



UNIVERSITÀ POLITECNICA DELLE MARCHE
FACOLTÀ DI ECONOMIA “GIORGIO FUÀ”

Master's Degree in International Economics and Commerce
Curriculum: Business Organization and Strategy

Turnover in Italian Universities
Turnover nelle Università italiane

Advisor:

Prof. Stefano Staffolani

Candidate:

Filippo Canarecci

Co-Advisor:

Prof. Riccardo Lucchetti

A.Y. 2018/2019

INDEX

INDEX OF TABLES AND FIGURES	4
INTRODUCTION	Error! Bookmark not defined.
INTRODUZIONE	Error! Bookmark not defined.
1. THE STRUCTURE OF ITALIAN UNIVERSITIES	9
2. MANAGEMENT OF HUMAN RESOURCES IN UNIVERSITIES	23
3. DESCRIPTIVE ANALYSIS OF DATA RELATING TO THE ROLES OF UNIVERSITY PERSONNEL	26
4. TURNOVER ANALYSIS	42
4.1 Observations on individual Universities	51
CONCLUSIONS	62
ACKNOWLEDGMENTS	65
BIBLIOGRAFICH REFERENCES AND WEB SITES	66
ATTACHMENTS	68

INDEX OF TABLES AND FIGURES

Tab. III.1 - Cross tabulation of Year (rows) vs. SSD (columns)	29
Fig. III.1 - Employment per year	30
Fig. III.2 - The Trend of Employment Variations	31
Tab. III.2A - Cross tabulation of Year (rows) vs. Macro Sectors (columns) and fixed base	33
Tab. III.2B - Cross tabulation of Year (rows) vs. Macro Sectors (columns) and fixed base	34
Fig. III.3 - The trend in number of employees in the most relevant disciplinary scientific sectors	35
Fig. III.4 - Evolution over time of the occupation of Level 1, Level 2 and Level 3 in all Italian universities, in the scientific area 13	36
Fig. III.5 - Mobility between universities	38
Fig. III.6 - Career Mobility	40
Tab. IV.1 - Summary flows from inside and outside.....	44
Tab. IV.2 - % External Recruitment at the Universities >10 professors (Res. excluded) – 2003	46
Tab. IV.3 - % External Recruitment at the Universities >10 professors (Res. excluded) – 2008	47
Tab. IV.4 - % External Recruitment at the Universities >10 professors (Res. excluded) – 2013	47
Tab. IV.5 - % External Recruitment at the Universities >10 professors (Res. excluded) – 2003	49
Tab. IV.6 - % External Recruitment at the Universities >10 professors (Res. excluded) – 2008	49
Tab. IV.7 - % External Recruitment at the Universities >10 professors (Res. excluded) – 2013	49
Tab. IV.8 - Ranking ordered by Share	51 - 52
Fig. IV.1 - Histogram of Density 2003	55
Fig. IV.2 - Histogram of Density 2008	56
Fig. IV.3 - Histogram of Density 2013	57
Fig. IV.4 - Scatterplot comparing recruitment policies 2000-2013	59
Fig. IV.5 - Scatterplot comparing recruitment policies 2008-2013	60
Fig. IV.6 - Scatterplot comparing recruitment policies 2003-2008	61
Tab. Appendix 1 - Cross tabulation of SSDs with respect to Year	68 - 70

INTRODUCTION

In the university institutions, the recruitment procedures for access to the academic career of the teaching staff are managed directly by the universities, through local competitions and through rigid procedures, regulated in part by the central bureaucracy with limits on turnover and budget allocation.

In Italy it is common opinion that, in the public administration, there are often cases of favouritism and nepotism in recruitment and career advancement: the various governments have tried to limit such phenomena with the reforms that have occurred over time.

I decided to experiment with a method that in the past was already applied in the business world, that is when and how much to resort to the external market or to the internal market and therefore how much the promotions or the inputs from other structures contribute to build the recruitment policies.

This validity could be realized in a high-level training offer that attracts and maintains excellent teachers, talented students and promotes excellence research and consequently abundant funding.

A study was carried out on the structure of professors in Italian universities, analysing observations for each one and elaborating them in the light of the legislative reforms that introduced new figures and led to the replacement of others, and the consequent changes over time.

The MIUR Ministry of Education, University and Research database, with more than 80,000 observations over 18 years, has been extensively modelled and enriched, to be able to draw descriptive statistics on teachers' attendance trends, divided by macro-sector, with more than 7000 units.

In the period from 2001-2018, all Italian universities (public, private and telematic), faculties, departments and professors with any qualifications belonging to the scientific area 13 were taken under examination to present an evaluation of the recruitment methods in Italian universities: the aim was to

demonstrate whether Universities preferentially exploit internal career or external recruitment in order to fill vacancies following retirement, transfer or some rare dismissal.

Thanks to the support of tables, graphs and classifications, the trend of university turnover by university and year by year was analysed, considering the size and aggregation of the geographical areas. They have been created empirically, through mobility indexes and synthetic indicators, rankings and classifications of the universities that highlight the particular characteristics of each one and their evolution over time.

INTRODUZIONE

Nel periodo che va dal 2001-2018 sono stati presi in esame tutti gli atenei italiani, (pubblici, privati e telematici) le facoltà, i dipartimenti e tutti i docenti, con qualsiasi qualifica, appartenenti all'area scientifica 13.

Lo scopo è presentare una valutazione delle modalità di assunzione nelle università italiane, per dimostrare se prediligono la carriera interna o l'assunzione dall'esterno, al fine di colmare i posti vacanti a seguito di pensionamento, trasferimento o qualche raro licenziamento.

Ho deciso di sperimentare un metodo che in passato è stato già applicato nel mondo delle imprese, cioè quando e quanto ricorrere al mercato esterno o al mercato interno e quindi quanto le promozioni o gli ingressi da altre strutture possano incidere sulla qualità e il prestigio dell'ateneo. La validità di ciò si concretizza nell'offerta formativa di alto livello che attrae e mantiene docenti eccellenti, studenti talentuosi e promuove ricerca d'eccellenza e quindi abbondanti finanziamenti.

Nelle istituzioni Universitarie, le procedure di reclutamento per l'accesso alla carriera accademica del personale docente, sono gestite direttamente dagli atenei, attraverso concorsi locali e attraverso rigide procedure, regolate in parte dalla burocrazia centrale con limiti al turnover e dall'assegnazione di budget.

In Italia è opinione corrente che, nella pubblica amministrazione, vi siano spesso casi di favoritismo e nepotismo nel reclutamento e avanzamento di carriera, a cui i vari di governi hanno cercato di porre rimedio con le riforme che si sono succedute nel tempo, ma con scarsi risultati.

È stato fatto uno studio sull'assetto del personale docente delle università italiane, analizzando osservazioni per singolo ateneo ed elaborandole alla luce delle riforme legislative che hanno introdotto nuove figure e portato alla sostituzione di altre, e dei conseguenti cambiamenti intervenuti nel tempo.

Il database del Ministero dell'Istruzione, dell'Università e della Ricerca (MIUR), con più di 80.000 osservazioni nell'arco di 18 anni, è stato ampiamente modellato ed arricchito, per poter elaborare delle

statistiche descrittive sull'andamento delle presenze dei docenti, divisi per macrosettore, con più di 7000 unità.

Con supporto di tabelle, grafici e classifiche è stato analizzato l'andamento del turnover ateneo per ateneo e anno per anno, tenendo conto delle dimensioni e della aggregazione per aree territoriali.

Sono stati creati empiricamente, tramite indici di mobilità e indicatori sintetici, graduatorie e classifiche degli atenei che evidenziano le particolari caratteristiche di ognuno e la loro evoluzione nel tempo.

1. THE STRUCTURE OF ITALIAN UNIVERSITIES

Law n. 210 of 30th December 2010 (regulations regarding the organization of universities, academic personnel and recruitment, as well as delegation to the Government to increase the quality and efficiency of the university system), the so called “Gelmini” law, has started an important process of change in the Italian university system. It is still too early to see effective results; not only because the enforcing of the law presupposes a combination of fulfilments entrusted to various stakeholders, but probably also due to technical faults within the regulation itself.

More precisely, although the “Gelmini” law has an objective which may be sustainable in itself, it is being enforced by debatable methods. The main aim of the reform seems to be that of making all stakeholders within the university system assume responsibility for compliance with the regulations. However, the solutions specified by the legislators have caused great confusion within university administrations.

Present experience shows that many universities are being run with differing interpretations of the legislation. Instead of simplifying the decision making and empowering the stakeholders, Law n. 210 has actually strengthened the power of numerically stronger academic groups and the Rectors. University autonomy is formally declared but in reality, it is denied by a series of provisions that meticulously regulate the construction of degree courses and control the allocation of central funds. These regulations do not consider either the diverse situations of the university communities or the inevitable differences in context in which they operate.

The organisational structure of university institutions determines the methods of distribution of teaching and how research activities are carried out. Each university is made up of two basic structures: Faculty and University.

Each university structures, via incremental processes, the correlation of Faculty/Department in very different ways.

The procedure used to overcome the organizational division between research and education has spread with the direct involvement of the departments in the organization and management of institutional teaching activities.

There are integration difficulties, both at a horizontal level between faculties and departments and also at a vertical level between the universities' central government and the basic structures.

The draft law "Gelmini" text presents a complete restructuring of the basic university framework and their relations, even though it doesn't have a homogeneous and mandatory format. It seems to opt for a framework with a very strong organisational role and coordination between education and research for the departments. Therefore, individual universities can decide, thanks to their statutory independence, how to organize their own basic framework. Above all, they can decide among themselves which relationships/rapport they establish and which roles are assigned to decision making in decisive processes.

This margin of discretionary power given to individual universities certainly appears to be reasonable and to some extent far sighted. At the same time, one runs the risk that the decisions relative to internal frameworks are taken on the basis of simple adjustment to the existing system, or even on non-congruent following of foreign experiences of which there is often a rather distorted image.

The basic organizational structure of universities, conditions the method of pursuing their primary functions (the allocation of teaching and the execution of research activities) and the dynamics of the internal decision making process.

A problem that any complex organization has to face when defining its internal structure is that of

providing itself with frameworks that work well among themselves, each carrying out specific functions in the most efficient manner, without duplication, overlapping or interference. The main functions of universities are teaching and research. These are tasks assigned to professors and researchers, who constitute the Basic Unit.

However, the methods by which these Basic Units are coordinated to offer a certain number of study curricula, to manage the funds and the equipment necessary for research, to recruit new professors/researchers, often vary even within the same country.

These functions can all be carried out within the same structure or different structures, which in turn can be in a hierarchical order or just functionally different.

The present situation of Italian Universities can be described as being characterised by an elevated functional differentiation and a scarce formal integration among the basic structures (Departments and Faculty).

Each university has structured, via incremental processes, the Faculty to Department rapport in very different ways.

The university professor has two functions: teaching and research. The importance for laboratory researchers as regards the department, is closely linked to the type of discipline. The faculty is actually a confederation of departments and a crucial place of cooperation between them.

In respect to the autonomy given to the universities, the recruitment procedures for a university career, be it for teaching, technical or administrative staff, are managed directly by the universities via local competitions.

The **university career positions** for research and teaching are: Full Professor and Associate Professor.

Following the Law 240/2010 (Gelmini reform), the prerequisite for a university role requires achieving the National Scientific Qualification.

Generally, the candidates require three relevant achievements within their scientific field or discipline (number of monographs, of articles written and of articles in a 'level A' journal, published within a certain time frame). The candidates will then be subjected to an evaluation by a committee of five full professors from each academic recruitment field.

The five committee members are drawn from a list made up from those who have or have surpassed the merit-threshold for full professors and those who applied. No more than one full professor from the same university can be part of the committee.

The candidates' qualifications and publications are analysed so that the committee can express a judgement supporting the awarding or not of the Qualification/Diploma which lasts 6 years. For the associates, a lesser number of qualifications and publications are required compared to full professors. The standards and bibliographic parameters are divided according to the respective levels established for each academic recruitment field.

The procedures to attain the Qualification/Diploma are organized annually by ministerial decree for each academic recruitment field and distinctly for full and associate university professors. The achievement of a qualification or diploma permits participation in competition for qualification or diploma organised over the next 6 years within the superior level of the same academic recruitment field.

With the Gelmini law, the probationary period and confirmation after 3 years from associate to full professor is abolished (in the past staff passed from associate to full professor only after a 3 year trial) and salary is evaluated every 3 years.

Individual universities announce a vacancy for an associate professor or full professor in the following manner:

“OPEN” competition (ex.art.18 comma 1 of law 240/2010). Candidates in possession of the National Scientific Qualification and also associate and full professors already employed in other locations, can apply for such position.

“OUTSIDER” competition (ex.art.18 comma 4 of law 240/2010). The candidates in possession of the National Scientific Qualification who are not employed by the university that offers the post or have not been assigned research contracts or, generally, have not worked there in the last 3 years can apply for the position. To this type of vacancy, all universities have to keep at least 20% of the positions available for recruitment in the three year program.

“INSIDER” competition (ex.art.24 comma 5 and 6 of law 240/2010). There are two types of insider competition:

Competition organised for fixed term “senior” researchers (RTD 6, see university researcher discipline) in the third and final year of their contract, who have attained their National Scientific Qualification as associate professor: the researcher will be evaluated by a specifically nominated committee and, after a positive assessment, be employed as an associate professor.

Competitions organised for indefinite term researchers or associate professors already employed by the university that offers the post, in possession the National Scientific Qualification to qualify for a superior role (art.24 comma 6).

For such positions the universities can allocate up to half of the resources available for the recruitment of professors in the 3 year programme plan.

Notwithstanding these 3 methods of recruitment, it is possible to carry out teaching/lecturing activities,

in the cases provided for by the law (for example foreign language teachers or well-known scholars).

- **Indefinite term researcher (exhaustible role);**
- **University assistants (exhaustible role);**
- **Fixed term researcher of art.24, comma 3, letter b)** law 240 of 2010. These are 3 year contracts, not renewable when expired, from which it is possible to directly access the role of associate professor, if in possession of the National Scientific Qualification and following a positive evaluation from the university;
- **Fixed term researcher art.24, comma 3, letter a)** law 240/2010. These are 3 year contracts, renewable for a further 2 years; and
- **Post-doctorate research assistant.** Each individual contract can have a minimum duration of 1 year and a maximum of 3 years. The total period of employment as post doctorate research assistant of the single subject cannot, however, exceed 6 years.

Prior to the creation of the position of researcher, an academic career provided the role of the “**voluntary assistant**”, named by the Rector, the **Extraordinary Assistant** named by the Administrative Board and the **Delegated Assistant** nominated by the Minister and after 1967, by the Rector. Finally, the **Full Assistant** nominated by the Minister following public competition for qualifications/exams, a proper role despite being subject to the linked professor.

Such profiles were abolished and became extinct in 1980 when the position of indefinite term researcher was implemented. This became the third level of university positions. At the same time, it was decided that all tenured assistants and professors already in employment for at least 3 years and the “graduate technicians” with at least 3 years of teaching, be classified in the role of associates based on the

assessment of their eligibility by a national committee.

Prior to the enactment of the Gelmini law, one became a researcher following a comparative evaluation declared by the individual university faculties. A faculty could ask its university to announce a post only after having been guaranteed to be able to pay the salary by the Academic Senate and the Administrative Board. Now such a procedure is no longer acceptable. The role of indefinite term researcher has been transformed to that of fixed term researcher (RTD) with a three year work contract.

According to Law 240 of 30th December 2010, there are now two types of university researcher:

- **“Junior” researcher or RDTa** with a 3 year contract renewable for a further 2 years; and
- **“Senior” researcher or RTDb** with a non-renewable 3 year contract, at the end of which, if in possession of the national qualification, the university can convert the researcher to the role of associate after a positive evaluation from a committee specially nominated by the department and the availability of university funds.

At the moment, the role of full assistant – who has passed a national selection, but who (for various reasons) has not passed eligibility starting from 1980 (year of enactment of the new regulation on recruitment of university teaching staff) is converted to that of university researcher, with the same salary level.

The **fixed visiting professor** (also a role being phased out) instead is a position of controversy. In 2008 there were 49 visiting professors in Italy who, for one reason or another, had not attained a positive eligibility assessment since 1982. They carried out teaching activities equal to an associate professor but with a lower salary.

Usually, after a Master’s degree (or old rule degree) and before becoming university researchers, a PhD

is obtained or other activities of collaboration with a research group relevant to the discipline in question are carried out. Often this would be as an expert on the subject or as assistant lecturer of the courses.

With the approval of the law of 30th December 2010 n. 240, enforced on 29 January 2011, according to art.24 (enforced from 07.042012) the PhD (alternatively the attainment of the Diploma of Specialisation issued by the university's School of Specialisation only in the medical sector) will be the obligatory qualification to carry out the job of researcher. This will provide access to the successive levels of academic career (associate professor and full professor) with the exclusion of subjects already employed indefinitely such as university full professors or associate or researchers, even if no longer in service.

Alongside the above mentioned figures, the figure of fixed term **Extraordinary Professor** as foreseen by art. 1, comma 12 of act. 230 of 2005 is still enforced. This is a professor with a 3 year contract renewable for a further 3 years, financed by outsiders for research activities, reserved for those who attained eligibility for the level of full professors, subjects in possession of elevated scientific and professional qualifications. For the duration of the contract, these positions have the same judicial and economic treatment as the full professors with eventual economic integrations where agreed by the contract.

From a funding point of view, the teaching activity is mainly borne by the university and therefore, mainly managed according to internal logistics. However, the research activity has a consistent external input and is therefore partially managed according to different and not solely academic logistics. The Italian Heads of Department act as intermediaries between the Heads of the University and the professors of the different basic structures of Departments, Schools, Institutes and Laboratories.

The comparison of the PIL percentage invested in research by other European countries is a number which needs no comment. This is between 1.0% and 1.2% of PIL against the 2.2% of France and the

2.8% of Germany and well under the European average of around 2%.

This situation, together with a continually changing government, produces various negative effects. These include the decreasing number of students, (much lower in Italy than other comparable countries); the closure of PhD research courses (as well as the decrease in the number of research graduates themselves); and obviously the crash in number of researchers and professors.

What strikes us most in these conditions, is the undeniable and many times repeated fact that the Italian universities, with all their complexities, continue to produce researchers able to take part in “open competitions” abroad and continue to publish first class international articles and monographs, even above the academic level of countries in which public funds in this sector are much more generous.

Some years after the approval of the Gelmini law, it can be said that it has produced negative effects both on research funds and universities.

One of the first mistakes of the Gelmini law was to assign all recruitment to the full professors, (the cause of many retirements with missed replacements). In certain scientific disciplinary fields, the category of the full professor is so restricted at a national level as to render personal contacts inevitable.

The absolute discretion left, by law, to the departments and universities regarding regulations on recruitment and therefore the single announcements for positions, has made it inevitable that “each location” employs its own researchers without respecting the idea of free competition and meritocracy.

A fund is distributed yearly by the Ministry to all universities which is divided between researchers and professors. For type A and type B researchers, who have research and teaching functions which are not at all similar, their destiny is completely different. Precarious for the former and virtually stable for the latter.

Selections carried out at a local level require neither written nor oral tests. A certain number of

requirements are indispensable; the committee is designated by the department in a very liberal manner, according to procedures that vary from university to university and department to department. Often there is an “internal” department member on the committee plus usually two other professors from the relevant field or picked from a group proposed by the internal member.

In these competitions it usually happens that the candidates have to fit a “profile”, sometimes so detailed and stringent that it is possible to set up a winner beforehand and put off potential candidates. This doesn't necessarily mean that the worst candidate is employed: the point is that it is possible that there are candidates with better qualifications and experience than the “predestined” candidate.

Some universities have introduced minimum parameters regarding the first step in an academic career.

Contrary to the above, in the Anglo-Saxon area the “profiles” are normally far more generic. In Germany an “internal career” is prohibited as the researcher cannot begin or end his/her career in the same university. An “open competition” is guaranteed as well as an in depth investigation on the capacity of each candidate. It is well known that, many Italians who have entered the university system of other countries, have benefited and continue to benefit from this approach.

For associate professors and full professors there are instead two other methods of recruitment. The first method, used a lot during the first years of enforcement of the Gelmini reform and seen as a transitory measure to remedy the conditions of the old fixed term researchers (redundant category), is the so called competition “ex.art.24”. This consists of a selection reserved for those of the scientific-disciplinary field who are already employed by the university. The indefinite term researchers (a professional position that no longer exists) have had the opportunity to become associates (rarely full professors) via closed internal competitions restricted to those already employed by the university who advertised the position.

This procedure has had the undoubted merit of rewarding, via a private selection, some researchers who have been active for a long time within the Italian university system. However, it has objectively reserved many resources for a type of competition that more often looked like an *Ope Legis* promotion rather than an open competition.

The other method of recruitment of professors is the “ex.art.18” approach and consists by comparison in a competition also open to suitably qualified outsiders. For both competitions “ex.art. 18 and ex. Art. 24, the main requirement to be admitted to the selection is in fact, the possession of the National Scientific Qualification (for full or associate professors) a title of eligibility that is issued by a committee set up for each macro-sector discipline at a national level.

Anyone can apply for this competition and they are judged by 5 full professors with particular requisites of scientific achievement. This committee operates throughout Italy and is independent of the individual universities. This then creates lists of “qualified” eligible candidates for the role of associate or full professor. Many of these “qualified” (in certain sectors, part qualified) individuals are not structured researchers and do not come from university roles but work abroad or as locum professors or as independent researchers or simply have unstable contracts.

It can be said that NSQ (National Scientific Qualification) is useful and has been successful in removing the most obviously inadequate researchers by making them ineligible.

The NSQ is “open” and there is no limit to the number of qualifications each year. However, each commission is free to set the number of eligible candidates. If the competition announced by the Department is “ex.art.24”, this happens by default and is actually written on the announcement that the winner has to be an internal candidate.

If instead, it is “ex.art. 18”, there are a series of expedients to ensure the outcome in advance.

Committees made up of an internal member and another 2 or 4 members indicated by the department (that is, full professor of the relevant discipline or similar discipline, who often are also the internal members of the committee) or, if lucky, picked from a small list proposed by the department or the Academic Senate (that is, again, by their full professor of the relevant or similar discipline). Even though the Gelmini law prohibits using “profiles” as an evaluation criteria, the required profile can be so stringent as to seem to have been created for a predestined winner. Cunningly some university regulations state the contrary and so some committees refer to profiles even when they should not. The system puts the responsibility, not on the committee, but on the department. In some universities, the committee doesn't announce the winner, but makes up a list of 2 or 3 “eligible” candidates, amongst whom the department can choose who they prefer, without considering the evaluation made by the committee. As can be imagined, there is no realistic choice to be made between a colleague that the department has known for years and a complete “stranger”.

Since this qualification system started (2012) it can be said of all scientific-disciplinary fields, that among those who possess NSQ, those who have been employed as professors are nearly all scholars who were already employed in different positions within the university. It is rare that “outsiders” have been employed. This is even truer for full professors than it is for associates.

In addition, economic motives favour the above system of internal recruitment. In fact, regarding the so called “organic points” system (funds allocated to each department to finance its own recruitment program) appointing an outside associate costs 0.7 points and appointing an outside full professor costs 1 point. Compare this with an internal promotion of an employee that the university already pays; typically, this is a factor of 0.2 for the promotion from researcher to associate and 0.3 for the promotion from associate to full professor. These are significant savings.

Putting aside the majority of competitions “ex.art.24”, but taking two cases from the extreme ends of

the peninsula, it can be observed that in an announcement of a large university of the south that offered, “ex.art.18”, 33 places as full professors in disciplines of various types, all 33 positions were offered to professors already associated with that university.

An announcement by a large university in the north that offered, “ex.art.18”, of the 61 associate professor places in all disciplines, the number of university outsiders who were offered the position could be counted on less than one hand!

Extraordinarily there is a different recruitment system financed or promoted by the Ministry on a yearly basis. This involves real outsiders, mostly from abroad who present themselves after having been granted conspicuous financing. These few outsiders are much sought-after by universities, not only for their scientific contribution and for the prestige and lustre they bring to the university, but above all for the amount of money they bring with them, often a blessing for the departments' balance sheet. This is why their direct employment, without competition, mainly as associate professors, rarely corresponds to the desire to implement or promote a shared direction of research.

One can bring up a technical objection. Up to now the great number of “internal” winners (in the private competitions ex.art.24, but also those theoretically “open” ex.art. 18) was due to the necessity to “take care” of the indefinite term researchers so as to avoid them becoming “surplus” and unmanageable by the system. Once all the “qualified” candidates among them are dealt with, it will be inevitable that non structured associates and full professors will be taken on. The first “new” candidates to be employed as associate and full professors will be Type A or Type B researchers, taken on according to competitions that are inevitably “aimed” or “profiled” to favoured candidates.

Not all indefinite term “old researchers” have been dealt with and we are a long way off this as regards promotions to full professor from associate. For such promotions it will be necessary to use many

resources which will weigh on the university's balance sheet once the ad hoc incentives of the Gelmini reform have finished.

Moreover, the number of persons qualified will continue to rise as there are new sittings of the competition for the National Scientific Qualification and therefore the problem will only increase.

The resources to be invested to employ an associate or full professor from “outside” are much higher compared to those persons promoted internally.

The problem of under-funding, combined with the faults of the recruitment system just described, renders the university system very static.

The professors, always distracted more by their teaching and research activities with heavy often unmanageable workloads and forever changing regulations, cannot handle the financial aspects of the system.

One could try to change what is possible, for example by making the “competitions” really open via a number of structural modifications at a central level. These modifications could include: closed qualifications; committees picked or made up transparently; competitions made public on national and international sites; impossibility of internal career moves, real financing of positions (even if an “outsider” wins), so as to favour a real fluidity of researchers.

In the Italian research system there is urgent need for a change of pace. We need to provide encouraging signals for the young who are always desperate to find a future that lives up to their expectations in this country.

2. MANAGEMENT OF HUMAN RESOURCES IN UNIVERSITIES

It will now briefly define some key concepts of the labor market as they will be used several times in subsequent elaborations.

The expression labor market is used to indicate the set of mechanisms that regulate the meeting between companies that ask for jobs, for job vacancies and the job seekers who offer it, determining wage and employment levels.

In traditional microeconomic theory, labor services represent a commodity, which can be exchanged like the others with a given quantity of money. So, the labor market is the same as that in which other goods and services are exchanged.

For a better definition, it is useful to classify the labor market into:

- external market, which is the real labor market, on which, in competition with each other, people are offered who are not yet employed or in search of a better place;
- internal market, which defines the procedures within an organization to move employees from one place to another, and to establish career paths.

Companies, in their own personnel management strategies, alternately make use of one or the other market:

- buying the human resources, they need on the market, possibly offering a higher salary than those of competitors;

- cultivating the professionalism of its employees, investing in their training and thus guaranteeing the availability of the human resources they expect to need.

Promotion in the internal labor market is often used both to fill a vacancy due to resignation, retirement, or dismissal, or as an incentive to ask for more commitment from the worker or as recognition for work already done.

As in business sector, even the academic world has to deal with personnel management issues.

In compliance with the recognized autonomy of universities, the recruitment procedures for access to university careers, both for teaching staff and for technical administrative staff (PTA), are managed directly by the universities through local competitions.

In the system of state universities, the hiring faculties are assigned annually, by decree of the Minister, considering:

- of the national maximum limit for the turn over established by the state legislation (80% in 2017, 100% starting from 2018);
- the insurance to each university to be able to count on a minimum annual budget equal to 50% of the resources deriving from its terminations the previous year
- of the budget indicators of each university.

To make recruitment planning flexible in terms of positions to be taken and, at the same time, to ensure the sustainability of the budgets of universities over time, each university is allocated a budget in terms of Organic Points¹ annually.

¹ Organic Points

The Organic Point (hereinafter referred to as OP) represents the average value at system level of the cost attributed to the 1st level Professor who acts as a benchmark for graduating the cost of the other qualifications. For the teaching staff, the Organic Points are translated into:

- Professor I level = 1 PO
- Professor II level = 0.7 PO;
- Researcher type b) = 0.5 PO;
- Researcher type a) = 0.4 PO.

3. DESCRIPTIVE ANALYSIS OF DATA RELATING TO THE ROLES OF UNIVERSITY PERSONNEL

By consulting the website of the Ministry of Education, University and Research (hereinafter referred to as MIUR), the "staff of the universities", from which the database was downloaded, was traced, taking into consideration only the personnel of the scientific area 13 (economics and statistics)².

The years from 2001 to 2018 were taken into consideration.

For each year taken into consideration, a "year" data column has been inserted to allow statistical cross-tabulation.

In the database of each year there are:

- Band that identifies the current academic title of the university employee (for example: ordinary, associate, confirmed researcher, etc.);
- Surname and name
- Gender
- University
- Faculty
- Disciplinary scientific sector (hereinafter referred to as SSD) is a disciplinary distinction used in Italy in universities to organize higher education;

² <https://cercauniversita.cineca.it/php5/docenti/cerca.php>, last accessed on February 22, 2019

- Competition Section is used in the identification of competitions for the various disciplines;
- Membership structure
- Year of membership.

Data processing was done correcting inaccuracies and making formal adjustments such as removing special characters.

From data analysis, various problems related to homonyms emerged, which were manually corrected with changes in each year concerned. The double name problem was solved by adding a number after the name.

There was the strange situation that an associate professor participated in a competition to become a researcher, which is impossible because in that case there would have been a relegation rather than a career advancement, in fact it was only an error in compiling the data.

Only a rare case was found: Prof. Simone Lazzini saw the awarding of the competition won for the chair of Business Economics canceled (SECS-P / 07). In this case it could rightly be pointed out that there was an effective change in the career a year in progress and a year in relegation.

Universities have been given a geographical area and an indicator of the size of the university.

The Italian universities in which the scientific area 13 is present (economics and statistics) are 92 in total.

To create homogeneous territorial areas, they were divided into 3 groups, trying to respect the geographical position on one hand (North with code 1, Center with code 2 and South with code 3) and, on the other, not to create too many disparities in quantity (respectively 31, 31 and 30 incorporating Abruzzo and Molise in the southern territorial area).

Furthermore, all the universities were classified according to the CENSIS (Social Investment Study Center, in Italian “Centro Studi Investimenti Sociali”) criteria, unifying state and non-state, based on the type given by the number of members:

- Polytechnics (category independent of the number of enrolled students; institution of higher studies autonomous from an administrative and didactic point of view) with code 1, total 4
- Small universities with enrollments up to 10,000 with code 2, total 34
- Medium-sized universities with enrollments from 10,000 to 20,000 with code 3, total 25
- Large universities with enrollments from 20,000 to 40,000 with code 4, total 20
- Mega universities with over 40,000 members with code 5, total 9.

All the roles existing in the database have been re-aggregated into 3 Levels:

- Level 1 (which includes: Ordinary and Extraordinary);
- Level 2 (which includes: Confirmed and Associated Associates not confirmed);
- Level 3 (which includes: Assistants, Assistants to exhaustion role, Researchers, Unconfirmed Researchers, Temporary Researchers and Permanent Researchers and Appointees).

Macro Sector	Economics	Management	Economic History	Statistics	
SSD	P/01 P/02 P/03 P/06 P/05	P/07 P/08 P/10 P/11 P/09 P/13	P/12 P/04	S/01 S/02 S/03 S/04 S/05 S/06	Total
2001	1.300	1.242	285	1.061	3.888
2002	1.363	1.355	287	1.107	4.112
2003	1.348	1.356	282	1.088	4.074
2004	1.387	1.409	276	1.111	4.183
2005	1.493	1.550	270	1.161	4.474
2006	1.590	1.698	262	1.195	4.745
2007	1.604	1.748	254	1.203	4.809
2008	1.675	1.873	258	1.241	5.047
2009	1.646	1.877	250	1.221	4.994
2010	1.577	1.870	229	1.171	4.847
2011	1.558	1.886	227	1.152	4.823
2012	1.528	1.908	221	1.144	4.801
2013	1.518	1.912	214	1.143	4.787
2014	1.497	1.912	207	1.127	4.743
2015	1.497	1.947	199	1.128	4.771
2016	1.499	1.958	188	1.123	4.768
2017	1.504	1.970	181	1.123	4.778
2018	1.532	2.011	178	1.140	4.861
Total	27.116	31.482	4.268	20.639	83.505

Tab. III.1 Cross tabulation of Year (rows) vs. SSD (columns)

Analyzing the data in the table (Tab. III.1), it can easily see that the subjects of the scientific disciplinary sector that are part of the scientific area 13 (Economics, Business Economics, Economic History and Statistics) are reported in the columns, while the years taken into consideration are reported in the rows: from 2001 to 2018. (The detailed table Tab. A.1 containing all the specific scientific disciplinary sectors divided into three periods 2001-2006, 2007-2012 and 2013-2018 is attached in the appendix *)

The data give the opportunity to check the progress of the people engaged in the various positions of the university staff: for example, in 2008 the peak is reached with 5047 units while in 2001 it started from 3888 units.

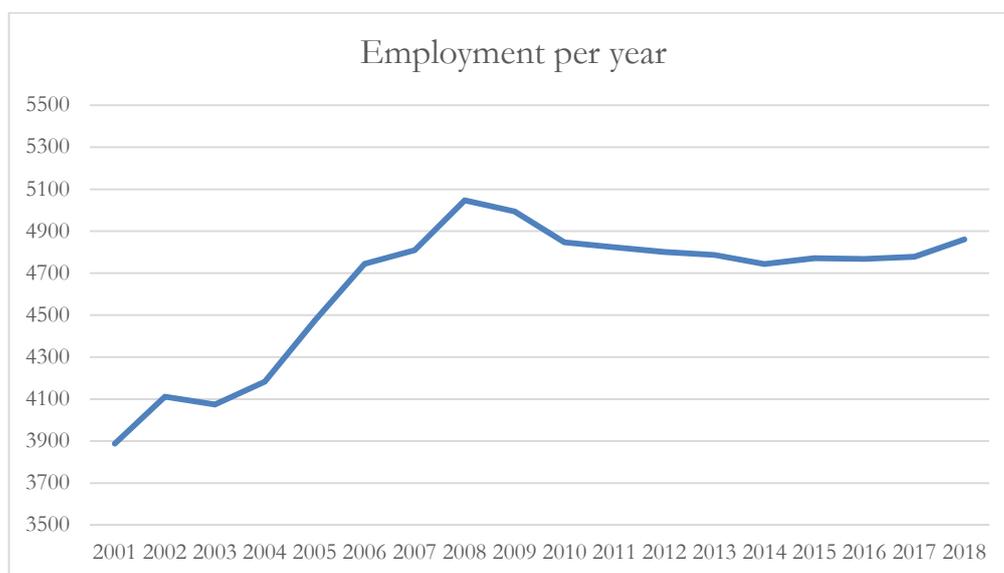


Fig. III.1 Employment per year

From the graph (Fig. III.), it is clear that there has been a considerable increase (approximately + 30%) in employment for the first 8 years (2001-2008) followed by a slight decline and then remained generally constant.

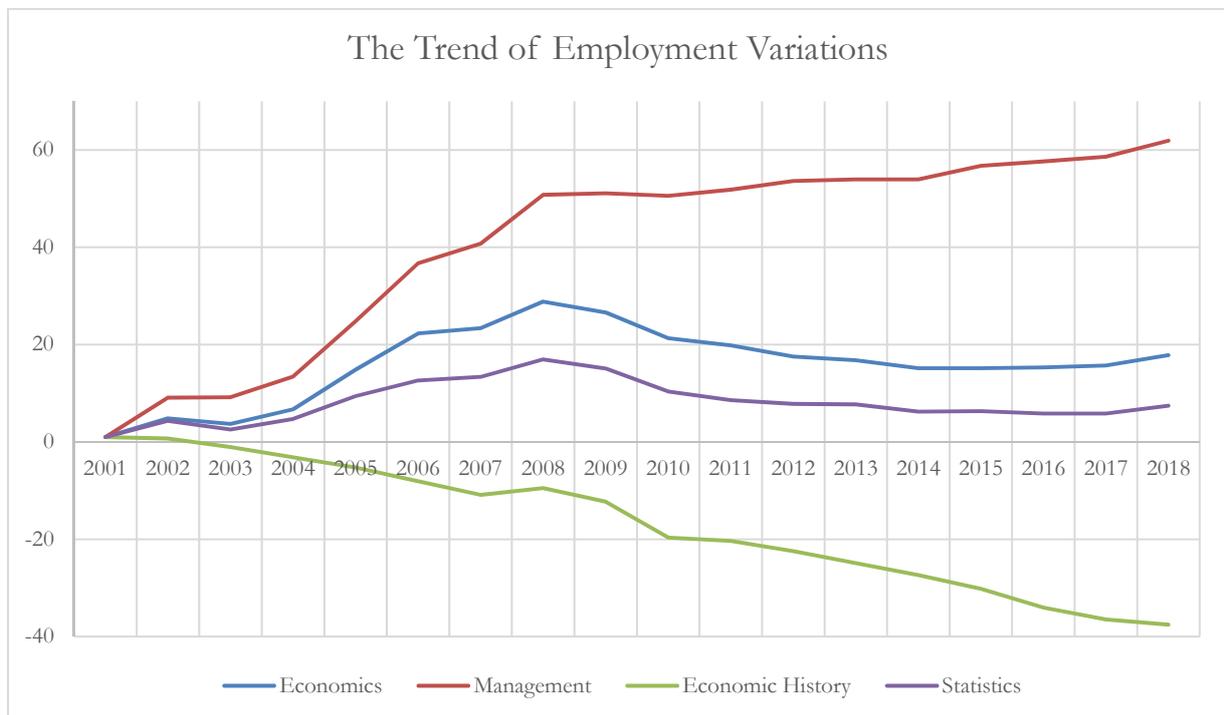


Fig. III.2 The Trend of Employment Variations

The blue line in the graph (Fig. III.2) shows the situation of the employees in the macro sector of Economics (which includes the SSDs P/01 P/02 P/03 P/05 P/06) gradually increasing until 2008, followed by a phase of downturn until to date.

The orange line of the employees of the macro sector of Management (which includes the SSD P/07 P/08 P/09 P/10 P/11 P/13) shows a significant increase up to 2008, to then remain in slight growth, highlighting that the employees in this sector are the most numerous (2011).

The gray line (in Fig. III.2) of the Economic History macro sector (which includes the SSD P/12 P/04) shows a continuous decrease in personnel excluding the period from 2007 to 2010 in which there was a slight increase.

The yellow line of the graph (Fig. III.2), regarding the employees in the Statistics macro-sector (which includes the SSDs S/01 S/02 S/03 S/04 S/05 S/06), follows the same trend of the Economics staff while counting less units.

The elaboration of the data concerning the 4 macro sectors of the scientific area 13 (economic and statistical sciences) has allowed to evaluate the trend of employment variations by constructing fixed-base index numbers.

When calculating the index numbers with a fixed base, the reference period always remains the same (in this case the year 2001 was taken as a reference and set to 100).

Employment of personnel over the years is compared with the employment of staff in the basic situation:

$$\left| \begin{array}{c|c} t & I_t = \frac{Y_t}{Y_1} \end{array} \right|$$

Note that the fixed base index numbers are indicated with a capital letter "I"; the index at the bottom left indicates the base time, the index at the bottom right indicates the time for which the index is calculated.

The index numbers have been multiplied by 100 so as to obtain percentage rates.

Year	Economics		Management	
2001 *	1300	100	1242	100
2002	1363	104,846	1355	109,098
2003	1348	103,692	1356	109,179
2004	1387	106,692	1409	113,446
2005	1493	114,846	1550	124,799
2006	1590	122,308	1698	136,715
2007	1604	123,385	1748	140,741
2008	1675	128,846	1873	150,805
2009	1646	126,615	1877	151,127
2010	1577	121,308	1870	150,564
2011	1558	119,846	1886	151,852
2012	1528	117,538	1908	153,623
2013	1518	116,769	1912	153,945
2014	1497	115,154	1912	153,945
2015	1497	115,154	1947	156,763
2016	1499	115,308	1958	157,649
2017	1504	115,692	1970	158,615
2018	1532	117,846	2011	161,916

Tab. III.2A Cross tabulation of Year (rows) vs. Macro Sectors (columns) and fixed base

***: fixed base numbers (2001=100)**

Year	Economic History		Statistics	
2001 *	285	100	1061	100
2002	287	100,702	1107	104,335533
2003	282	98,947	1088	102,545
2004	276	96,842	1111	104,713
2005	270	94,737	1161	109,425
2006	262	91,930	1195	112,630
2007	254	89,123	1203	113,384
2008	258	90,526	1241	116,965
2009	250	87,719	1221	115,080
2010	229	80,351	1171	110,368
2011	227	79,649	1152	108,577
2012	221	77,544	1144	107,823
2013	214	75,088	1143	107,729
2014	207	72,632	1127	106,221
2015	199	69,825	1128	106,315
2016	188	65,965	1123	105,844
2017	181	63,509	1123	105,844
2018	178	62,456	1140	107,446

Tab. III.2B Cross tabulation of Year (rows) vs. Macro Sectors (columns) and fixed base

***: fixed base numbers (2001=100)**

From the table (Tab. III.2) it can be seen that the employment of teachers of Economics has increased by 4.84% between 2001 and 2002; while it increased by about 28.85% between 2001 and 2008.

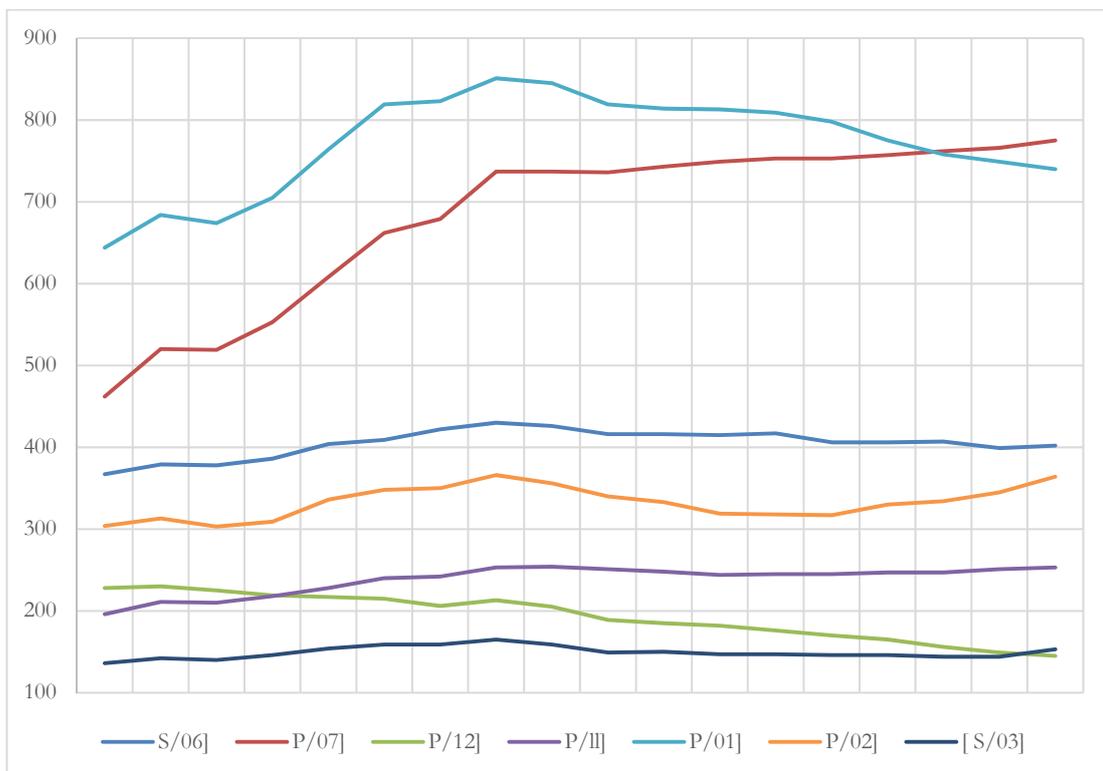


Fig. III.3 The trend in number of employees in the most relevant disciplinary scientific sectors

The trend in the number of employees in the most relevant disciplinary scientific sectors (Fig. III.3) can be noted:

- S03 Economic Statistic numerically, the least present in the university staff (among those taken into consideration), has a linear trend and without oscillations;

- P11 Economics of financial intermediaries shows a growing trend until 2008 and then remains constant over the years;
- P12 History Economy reveals a constant decrease in the years under examination (-36.4%);
- P02 Economic Policy shows a fluctuating trend throughout the period under review;
- S06 Mathematical methods of economics and actuarial and financial sciences, slightly increasing up to the peak of employment and then continuing steadily;
- P07 Management, a clearly growing trend stands out until 2008 to continue regularly in slight growth, exceeding the P01 employees by 35 units (the most numerous until 2017);
- P01 Political Economy, shows considerable growth until 2008 and then begins a phase of decline.

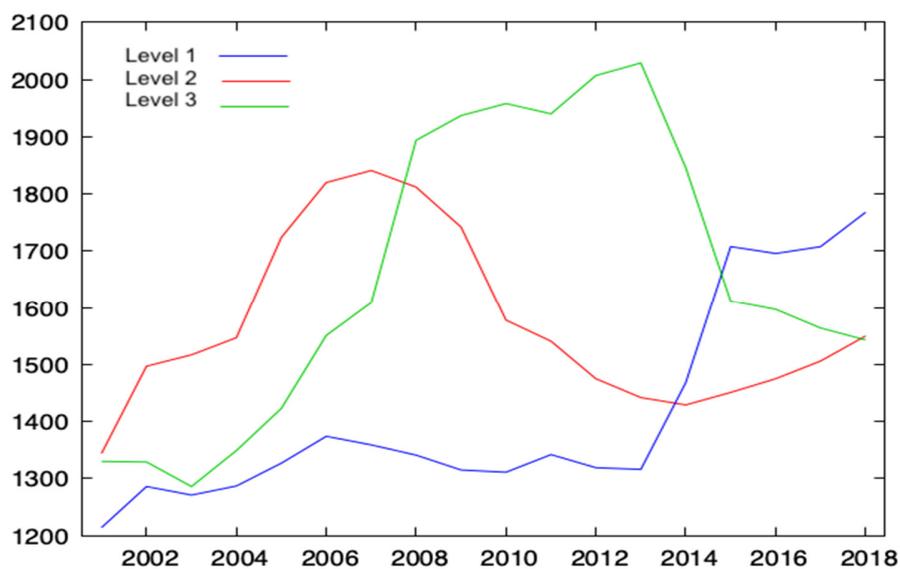


Fig. III.4 Evolution over time of the occupation of Level 1, Level 2 and Level 3 in all Italian universities, in the scientific area 13

The graph (Fig. III.4) represents the number of figures present in the universities: with the red color Level 2 is identified, with the blue color the Level 1 and with the green the Level 3. It is evident that until 2006 there is a considerable increase for what concerns the Level 2 and Level 3, that after a very slight initial decline record a similar growing trend; on the contrary, the Level 1 has only a slight increase in the units.

In the following period, the Level 2, after an initial increase, peaks in 2007 with 1841 people, and then it begins to decrease until it reaches the minimum in 2014.

On the contrary, Level 3 continues to increase significantly at the beginning and then more gradually, also as a result of the blocking of competitions (2009-2013). At the same time, Level 1 roughly maintains the same elements until competitions are released in 2013 when we see a surge until 2015, followed by a slight but steady increase. Probably the increase is also due to the promotion of a considerable number of teachers in Level 2 in Level 1.

As regards Level 3, their number initially collapses and then continues to decline while Level 2 increases, again as a result of the unblocking of competitions which favors career advancement.

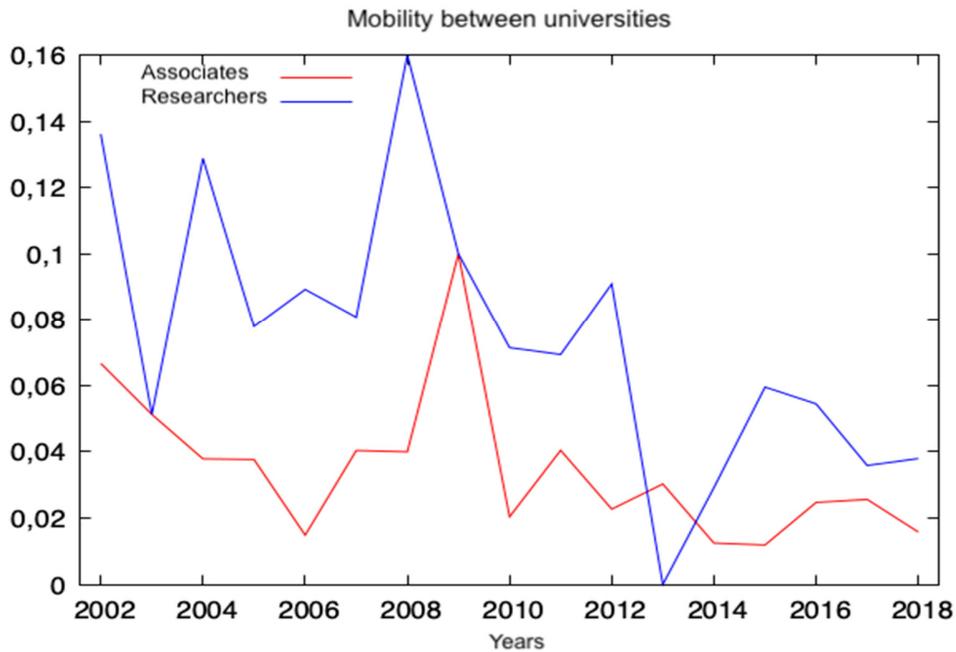


Fig. III.5 Mobility between universities

Now analyzing the graph (Fig. III.5) that represents the Mobility between universities as regards in particular the Researchers and the Associates.

Mobility means the possibility of moving to other institutions, within one's own country or abroad, for a more or less limited period of time.

In some cases, mobility is a choice driven by career ambitions and to amplify the training experience, usually implemented by young scholars or researchers without family ties; unfortunately, this can result in a form of “precarization” that can impinge on a career.

Mobility between universities is an index that represents how many units of personnel have changed work place from one year to another. It was obtained by comparing the University of a given year

with the University of the following year, for the professors of Level 2 and Level 3, in order to obtain the variations of workplace that occurred in the different years.

Considering, “x” the number of Researchers (Level 3) and “y” the number of Associates (Level 2): each of them is characterized by “t” which represents the year to which it refers and “i” which represents the university in which it is located.

The mobility between universities is the number of people who in year “t” who were in a certain “i” and in year “t+1” changed “i”, compared to the total number of researchers or associates per year “t”.

Mobility index for $x = \frac{x_{t+1,i,t}}{Tot.X}$; Mobility index for $y = \frac{y_{t+1,i,t}}{Tot.Y}$, where i’=is a different university.

The chart (Fig. III.5) shows the values of the percentage variations on the y-axis and the periods taken into consideration on the x-axis.

The red color (in Fig. III.5) represents the variations of the Associates, while the blue ones of the Researchers.

Analyzing the graph (Fig. III.5), it is clear that there are substantial variations in certain periods.

Comparing the graph (Fig. III.5) in the two positions shows that the changes in the mobility of Researchers are much more significant than those of the Associates.

In the first period of time, there is a sharp decrease in the mobility of Researchers, which is less relevant for the Associates and continues to decrease until 2005/06.

For the Researchers, after the decline, there is an increase followed by a decrease, then continues with a fluctuating trend, until it reaches the maximum in 2007/08 with 16% of variations.

After 2005/06, for the Associates, a period of increase in mobility began, which reached a maximum of 10% in 2008/09, after which there was a sharp decrease and then fluctuating until today.

Even for the Researchers, after the maximum reached, a notable decrease in mobility, marked by two collapses separated by a short period of stasis, can be noticed.

2012/13 marks the minimum of changes, then there is an increase up to 2014/15, followed by a slight decrease and then stabilizing until 2017/18.

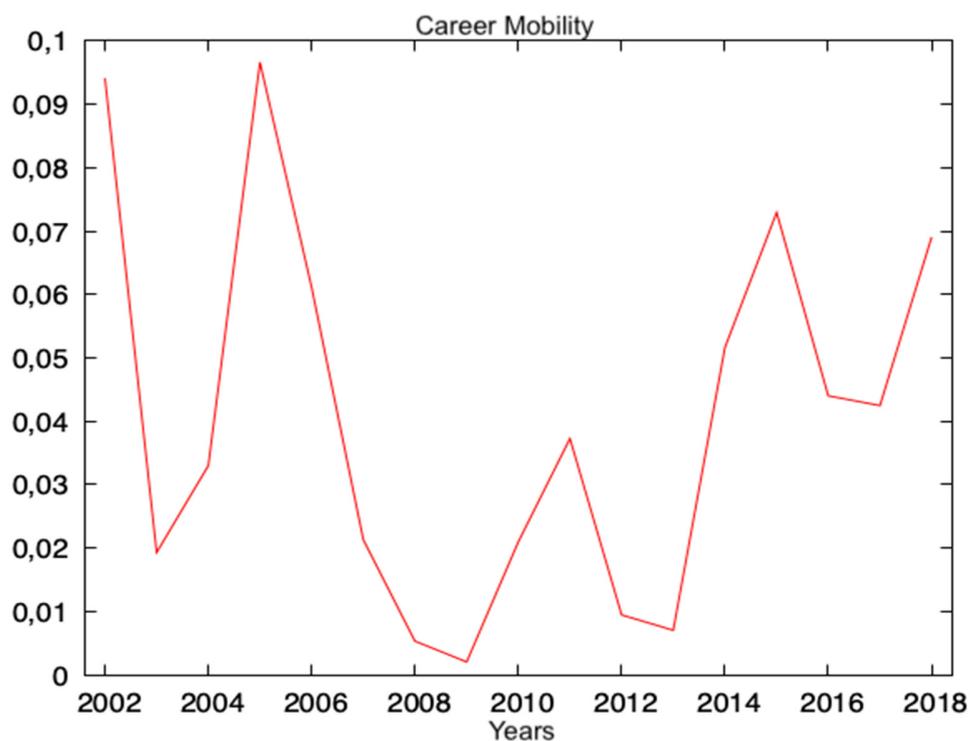


Fig. III.6 Career Mobility

The Career Mobility Graph (Fig. III.6) shows the percentage of university staff who have had a career advancement in the years examined.

The numbers of the percentage changes are shown on the ordinate axis.

Each year reported in the graph (Fig. III.6) is compared with the previous period to obtain the percentage of growth.

Considering, X the number of teachers (of Level 2 and Level 3): each of them is characterized by T which represents the year to which it refers and I which represents the band to which they belong.

Career mobility is the number of people who in the year T who were in a certain I and in the year T + 1 changed I, compared to the total number of teachers per year T

Starting from 2001/02, a very high career variation is evident followed by a valley, with a new peak in 2004/05 that represents the maximum percentage reached (9.6%).

In the following period (2004/05-2008/09) there is a vertical collapse in the percentage index; which resumes its rise following Law 240/2010 (so-called Gelmini Reform) in the years 2010/11; subsequently it falls (2012/13) and then starts to increase again until it reaches 7.3% in the years 2014/15; then there is a decrease to resume climbing up to today.

4. TURNOVER ANALYSIS

By processing the available database it is possible to indicate the stock with “x”: for the number of Researchers, the abbreviation $x_{t,i}^R$ (Level 3), for Associates $x_{t,i}^A$ (Level 2) and for the Full Professors $x_{t,i}^F$ (Level 1), where the variable “i” indicates each individual university, the variable “t” refers to the initial time of the analysis. We decide to observe 2003, 2008 and 2013.

$x_{t,i}^R$
 $x_{t,i}^A$
 $x_{t,i}^F$

Where “t” (2003, 2008, 2013) and “i” represents the universities

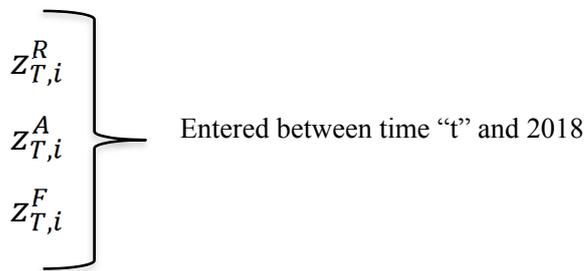
For example, if $R_{2003} = 1$, it means that from a certain observation on the whole list, there is only one Researcher (Level 3) in the year 2003.

Subsequently, the number of professors who entered the University as a flow of internal entries, is represented with “y”: the Researchers as $y_{T,i}^R$, the Associates as $y_{T,i}^A$ and the Full Professors as $y_{T,i}^F$, where the variable “i” indicates each individual university, the variable “T” can be chosen among three different time horizons: 2003-2018, 2008-2018 and 2013-2018.

$y_{T,i}^R$
 $y_{T,i}^A$
 $y_{T,i}^F$

Entered between time “t” and 2018

Finally the number of professors who entered the University as a flow of external entries, is represented with “z”: the Researchers as $Z_{T,i}^R$, the Associates as $Z_{T,i}^A$ and the Full Professors as $Z_{T,i}^F$, where the variable "i" indicates each individual university, the variable "T" can be chosen among three different time horizons: 2003-2018, 2008-2018 and 2013-2018.



From the observations of the variables described above we define: a Researcher whose name was not present in a given year and who instead appears in the following year is hired in that particular university. ($Y_{T,i}^R=1$)

A Researcher, while maintaining the same level, moves to another university ($Z_{T,i}^R$ Researcher hired from outside): this occurs when the surname is present in the previous year, but in the current year the workplace is different.

The call for the Associate from within the same university for those who were not present or were a Researcher the previous year, then he was promoted from Level 3 to Level 2, in the same university ($Y_{T,i}^A$ Associate hired within the same university). While $Z_{T,i}^A$ indicates the associates, who come from different universities for transfer or promotion.

	Internal	External
Researchers	2.776	207
Associates	1.656	652
Full Professors	1.036	483
Total	5468	1342

Tab. IV.1 Summary flows from inside and outside

To continue with further processing, a new variable “**Y**” that has been obtained by the sum of all three levels flow of internal entries:

$$Y_{T,i} = y_{T,i}^R + y_{T,i}^A + y_{T,i}^F \quad (1)$$

where the variable “**i**” indicates each individual university, the variable “**T**” can be chosen among three different time horizons: 2003-2018, 2008-2018 and 2013-2018.

A further variable, “**Z**” that has been obtained by the sum of all three levels flow of external entries:

$$Z_{T,i} = z_{T,i}^R + z_{T,i}^A + z_{T,i}^F \quad (2)$$

where the variable “**i**” indicates each individual university, the variable “**T**” can be chosen among three different time horizons: 2003-2018, 2008-2018 and 2013-2018.

Next, a new variable “ $\tilde{\mathbf{Y}}$ ” that has been obtained by the sum of the flows of internal entries of Associates and Full Professors:

$$\tilde{Y}_{T,i} = y_{T,i}^A + y_{T,i}^F \quad (3)$$

where the variable "i" indicates each individual university, the variable "T" can be chosen among three different time horizons: 2003-2018, 2008-2018 and 2013-2018.

Finally, a new variable " \tilde{Z} " that has been obtained by the sum of the flows of internal entries of Associates and Full Professors:

$$\tilde{Z}_{T,i} = z_{T,i}^A + z_{T,i}^F \quad (4)$$

where the variable "i" indicates each individual university, the variable "T" can be chosen among three different time horizons: 2003-2018, 2008-2018 and 2013-2018.

The first indicator is the external "share" which is used to obtain the percentage of external hiring at time 0, indicated as " $Esh_{T,i}$ ":

$$Esh_{T,i} = \frac{Z_{T,i}}{(Y_{T,i} + Z_{T,i})} \quad (5)$$

The value obtained is between 0 and 1, if it is equal to 0 it means that no one has been hired from outside but that there has only been progression of internal career, while if it is equal to 1 all have been taken from outside and none from the inside.

Given that most researchers are hired from within, another elaboration has been done excluding them from the calculation thus obtaining a new indicator: is the external "share" without the Researchers which is used to obtain the percentage of external hiring at time t, indicated as " $Eshnores_{T,i}$ ":

$$Eshnores_{T,i} = \frac{\tilde{Z}_{T,i}}{(\tilde{Y}_{T,i} + \tilde{Z}_{T,i})} \quad (6)$$

In this way, we obtain the share of external recruitment on the total recruitment, this time excluding the researchers.

To assess the trend of external hiring, in the light of the last indicator developed, universities that have a number of teachers (Scientific area 13), of all three levels, have been excluded, less than 10, as they do not they are significant.

Once this last indicator was obtained, a series of charts was produced, first of all, a ranking of the universities was drawn based on the CENSIS classification by size (see pag. 26 of the previous chapter).

Taking into consideration only the universities that have the aforementioned characteristics we observe a frequency of 53, 58 and 57 respectively in 2003, 2008 and 2013.

Tables by type of university

Type	Mean	Std. Dev.	Frequency
Polytechnics	7,41%	0,00%	1
Small Universities	30,22%	10,86%	8
Medium Universities	22,87%	18,09%	17
Large Universities	22,10%	7,62%	19
Mega Universities	20,17%	7,01%	8
Total	23,00%	12,55%	53

**Tab. IV.2: % External Recruitment at the Universities >10 professors
(Res. excluded) – 2003 ($Eshnores_{T,i}$, Eq. 6)**

Type	Mean	Std. Dev.	Frequency
Polytechnics	21,82%	11,57%	2
Small Universities	23,86%	18,01%	10
Medium Universities	21,00%	17,92%	19
Large Universities	17,60%	8,38%	19
Mega Universities	18,44%	7,33%	8
Total	20,06%	13,75%	58

Tab. IV.3: % External Recruitment at the Universities >10 professors (Res. excluded) – 2008
($Eshnores_{T,t}$, Eq. 6)

Type	Mean	Std. Dev.	Frequency
Polytechnics	21,85%	10,70%	2
Small Universities	19,82%	22,04%	10
Medium Universities	15,17%	16,33%	18
Large Universities	13,35%	10,38%	19
Mega Universities	15,98%	7,78%	8
Total	15,73%	14,48%	57

Tab. IV.4: % External Recruitment at the Universities >10 professors (Res. excluded) – 2013
($Eshnores_{T,t}$, Eq. 6)

In 2003 (Table IV.2), it was detected that the highest percentage of recruitment from outside is in Small Universities (with 30.22%) followed by Medium, Large and Mega (all with a value of around 20% approximately), last the Polytechnics with 7.41%.

In 2008 (Table IV.3), the primacy of the small universities is confirmed, although decreasing compared to 2003 (with 23.9%), remains constant to the Mediums and Large Universities, while there is a net increase in Polytechnics (21, 8%).

In 2013 (Table IV.4) about Polytechnics, the percentage remains constant at 21, 80%, placing them first this time, followed immediately afterwards by the Little universities 19.80% in third place we find the Mega with 16% the Medium fourth and fifth the Large.

It was noted that the share of external recruitment on the total recruitment is greater in Small Universities and less in Large ones.

By the value of the totals it is possible to demonstrate that there was a progressive decrease in the share of external recruitment

Tables sorted by Geographical Area

Geographical Area	Mean	Std. Dev.	Frequency
North	22,38%	7,20%	21
Center	25,51%	19,25%	14
South	21,78%	11,40%	18
Total	23,00%	12,55%	53

Tab IV.5: % External Recruitment at the Universities >10 professors (Res. excluded)
2003 ($Eshnores_{T,i}$, Eq. 6)

Geographical Area	Mean	Std. Dev.	Frequency
North	23,02%	12,94%	24
Center	20,92%	18,48%	15
South	15,63%	9,27%	19
Total	20,06%	13,75%	58

Tab IV.6: % External Recruitment at the Universities >10 professors (Res. excluded)
2008 ($Eshnores_{T,i}$, Eq. 6)

Geographical Area	Mean	Std. Dev.	Frequency
North	19,18%	15,30%	24
Center	14,83%	17,45%	15
South	11,86%	9,47%	18
Total	15,73%	14,48%	57

Tab IV.7: % External Recruitment at the Universities >10 professors (Res. excluded)
2013 ($Eshnores_{T,i}$, Eq. 6)

In the same way, the data was also processed according to the Geographic Area of the universities (North, Center and South).

In 2003 (Table IV.5) it is the Center the area that results with the greatest number of external recruitment (25.5%) followed by the North (22.4%) and South (21.8%).

In 2008 (Table IV.6) North is in first position with 23% of external recruitment followed by the Center with 20.9% and then by the South with 15.6%.

In 2013 (Table IV.7), the North is confirmed as first position with 19.2% followed by the Center, which decreased to 14.8% compared to the previous year, South is still in the last place, with 11.9%.

If the Researchers had been included, the external recruitment trend would have been similar to the one developed above (Table IV.5, Table IV.6 and Table IV.7).

The totals are the same as the one made in the analysis by type of university.

4.1 OBSERVATIONS ON INDIVIDUAL UNIVERSITIES

N.	Universities	$\tilde{Y}_{2003,i}$	$\tilde{Z}_{2003,i}$	<i>Eshnores</i> _{2003,i}
1	LUISS Guido Carli - ROMA	9	48	84,21%
2	MOLISE	13	14	51,85%
3	LIUC – CASTELLANZA	8	5	38,46%
4	MILANO Bocconi	93	56	37,58%
5	SASSARI	19	10	34,48%
6	TERAMO	8	4	33,33%
7	NAPOLI Federico II	64	29	31,18%
8	MILANO	42	19	31,15%
9	SALENTO	23	10	30,30%
10	MACERATA	28	12	30,00%
11	TUSCIA	14	6	30,00%
12	VERONA	46	19	29,23%
13	PERUGIA	30	12	28,57%
14	ROMA TRE	59	23	28,05%
15	ROMA Tor Vergata	52	20	27,78%
16	GENOVA	30	11	26,83%
17	VENEZIA Ca Foscari	61	22	26,51%
18	ROMA La Sapienza	92	33	26,40%
19	INSUBRIA	24	8	25,00%
20	Cattolica del Sacro Cuore	102	34	25,00%
21	Parthenope di NAPOLI	73	24	24,74%
22	MESSINA	31	10	24,39%
23	TRENTO	45	14	23,73%
24	MILANO-BICOCCA	73	22	23,16%
25	PISA	52	15	22,39%

26	BOLOGNA	147	42	22,22%
27	FOGGIA	26	7	21,21%
28	CAMPANIA - L. Vanvitelli	30	8	21,05%
29	SANNIO di BENEVENTO	15	4	21,05%
30	CHIETI-PESCARA	64	17	20,99%
31	CASSINO e LAZIO MERID.	19	5	20,83%
32	UDINE	28	7	20,00%
33	TORINO	82	20	19,61%
34	BERGAMO	35	8	18,60%
35	BRESCIA	35	8	18,60%
36	TRIESTE	14	3	17,65%
37	PAVIA	29	6	17,14%
38	PARMA	36	7	16,28%
39	PADOVA	75	14	15,73%
40	FIRENZE	57	10	14,93%
41	MODENA e REGGIO EMILIA	40	7	14,89%
42	PIEMONTE ORIENTALE	30	5	14,29%
43	L'AQUILA	13	2	13,33%
44	FERRARA	26	4	13,33%
45	SALERNO	56	8	12,50%
46	CAGLIARI	44	6	12,00%
47	PALERMO	45	6	11,76%
48	U. della CALABRIA	46	6	11,54%
49	Politecnica delle MARCHE	41	5	10,87%
50	CATANIA	41	4	8,89%
51	SIENA	34	3	8,11%
52	BARI	50	4	7,41%
53	URBINO Carlo Bo	19	0	0,00%

Tab. IV.8 Ranking ordered by Share (Eq. 6)

For the elaboration of the "ranking" of the universities (Table IV.8), ordered on the basis of the share of external recruitment ($Eshnores_{T,i}$ Eq. 6), there was examined the total number of Associates and Full Professors hired from outside ($\tilde{Z}_{T,i}$, Eq. 4) divided by the total number of employees both hired from inside and outside ($(\tilde{Y}_{T,i} + \tilde{Z}_{T,i})$, Eq. 3 and Eq.4).

The first column (Internal: $\tilde{Y}_{2003,i}$) after the name of the universities, represents the number of Professors ($\tilde{Y}_{T,i}$, Eq. 3) hired within the period from 2003 to 2018 while the second ($\tilde{Z}_{T,i}$, Eq. 4) are those hired from outside in the same period.

Researchers were excluded from counting because their number of external hiring is irrelevant.

The reference period for this ranking is 2003 because the last 15 years of available data have been analyzed with a wide range of variations.

The surveyed universities are 53 out of 93 because all those with a stock of professors equal or less than 10 were excluded ($(x_{2003,i}^A + x_{2003,i}^F) < \text{or} = 10$).

From the analysis of the ranking we can see that the private University "LUISS Guido Carli - Rome" is in the first place with 84.2% of external recruitment, that means that the internal career is almost inexistent.

Immediately afterwards comes the University of "Molise" with 51.9% and "LIUC - CASTELLANZA" with 38.5%, followed shortly by the famous private University "MILANO - Bocconi" with 37.6%. In practice more of one teacher out of three is taken from outside. The universities of "SASSARI" and "TERAMO" have similar percentages, respectively 34.5% and 33.3%.

On the other side, the "URBINO Carlo Bo" University is in the last place, where nobody is hired from outside in a period of 15 years!

In the universities of "BARI", "SIENA", "CATANIA" and "Politenica delle MARCHE" very few teachers are hired from the outside, having a percentage around (or lower) than 1%.

Analyzing the same data but in the period 2013, we note that in some universities the recruitment policies have changed following the reforms applied in the academic field, consequently varying the percentages of recruitment from the outside: for example, at "ROMA Tor Vergata" there are only 31 assumptions from the inside and 0 from the outside while at "MACERATA" 16 always from the inside and 0 from the outside.

Three histograms have been developed for 2003 (Fig. IV.1), 2008 (Fig. IV.2) and 2013 (Fig. IV.3) to see how most universities have changed recruitment from outside. Universities with less or equal of 10 government employees were excluded to be consistent with what has been done so far and produce an immediately understandable graph ($x_{2003,i}^A + x_{2003,i}^F < \text{or} = 10$).

The share of recruitment from the outside indicates how many are the Associates and the Full Professors hired from the outside divided by the total of the hired ($Eshnores_{T,i}$, Eq. 6). Density indicates the density frequency in a given range, obtained by the ratio between the absolute frequency in the interval and the length in the interval itself.

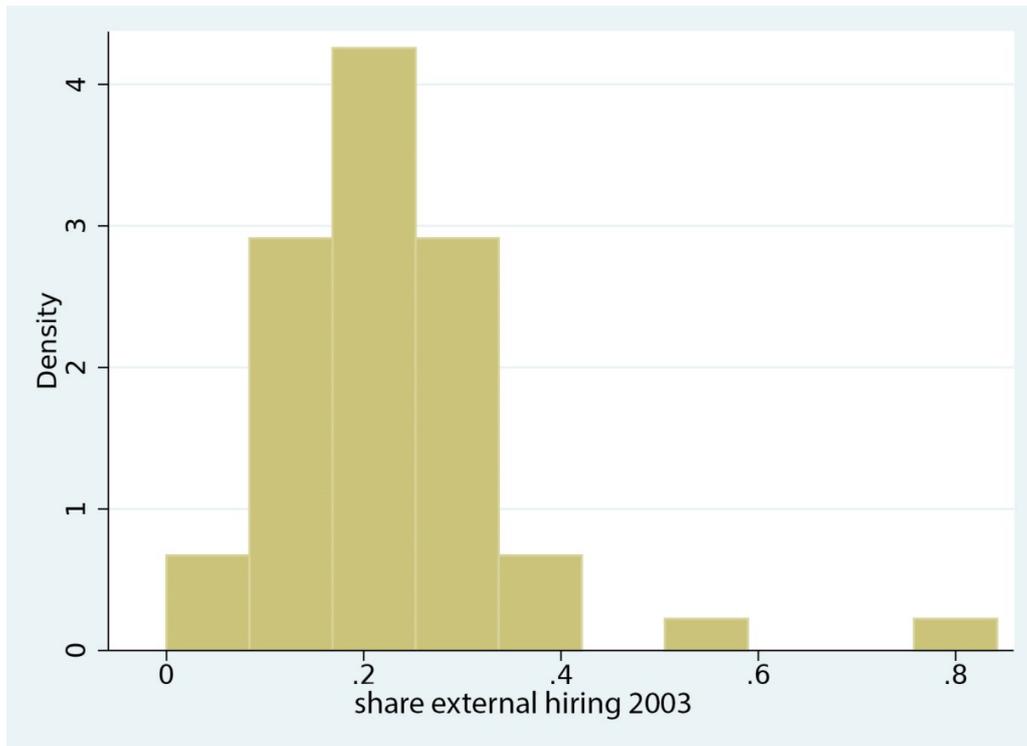


Fig. IV.1 Histogram of Density 2003 (Eq. 6)

In 2003 (Fig. IV.1), the universities that have a share of around 20% constitute the largest column out of 53 universities surveyed. At the same level there are both universities that have an external recruitment rate between 8% and 16% than those that have between 24% and 32%; there are two cases of single universities in which the percentage of external recruitment is considerably higher than the others and are respectively "MOLISE" and "LUISS Guido Carli - ROME".

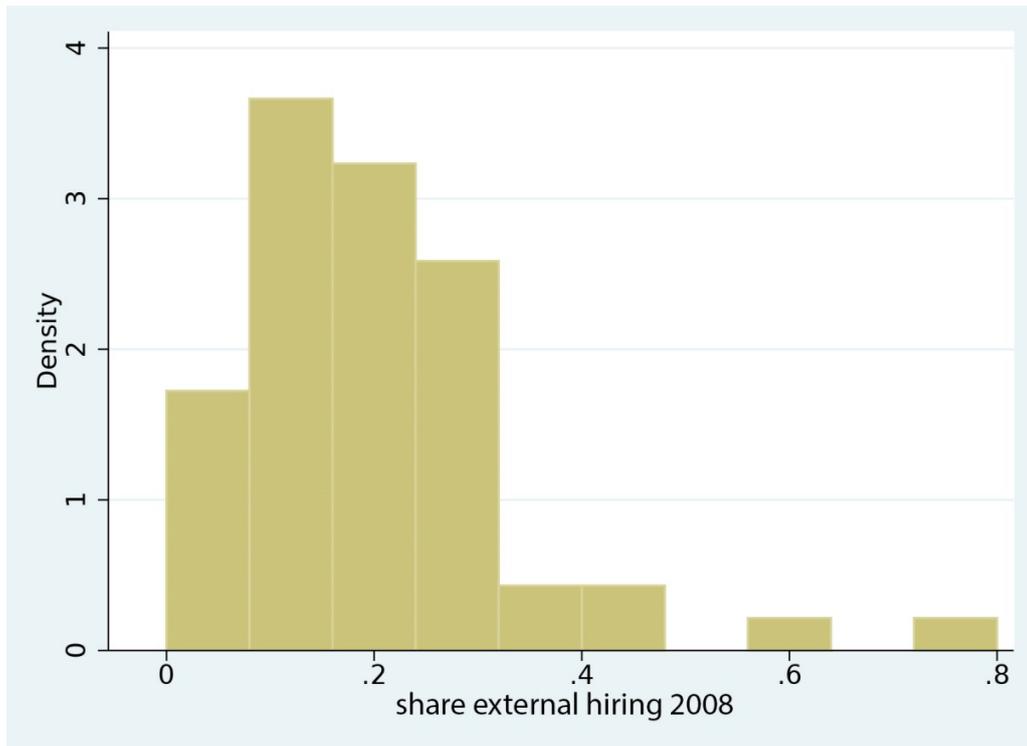


Fig. IV.2 Histogram of Density 2008 (Eq. 6)

In the 2008 histogram (Fig. IV.2), the two most significant bars belong to the Universities, which have a share of external recruitment of between 8% and 24%, so the majority prefer an internal career. The analysis of the share of external recruitment of the "LUISS Guido Carli - ROME" has decreased slightly compared to 2003 but remained at a very high percentage.

“Libera Università di BOLZANO” not present in the previous histogram now appears with about 63%.

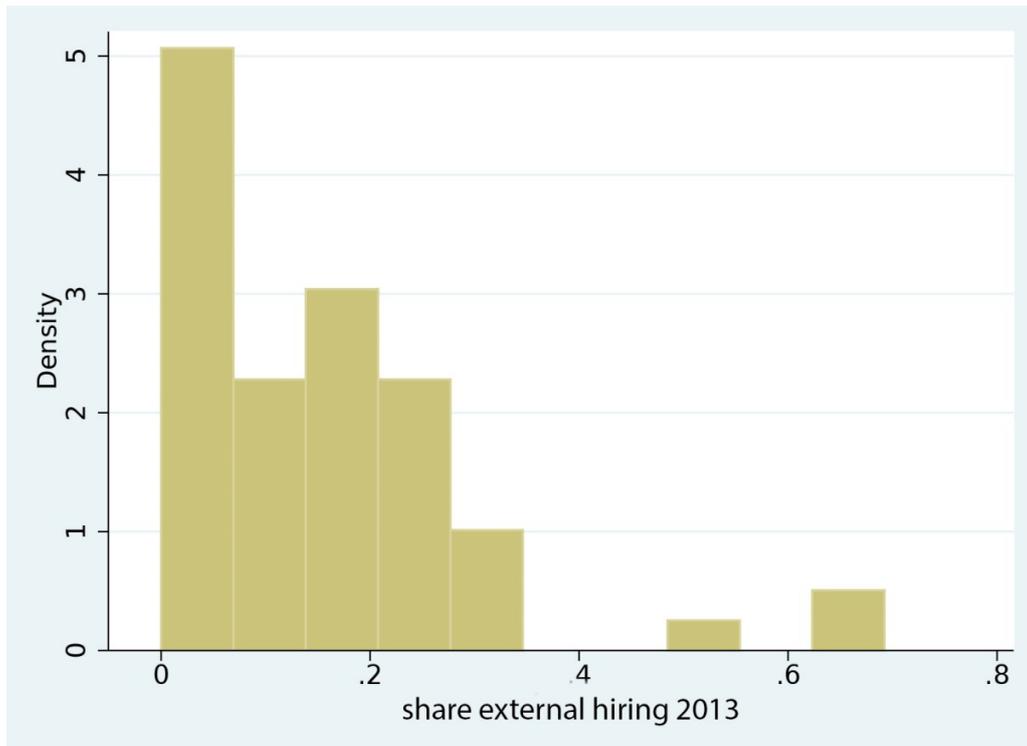


Fig. IV.3 Histogram of Density 2013 (Eq. 6)

Last but not least, in the 2013 histogram (Fig. IV.3), there have been the most obvious changes compared to the previous ones, in fact most universities assume from the outside a number of teachers between 0% and 8% while the remaining part falls into a range between 8% and 32% except for "LUISS Guido Carli - ROME" and "Libera Università di BOLZANO" (both with more than 60%) and "LIUC - CASTELLANZA" (around 50%).

From the overall elaboration (Fig. IV.1, Fig. IV.2, Fig. IV.3) it is figured out that the general trend of external turnover gradually decreases in the periods examined with the only exception of "LUISS Guido Carli - ROME" in contrast.

To easily understand the variations that have occurred in the university recruitment policies in the period under examination, three scatterplots have been created, comparing the recruitment shares from the outside of two different periods between the three analyzed, placing one on the x axis and one on the y axis.

Within the graph, each point represents a University, the diagonal divides the plan into two, facilitating the reading of the result because it highlights the area of belonging of each period in question, the points that are on the diagonal or near it represent universities that they have not varied behavior in the two periods.

The set of results shows that the quantity of universities (points) is always greater in the period preceding the one with which it is compared.

In all three scatterplots we can observe that the highest point certainly represents the "LUISS Guido Carli - ROME" which has maintained a very high percentage in all periods, on the contrary the University of "Urbino" has never hired anyone from the external so it is always at the point of origin.

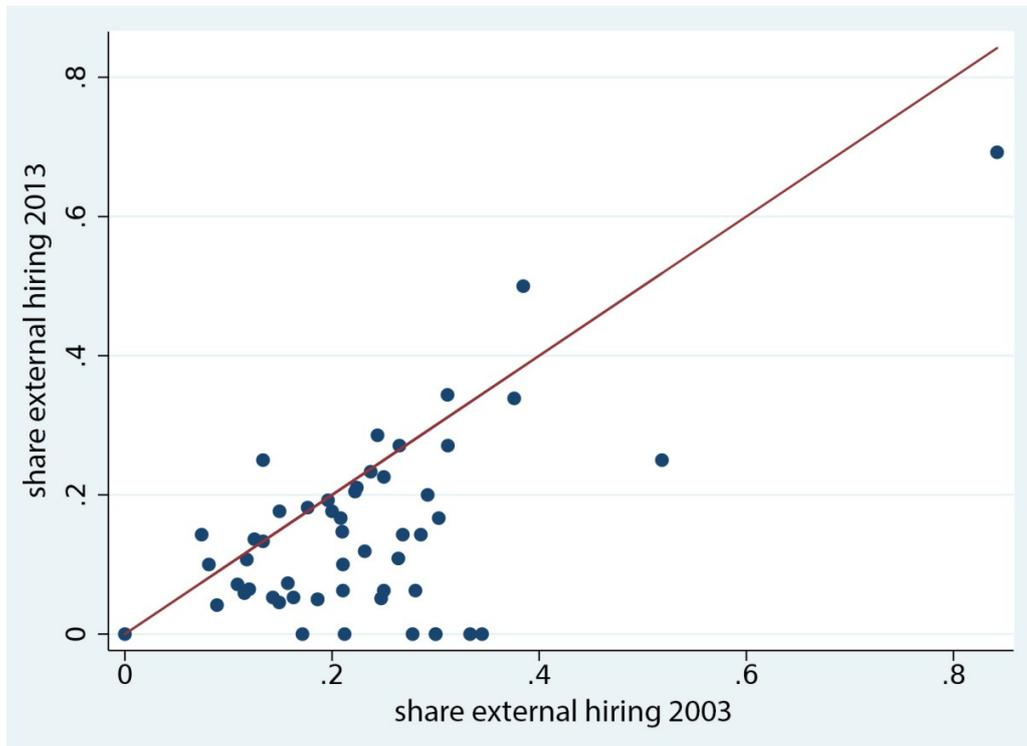


Fig. IV.4 Scatterplot comparing recruitment policies 2000-2013 (Eq. 6)

The scatterplot that compares the external hiring quotas of 2003 with those of 2013 (Fig. IV.4) shows a radical change in the hiring policies for six universities that go from about 30% to 0!

Almost all the universities are below the diagonal, which means that they assumed more from the outside in 2003 than in 2013.

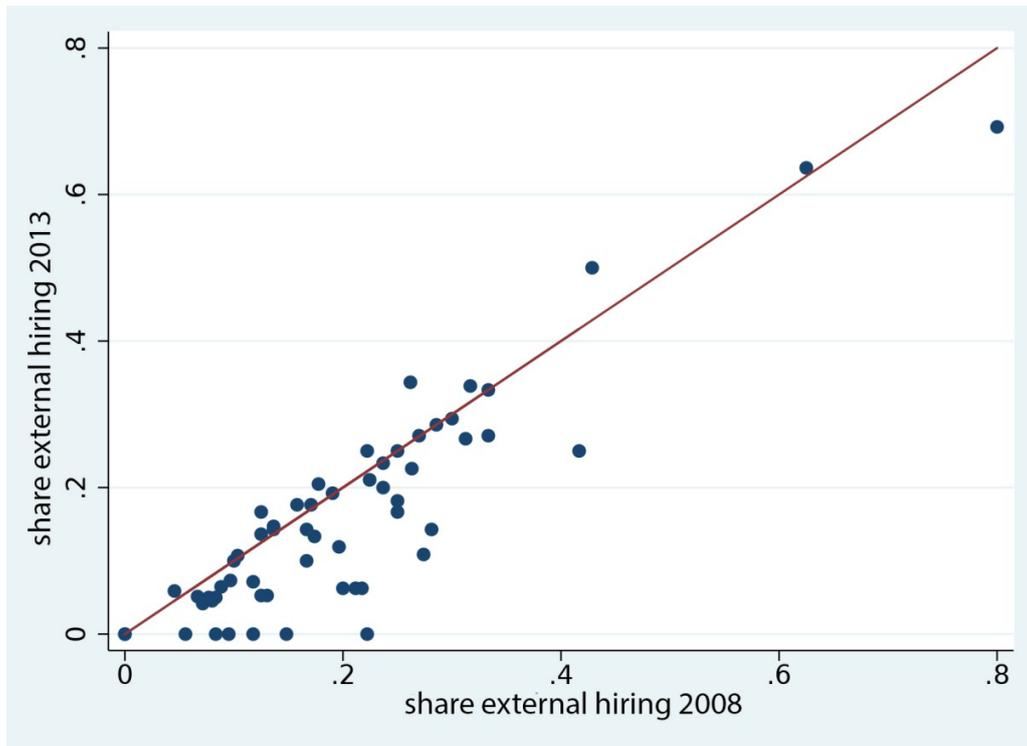


Fig. IV.5 Scatterplot comparing recruitment policies 2008-2013 (Eq. 6)

The second scatterplot compares the external hiring shares of 2008 with those of 2013 (Fig. IV.5) illustrates for six universities, a decrease already begun 5 years earlier continues, that go from about 20% to 0!

Comparing two closer periods it is clear that the behavioral variations will be smaller and therefore the positions of the universities on the graph are grouped around the diagonal.

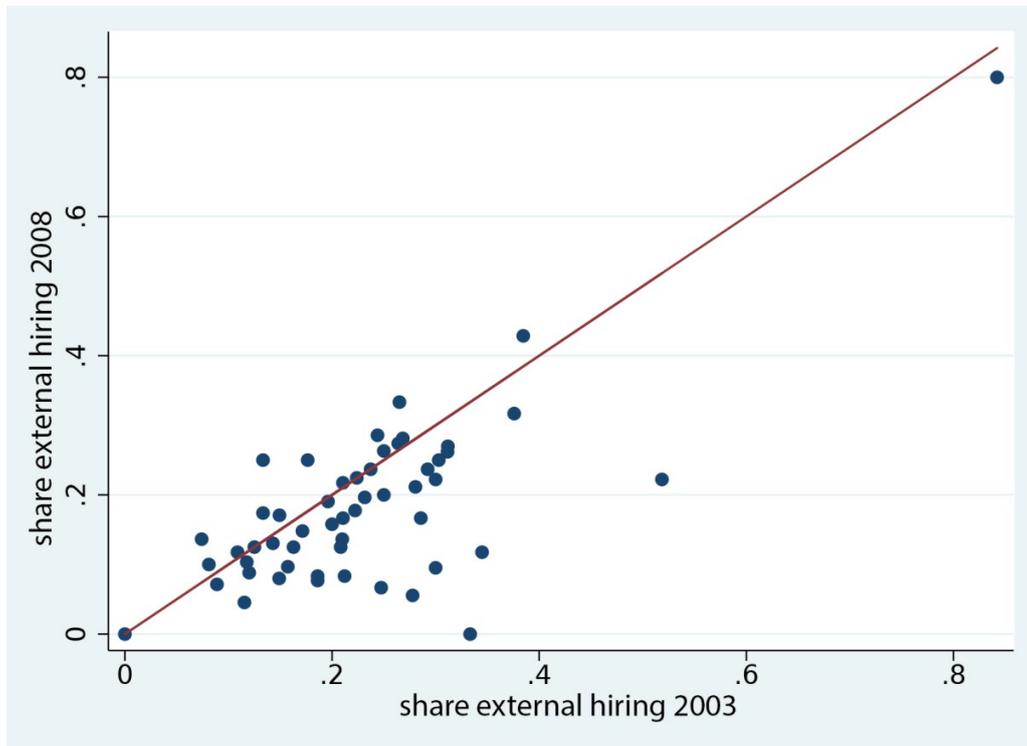


Fig. IV.6 Scatterplot comparing recruitment policies 2003-2008 (Eq. 6)

The last scatterplot compares the periods of 2003 and 2008 (Fig. IV.6) in which the tendency of the number of external hires continues to decrease.

The global situation shows that it has become increasingly difficult to recruit from outside in Italian universities due to a series of factors mentioned in the previous chapters (e.g. Reforms of academic education, failure to replace retirement, block turnover).

CONCLUSIONS

From the results achieved we can observe that the academic staff has suffered a huge decrease after the 2010 "Gelmini" reform.

What we are interested in seeing from these elaborations is not so much if there has been an internal career but if it has been the recruitment from outside, which on the one hand is more expensive but on the other it probably brings new more prepared and motivated employees.

Total employment shows a steady increase until the reform and then is clearly decreased, differently in each macro sector, and only in the last two years there has been a slight recovery.

Analyzing instead the situation by Level, we can see that the effects of the reform weigh on the reduction of the number of Associates and Ordinaries, while the Researchers increase slightly.

This trend was reversed in 2013 following the unlocking of academic competitions.

The examination of the tables show that depending on the size of the universities and on the geographic areas, the number of planned employment shares in the external labor market can be quantified.

We have found that small universities hire more frequently from the external market than the large ones and that the percentage of the North is slightly higher than the Center and the South.

From the ranking table we have defined the first six universities that most frequently recruit personnel from the external market: three private and three public.

The private ones are the same as those that are firsts in the rankings of excellence: LUISS with 84%, Bocconi with 37.58% and LIUCC Castellanza 38.46%.

the three public universities are Molise 51.85%, Sassari 34.48% and Teramo 33.33%, all are small and located in non-metropolitan areas.

Milano and Napoli Federico II, are the medium-large public universities, that recruit more from the outside.

On the other hand, there are universities which, probably due to budget constraints, have very low levels of employment: such as Bari, Siena and Catania, and, lastly, Urbino Carlo Bo with nobody hired from outside.

From the graphs "(Fig. IV.1, Fig. IV.2, Fig. IV.3)" that were made taking into consideration the recruitment in 2003-2018, 2008-2018 and 2013-2018, it appears that there is a progressive decrease in the number of external hiring.

In public universities there are still many problems that are difficult to fix and maintaining high standards with limited resources is extremely difficult but not impossible. There are universities that, despite being small, make sensible choices and are able to offer high level of education. Unfortunately, in almost all the latest financial maneuvers made by our Government, the funds dedicated to research and education have always been weak and certainly insufficient to relaunch our universities and support new research.

In the Universities that are considered more as companies where maintain balances becomes a priority it becomes very difficult to recruit excellent teachers and offer interesting and attractive educational cues. Indeed, in the field of personnel recruitment policies, the internal market is often used because it is less burdensome and because the academic system does not provide other entry methods for certain positions, such as Researchers. The financial constraints faced by some universities may be one of the causes that

force the choice not to hire from the outside, because it is more expensive. A situation of stagnation and slow turnover will remain, until the central government decides to heavily invest in the training of young people, allowing each university to offer lively and stimulating programs.

ACKNOWLEDGMENTS

I would like to thank all the professors that I had the honor to meet in this last year for having transmitted me curiosity and interest toward the subjects they teach.

In particular, I am so grateful to Prof. Staffolani for the availability and patience with which he assisted and followed me, for the priceless advice and support in the elaboration of the thesis.

The Prof. Lucchetti for suggestions and moments of comparison to three.

All my family that has always spurred me and supported me with love, and encouraged me to never give up throughout my university career, and my girlfriend for understanding and closeness, letting never being alone.

THANK YOU!

BIBLIOGRAFICH REFERENCES AND WEB SITES

Edward P. Lazear, Paul Oyer, "Internal and external labor markets: a personnel economics approach", Elsevier, 2004

PM Mampane, 2012. "The Teacher Turnover Crisis. Evidence From South Africa," Business Education and Accreditation, The Institute for Business and Finance Research, vol. 4(2), pages 73-83.

Stanislas Bigirimana & Esnath Ntombizodwa Sibanda & Reason Masengu, 2016. "The Impact of Working Conditions on Academic Staff Turnover at Africa University, Mutare, Zimbabwe," Asian Journal of Social Sciences and Management Studies, Asian Online Journal Publishing Group, vol. 3(2), pages 91-98.

Peter Kwegyir-Aggrey, 2016. "Assessment of Staff Retention in Private Universities in Ghana: A Study of the Perez University College, Winneba," Journal of Education and e-Learning Research, Asian Online Journal Publishing Group, vol. 3(4), pages 130-137.

Usman SHAH & Jangraiz KHAN, 2015. "An Analysis of the Factors Affecting Turnover Intensions: Evidence from Private Sector Universities of Peshawar," Journal of Social and Administrative Sciences, KSP Journals, vol. 2(3), pages 144-152, September.

Byron W. Brown & Stephen A. Woodbury, 1995. "Gender Differences in Faculty Turnover," Upjohn Working Papers and Journal Articles 95-34, W.E. Upjohn Institute for Employment Research.

Giliberto Capano, Marino Regini, "Tra Didattica e Ricerca: quale assetto organizzativo per le Università italiane?", Fondazione Crui 2011

Parlamento italiano, "Legge 9 gennaio 2009, n. 1, Conversione in legge, con modificazioni, del decreto-legge 10 novembre 2008, n. 180, recante disposizioni urgenti per il diritto allo studio, la valorizzazione del merito e la qualità del sistema universitario e della ricerca " 2009

Parlamento italiano, "Legge 30 dicembre 2010, n. 240 "Norme in materia di organizzazione delle università, di personale accademico e reclutamento, nonché delega al Governo per incentivare la qualità e l'efficienza del sistema universitario" 2011

MIUR, "Linee guida corsi dottorato"2016

MIUR "Il personale docente e non docente nel sistema universitario italiano - a.a 2016/2017" 2018

Alessandro Bellavista. (2012). Retrived from Il reclutamento dei professori e dei ricercatori universitari dopo la legge "Gelmini": <https://www.roars.it/online/il-reclutamento-dei-professori-e-dei-ricercatori-universitari-dopo-la-legge-gelmini/>

Paolo Rossi (2012). Retrived from Evoluzione della docenza universitaria: le nuove tabelle 1998-2018: <https://www.roars.it/online/evoluzione-della-docenza-universitaria-le-nuove-tabelle-1998-2018/>

Paolo Rossi (2015). Retrived from L'evoluzione della docenza universitaria: nuove tabelle e proiezioni: <https://www.roars.it/online/levoluzione-della-docenza-universitaria-nuove-tabelle-e-proiezioni/>

Filippomaria Pontani. (2016). Retrived from Come funziona il reclutamento nelle università: <https://www.ilpost.it/2016/10/11/assunzioni-universita/>

MIUR. (2016). Retrived from Personale universitario: <http://ustat.miur.it/attivita/personale-universitario/>

MIUR. (2016). Retrived from Reclutamento nelle Università: <https://miur.gov.it/web/quest/reclutamento-nelle-universita>

CENSIS. (2019). Retrived from Censis – Le Pubblicazioni: http://www.censis.it/17?shadow_publicazione=120579

Martina Tafuro. (2018). Retrived from Pubblicata la classifica Censis delle Università italiane 2018/2019: <http://lavocedelquartiere.it/pubblicata-la-classifica-censis-delle-universita-italiane-2018-2019/>

Il Tirreno Pisa (2018). Retrived from Cattedra annullata, il prof escluso va al Consiglio di Stato: <https://iltirreno.gelocal.it/pisa/cronaca/2018/06/19/news/cattedra-annullata-il-prof-escluso-va-al-consiglio-di-stato-1.16979029>

ANVUR. (2013) Retrived from Valutazione della qualità della ricerca 2004-2010: <http://www.anvur.it/rapporto-2016/>

ANVUR. (2017) Retrived from Valutazione della qualità della ricerca 2011-2014: <http://www.anvur.it/rapporto-2016/>

Università di Bologna. (2013) . Retrived from Elementi di stato giuridico del personale universitario: <https://www.unibo.it/annuari/annu9901/indice/parte1/p1s2-3.htm>

ATTACHMENTS

***Tab. Appendix 1 - Cross tabulation of SSDs (rows) with respect to Year (columns)**

		<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
Economics	[P/01]	644	684	674	705	764	819
	[P/02]	304	313	303	309	336	348
	[P/03]	175	180	179	178	187	201
	[P/06]	126	131	136	138	149	161
	[P/05]	51	55	56	57	57	61
Tot. Economics		1300	1363	1348	1387	1493	1590
Management	[P/07]	462	520	519	553	608	662
	[P/08]	338	359	363	369	434	490
	[P/10]	75	83	83	91	101	121
	[P/11]	196	211	210	218	228	240
	[P/09]	53	58	58	59	61	69
	[P/13]	118	124	123	119	118	116
Tot. Management		1242	1355	1356	1409	1550	1698
Economic History	[P/12]	228	230	225	219	217	215
	[P/04]	57	57	57	57	53	47
Tot. Economic History		285	287	282	276	270	262
Statistics	[S/01]	370	393	383	389	409	426
	[S/02]	22	24	24	26	26	29
	[S/03]	136	142	140	146	154	159
	[S/04]	94	97	93	91	95	97
	[S/05]	72	72	70	73	73	75
	[S/06]	367	379	378	386	404	409
Tot. Statist.		1061	1107	1088	1111	1161	1195
TOTAL		3888	4112	4074	4183	4474	4745

		<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>
Economics	[P/01]	823	851	845	819	814	813
	[P/02]	350	366	356	340	333	319
	[P/03]	208	218	211	187	180	173
	[P/06]	159	172	166	159	160	151
	[P/05]	64	68	68	72	71	72
Tot. Economics		1604	1675	1646	1577	1558	1528
Management	[P/07]	679	737	737	736	743	749
	[P/08]	507	547	549	550	561	574
	[P/10]	133	144	146	149	144	152
	[P/11]	242	253	254	251	248	244
	[P/09]	73	79	79	82	87	91
	[P/13]	114	113	112	102	103	98
Tot. Management		1748	1873	1877	1870	1886	1908
Economic History	[P/12]	206	213	205	189	185	182
	[P/04]	48	45	45	40	42	39
Tot. Economic History		254	258	250	229	227	221
Statistics	[S/01]	421	448	446	436	421	425
	[S/02]	30	30	30	26	24	22
	[S/03]	159	165	159	149	150	147
	[S/04]	95	89	85	75	72	70
	[S/05]	76	79	75	69	69	65
	[S/06]	422	430	426	416	416	415
Tot. Statistics		1203	1241	1221	1171	1152	1144
TOTAL		4809	5047	4994	4847	4823	4801

		<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>TOTAL</u>
Economics	[P/01]	809	798	775	758	749	740	9594
	[P/02]	318	317	330	334	345	364	4072
	[P/03]	174	173	169	178	181	181	2233
	[P/06]	147	144	158	162	162	174	1914
	[P/05]	70	65	65	67	67	73	822
Tot. Economics		1518	1497	1497	1499	1504	1532	18635
Management	[P/07]	753	753	757	762	766	775	8947
	[P/08]	569	572	587	591	591	616	6814
	[P/10]	153	159	166	172	171	176	1865
	[P/11]	245	245	247	247	251	253	2980
	[P/09]	94	90	95	91	96	102	1059
	[P/13]	98	93	95	95	95	89	1207
Tot. Management		1912	1912	1947	1958	1970	2011	22872
Economic History	[P/12]	176	170	165	156	149	145	2141
	[P/04]	38	37	34	32	32	33	465
Tot. Economic History		214	207	199	188	181	178	2606
Statistics	[S/01]	425	420	420	421	425	420	5128
	[S/02]	24	22	22	19	20	20	289
	[S/03]	147	146	146	144	144	153	1809
	[S/04]	68	69	69	69	70	73	904
	[S/05]	62	64	65	63	65	72	824
	[S/06]	417	406	406	407	399	402	4962
Tot. Statistics		1143	1127	1128	1123	1123	1140	13916
TOTAL		4787	4743	4771	4768	4778	4861	58029