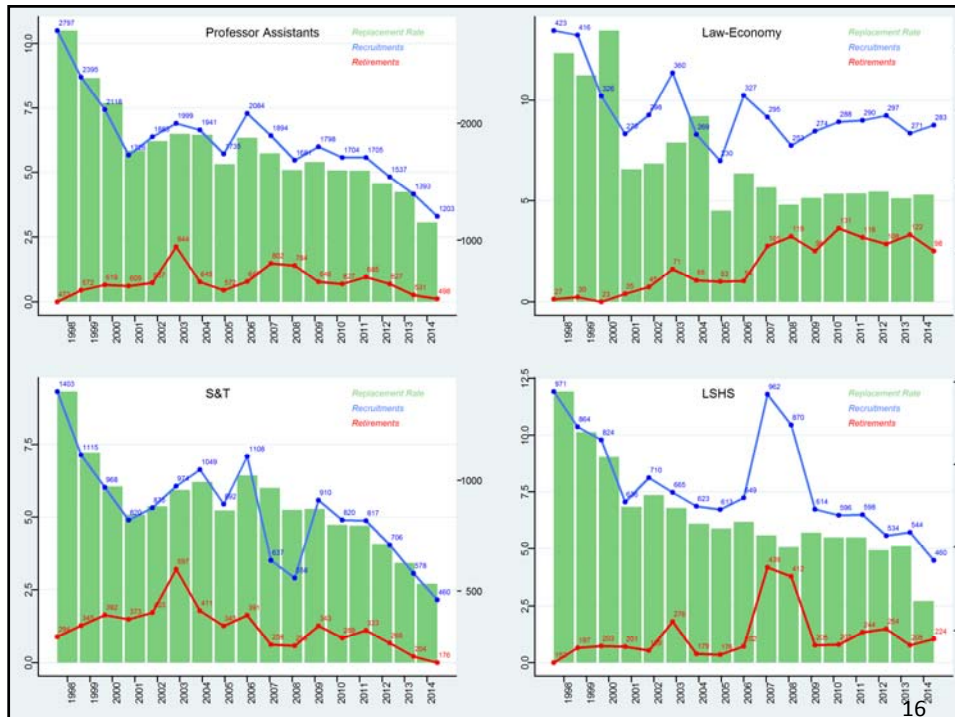
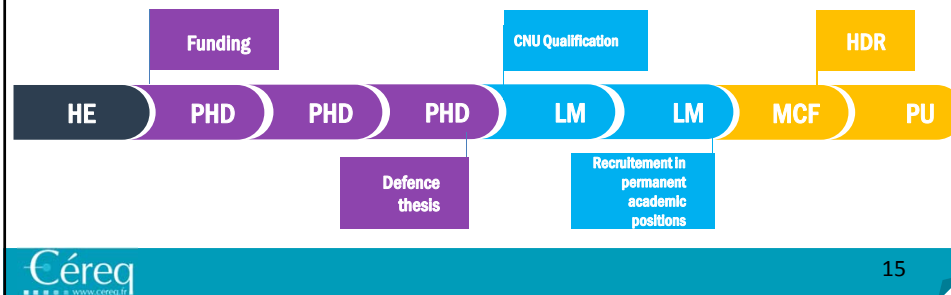


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### 3. PhD transition from thesis to labor market

# Scientific Literature

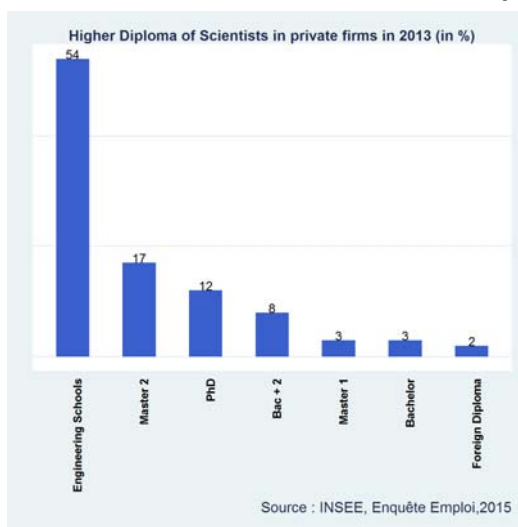
- Different and much longer than other Higher Education graduates (Calmand, 2013)
- Blurred lines between initial training and labor market (Giret, 2011)
- Transition compared to trials pathways (Boltanski & Chiapello, 1999, Viry 2006)



## Tensions on Academic sector

- Quantitative tensions :
  - High competition to access to academic permanent jobs (Bonnal & Giret, 2009)
  - Queue line to permanent jobs and multiplication of postdoctoral experiences (Recotillet, 2007)
  - « Publish or perish »
- Qualitative tensions :
  - Tensions during recruitment trials, subjectivity and discrimination (Musselin, 1996, Carrère et alii, 2006)
  - Pathways to permanent position in academic appear less successful to women (Bernela, 2015)

## Tensions on the private sector



- High competition with graduates from Engineering schools
- Preference from recruiters (Mason et alii, 2004, Giret et alii, 2007)
- Lack of knowledge from recruiters of doctoral training (d'Agostino et alii, 2009)

## 4. Generation in the french follow-up survey system

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### Vocationnalisation of doctoral training

- Since a law in 2006, PhDs must consider their professional pathways not only in academic, but also in private sector.
- There are incentives that help PhD to enter into the labor market
  - Higher thesis supervision
  - Reduction of thesis duration
  - Additional training during thesis
- State, Universities, Doctoral Schools must give information on transition from school to labor market to students and their families

## PhD follow-up surveys in France

- In 2016, 28 follow-up surveys in France on the transition from thesis to labor market (Calmand, 2016).
  - 16 at university or regional level
  - 4 at doctoral schools level
  - 4 from private organisations
  - 4 at national level
- At national level
  - ANRT/CIFRE
  - MENESR
  - APEC/ANDES
  - GENERATION from Cereq

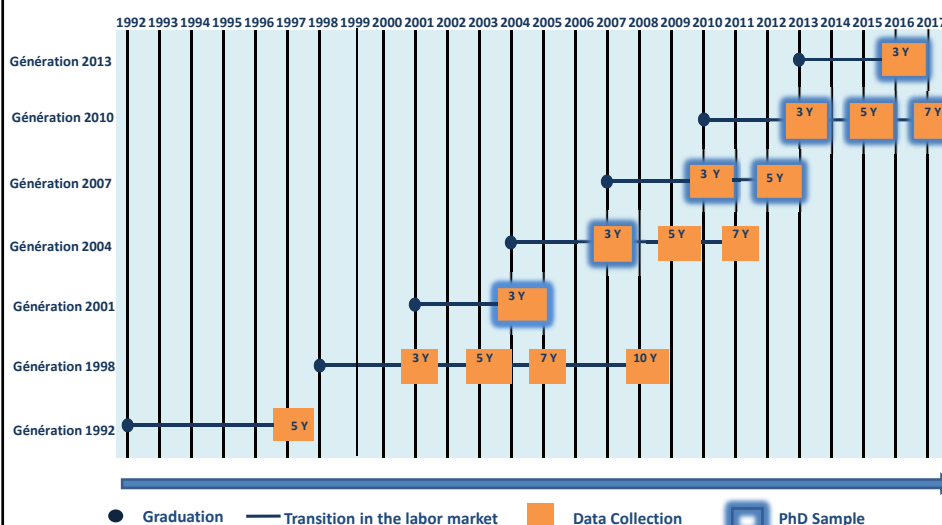
## Generation Survey : history and methodology

- **Different surveys by levels of education until the nineties**
  - Annual panel surveys always on different secondary degrees (panels 1986-90, 1994-2000, surveys 7 months after (IVA))
  - Surveys on higher education graduates (1983, 1988, 1992, 1994, 1996 graduation years). Essentially, a national representative survey, with samples size between 8,000 and 60,000 students
- **Now, national 'Generation' surveys labelled as part of the "National Statistics Framework"**
  - Targeted population : all initial education levels (from young drop outs with no qualification to PhD students)
  - Sampling : representative of a whole French generation of education leavers (same years)
  - Field : leavers (no return to education within one year), under 35 years, who live in France at time of data collection
  - Interviewed three, 5, 7 and 10 years after graduation or school leave
  - Method : CATI, CAWI (experimental), conducted by a polling institute
  - Large sample (between 15,000 and 75,000 individuals, depends by the survey)

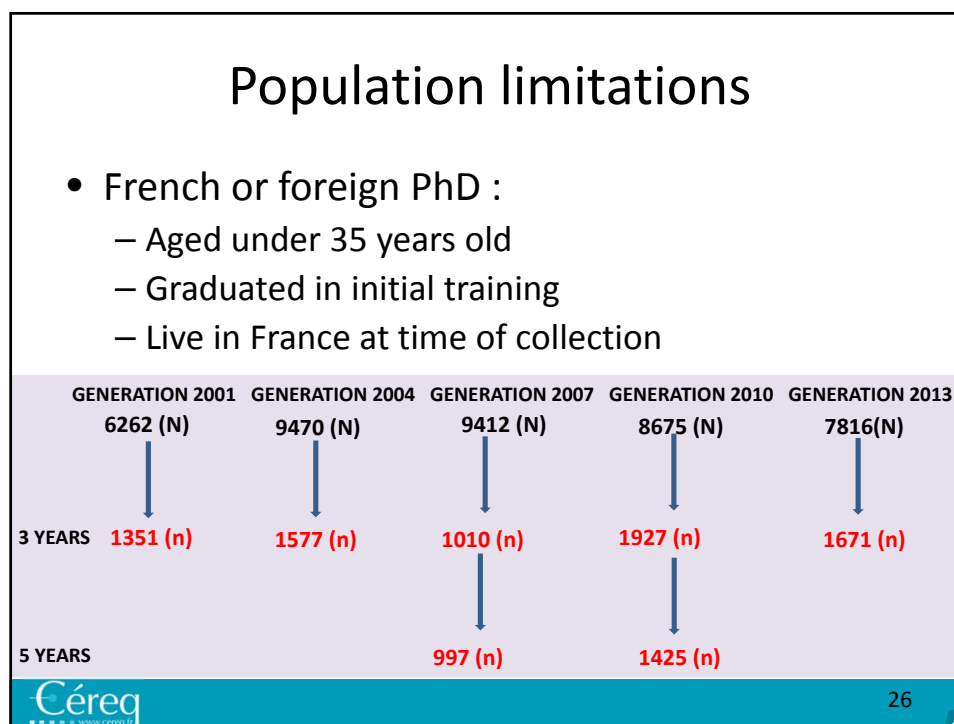
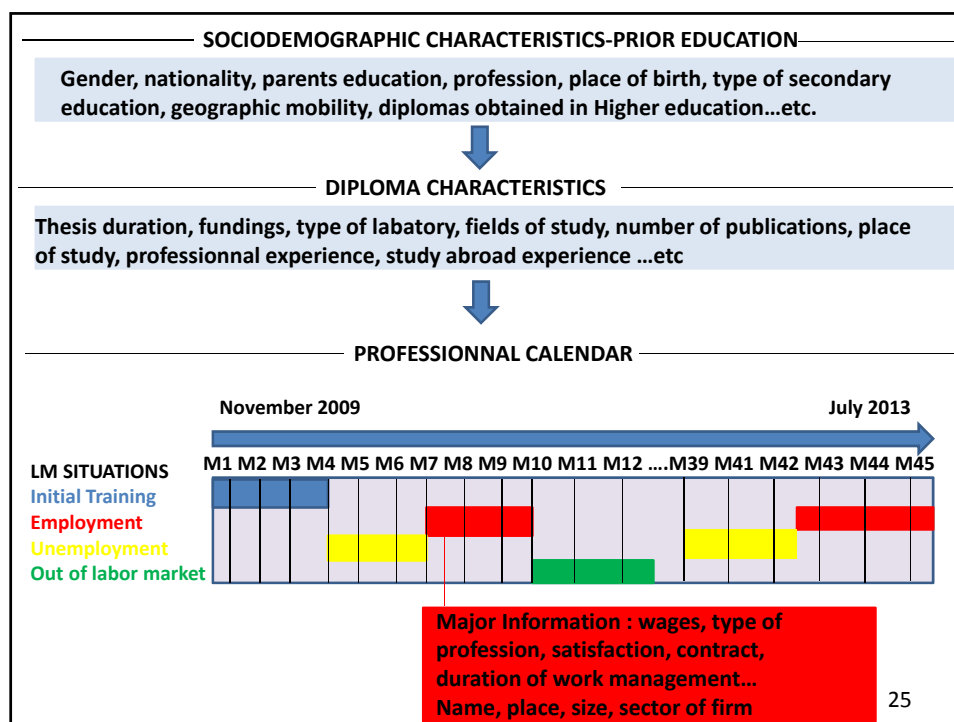
## Generation surveys : a large longitudinal dataset supporting scientific research

- **Explore transition process as central aspect**
  - Background Characteristics
  - Scholarship Pathways (apprenticeship, internship, work experience ...)
  - Accurate description of diploma (level, field of study...etc)
  - Geographical mobility (at 3 different times..)
  - Professional and living trajectories (calendar during 3, 5, 7 and 10 years..)
  - Accurate description of employment sequences (Occupation, contract, wage, satisfaction, category of employer, size, sectors...etc)
  - Accurate description of unemployment sequences
- **A flexible tool : Possibility to add questions depending on research programs**
  - Additional segments: PHDs (since 1998), « Professionnalization » of Higher Education, returns to initial education », international mobility during studies
  - Articulation between quantitative/qualitative surveys
  - Possibility to do some experimentations (competences survey)
- **Dissemination :**
  - Cereq's publications (Bref, Nef...etc)
  - Exploitation groups (Open to a large community of researchers)
  - Availability to researchers 3 years after data collection

## A longitudinal approach







## 5. Multiple uses of Generation Surveys

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## Information and monitoring policy

### Bref

#### Des **docteurs** en mal de **stabilisation**

Pour se préserver de la précarité et du chômage, il est préférable d'être diplômé de l'enseignement supérieur. Néanmoins, certains indicateurs de doctorat ont des difficultés croissantes à trouver un emploi stable. Traditionnellement rattachés à la recherche publique et académique, leur orientation vers la sphère privée est devenue un enjeu majeur pour allonger leurs débouchés professionnels. Mais cette nécessaire adaptation des docteurs au monde de l'entreprise s'inscrit difficilement, et notamment

Les études menées par le Céreq montrent qu'en général l'obtention d'un diplôme de l'enseignement supérieur permet de se protéger des effets de conjoncture. En d'autres termes, plus un jeune sera diplômé, moins il aura de chances d'être au chômage. Néanmoins, certains indicateurs de doctorat ont de plus en plus de difficultés d'insertion. Des statistiques engagées à travers le monde montrent leur difficulté croissante à se stabiliser dans l'emploi. Les docteurs français n'échappent pas à la règle : après 10 %, d'entre eux, diplômés en 2004, sont au chômage trois années après leur soutenance de thèse, soit en 2007.

Traditionnellement, les futurs docteurs envisagent de travailler dans la recherche académique. Or, les exigences de la recherche publique deviennent régulièrement plus élevées. Pour répondre à leurs difficultés croissantes d'insertion, l'État a encouragé les futurs docteurs à travailler dans la sphère privée. Mais au moment d'entrer dans la vie active, ces derniers se voient fortement concurrencés par les diplômés d'autres niveaux de formation, voire de master, dans les domaines de leur spécialité. Pour les docteurs, travailler hors du secteur de la recherche s'avère être un second choix, souvent généré par certains préjugés et l'absence de contacts de la recherche. En effet, au moment de leur thèse, moins de 10 % de l'ensemble des docteurs déclarent envisager cette option.

**Le constat d'une insertion anormalement difficile**  
Bien que détenant le plus prestigieux des diplômes universitaires, une part de docteurs connaît certaines difficultés à l'entrée dans le marché du travail. Si le taux de chômage à peu près d'une génération (2004 à l'année 2007), la situation est même moins favorable concernant l'accès à l'emploi stable.

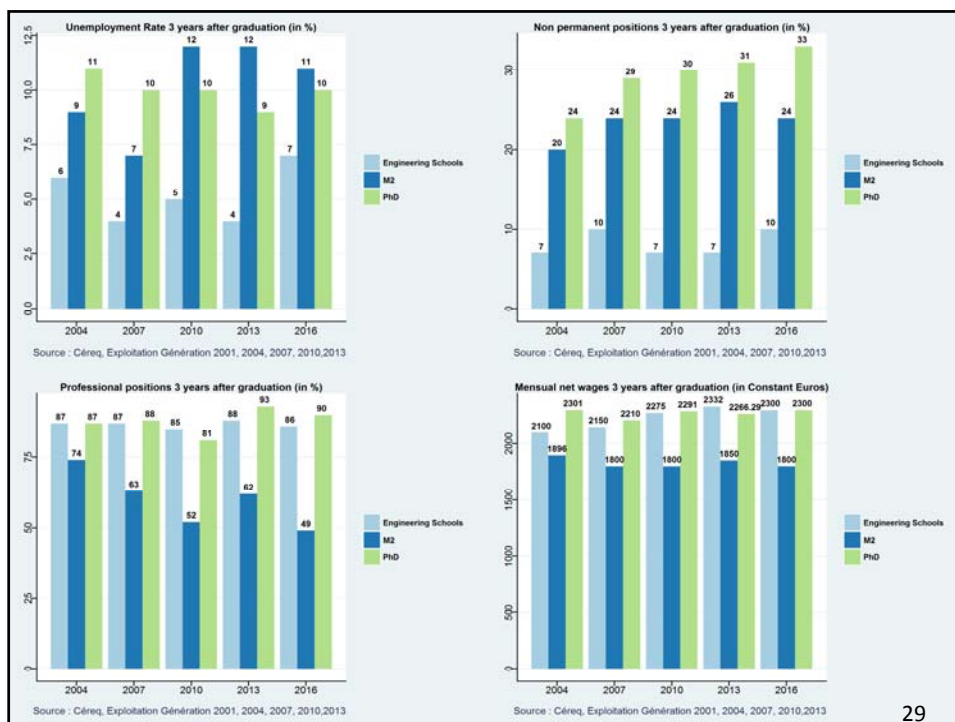
Plus de 10 % des docteurs diplômés en 2004 sont au chômage trois années après leur soutenance de thèse. En outre, au premier emploi, plus de 60 % des thésards de doctorat ont des emplois à durée déterminée, contre 40 % pour l'ensemble des docteurs diplômés trois ans de la génération 2003. Malgré tout, une fois leur soutenance de thèse, 27 % des docteurs sont encore sur des contrats à durée déterminée. C'est beaucoup plus que pour les autres niveaux de diplôme : 10 % pour les masters, 7 % pour les licences et 4 % pour les bacheliers. Ces derniers sont les plus touchés par le chômage trois années après leur soutenance de thèse, avec un taux de chômage de 15 %, et ceux qui ont déclaré un emploi stable, le plus souvent en emploi à durée déterminée. Les sortants de disciplines de droit, sciences économiques et gestion bénéficient d'une amélioration de leur situation...

27  
septembre 2010  
Céreq

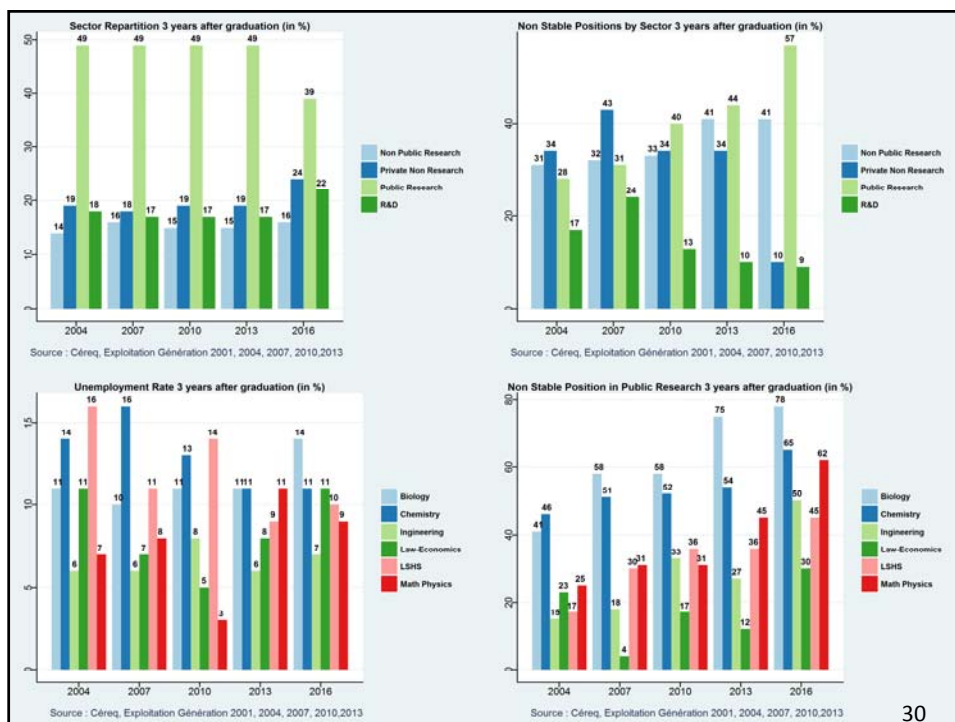
Céreq  
www.cereq.fr

- Publication in Céreq collections and Report for french education Ministry
- Longitudinal approach, 3 and 5 years after graduation
- Comparison between type of Higher Education diplomas
- Comparison between thesis fields of studies
- Explore Professional trajectories

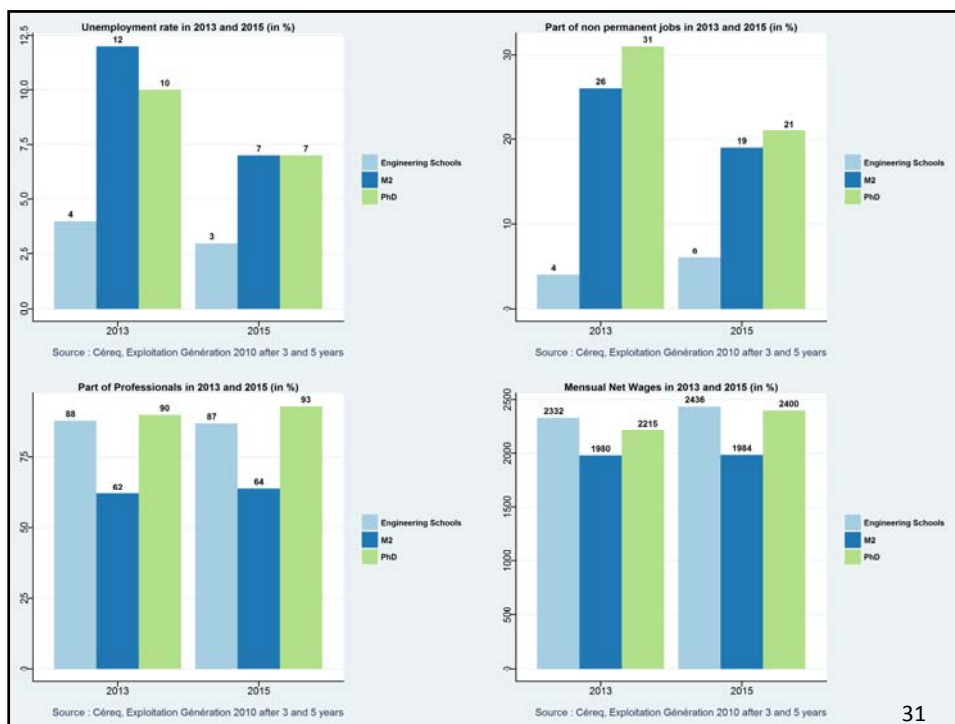
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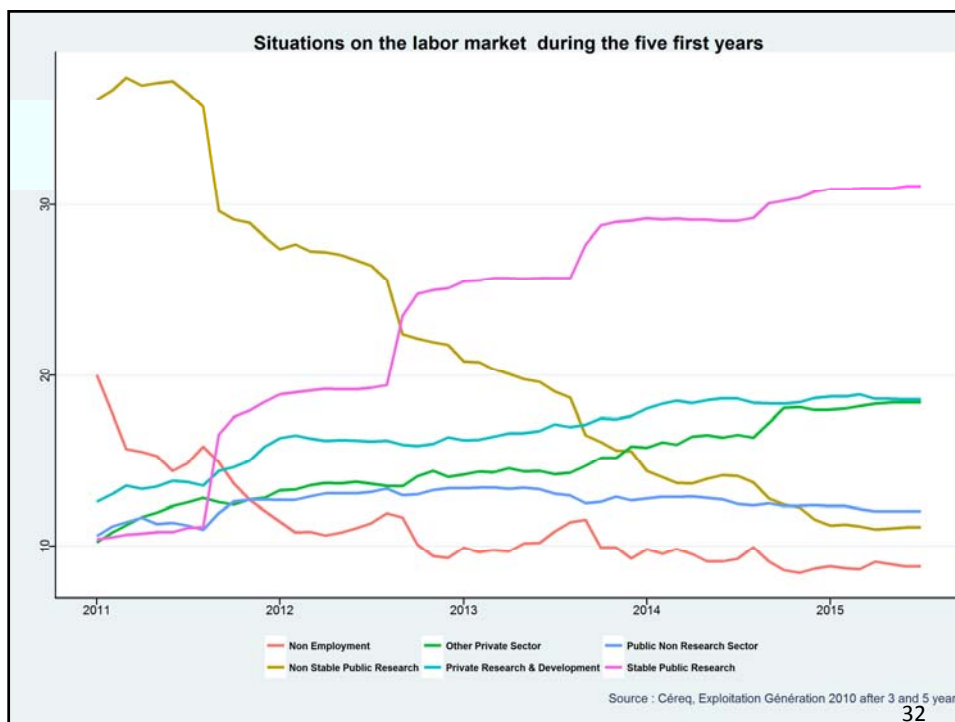
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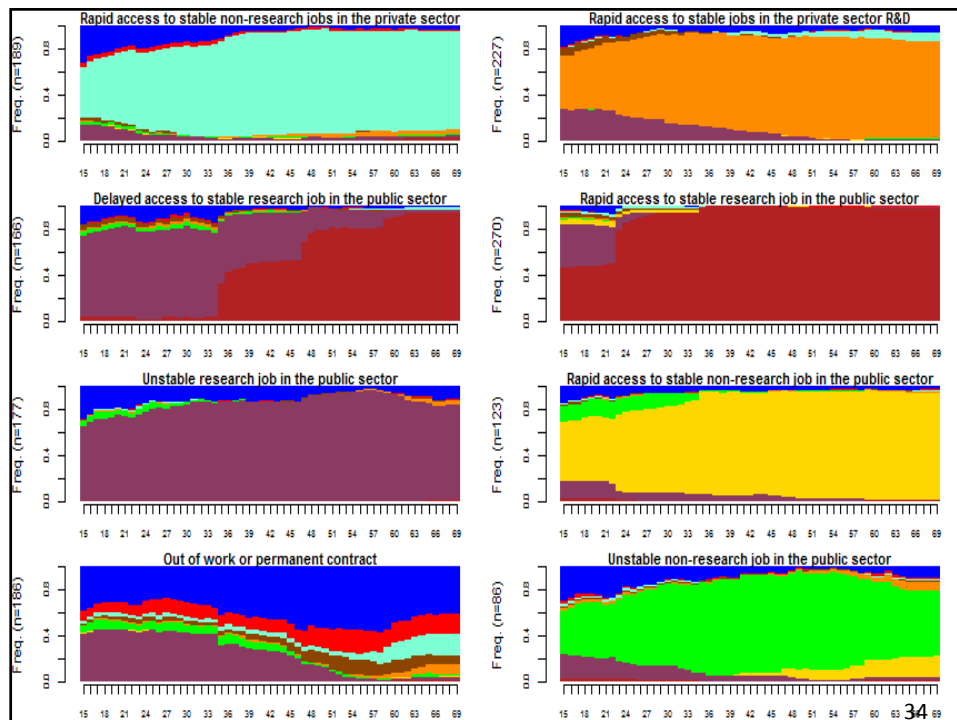
# Scientific Purpose

## French PhDs employed in private sector

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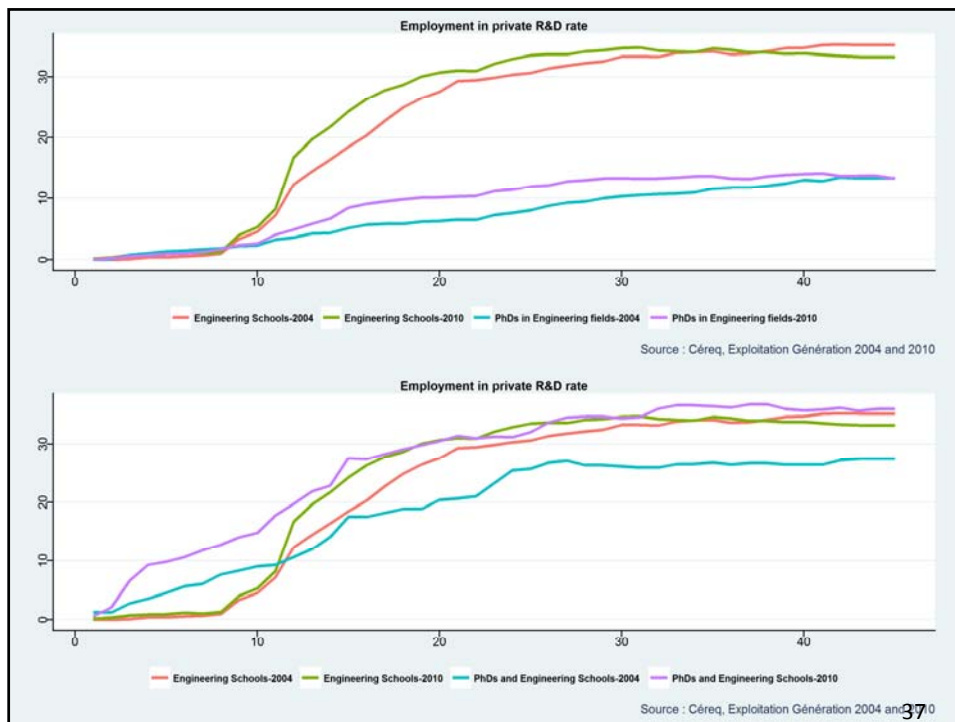
- Publications in Academic Peer Reviewing collections
- Explore the transition from thesis from labor market process
- Construct typical trajectories using data analysis methods (Optimal Matching)
- Explore determinants of access to typical trajectories



	Math/Physics/ Chemistry	Engineering	Biology	Laws, Economics	LSH	Total
Rapid access to stable research job in the public sector	18%	26%	7%	30%	26%	20%
Delayed access to stable research job in the public sector	12%	9%	9%	14%	14%	11%
Unstable research job in the public sector	10%	6%	24%	7%	5%	11%
Rapid access to stable non-research job in the public sector	6%	2%	7%	11%	18%	8%
Unstable non-research job in the public sector	2%	1%	9%	8%	10%	6%
Rapid access to stable jobs in the private sector R&D	27%	30%	15%	3%	2%	17%
Rapid access to stable non-research jobs in the private sector	13%	19%	9%	17%	11%	14%
Out of work and unstable employment history	12%	7%	19%	9%	15%	13%
Unemployment rate in 2015	4%	4%	12%	6%	9%	
Part of Non permanent job in 2015	18%	11%	38%	16%	15%	35

## Policy Evaluation

- Analysis for « France Strategie » an establishment under the aegis of Prime Ministry cabinet
- In 2008 policy incentive to employed more PhD in private R&D called « Dispositif Jeunes Docteurs »
- Does it have an effect on recruitment of PhD in R&D ?
- Comparison between PhD in Engineering fields, PhD both graduated from Engineering schools and Graduates from Engineering schools.
- Comparison of two Generation cohorts : 2004 and 2010.
  - Cohort in 2004 hasn't benefit from the measure
  - Cohort in 2010 has benefit from the measure



## International Comparison ?

- Comparison with NISTEP data
- Comparison of 2012 NISTEP cohort and CEREQ Generation cohort 2013
- Indicators 3 years after graduation :
  - Thesis conditions
  - Unemployment rate
  - Repartition between sectors
  - Non permanent contract in Research Public Sector, R&D
  - Wages
  - Work satisfaction
- Comparison problem : limitation of population, same fields of studies.

Thank you very much  
for your attention !!!!

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DISCUSSION PAPER No.156

博士人材の学位取得から労働市場への移行：フランスと日本の比較研究

2018 年 4 月

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The Transition between Thesis to Labor Market in France and Japan: Comparative Exploration

April 2018

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