

Notes for the Senate



CONTENTS

OUTLINE

MANAGEMENT

Decision Making
Budget
Development Office
Technical/Administrative Staff

TEACHING

Radical Overhaul
Syllabus
Course Number
Course Structure
Problem Courses
MB/PhD
Postgraduate Medical Schools
Teaching Officers
Head of Teaching
Assessment
Contingency Fund

RESEARCH

Turning the Tide
Infrastructure
Equipment
Research Professorships
Junior Investigatorships
Strategy Committee
Graduate Union

ENTERPRISE

COLLEGES

OUTLOOK

REFERENCES

FIGURES

TABLES

Outline

The University of Pavia is at a turning point. It has an established history and role in the national landscape but is not one of a handful of Universities in which the majority of young men and women from the world over aspire to study and is not one of a larger group of Universities that are climbing to the top.

The current dependence of the University on declining central government funding has seriously harmed research investment and strategic development. This trend must be reversed and any future candidate to the Chancellorship should offer a long term strategy with **clear endpoints** and **measurable milestones**.

Members of the new Senate should reflect seriously on the challenges ahead. Central governmental funding will continue to decline, certainly in real terms, for years to come. Further, Italian governments are typically incapable of straight planning and action, thus Italian Universities cannot know in advance the level of their core grant over the long period. Faced with this, Universities typically renounce strategic planning and switch to short term policies of damage limitation. Pavia cannot afford this. Together, the future Chancellor and the new Senate need to construct a blueprint for long term development and construct financial instruments commensurate to strategy instead of being forced to abandon strategy for lack of resources.

The thoughts below reflect this perspective and urge the University to do everything in its capacity to regain freedom of operation and ability to invest new resources in teaching, research, enterprise and Colleges. They are offered for discussion to interested students and colleagues and prospective Senate members and Chancellorship candidates.

Management

Decision Making

Effective decision-making is a quintessential feature of the work of any modern Institution and whether decision-making in Pavia is effective or not I cannot say as I do not know its inner working. I am not convinced, however, that the process operates smoothly based on the experience with the Golgi/Spallanzani building (~ 20 years in the making) and countless testimonies about the protracted restoration work of Palazzo Vistarino.

No University can compete in a globalised educational world without a fast and smooth decision-making process and the new Senate and Chancellor may wish to promote a thorough Review of University decision-making committing to any action that is necessary in order to ensure that all future projects are completed within acceptable time frames and budget targets.

Budget

Any strategy needs resources. I studied the document describing the provisional 2012 University budget ¹ as well as several earlier budget papers and the key points appear to be the following:

- (i) direct government funding to the University decreased from € 152.8M in 2007 to 145.9M in 2012. This is a nominal decrease of 4.5%, a decrease of ~ 13.5% when official inflation figures - a gross underestimate of true inflation - are taken into account.
- (ii) income from student fees was unchanged in nominal terms (€ 34.7M in 2007, 33.7M in 2007), a decrease of ~ 12% on official inflation figures.
- (iii) University management has adjusted to these changes by containing personnel costs with a 8.2% reduction in academic staff between 2007 and 2012 (997 in 2012 vs 1086 in 2007), but not in technical/administrative staff (927 in 2011 vs 938 in 2007).
- (iv) PhD studentships have been protected in full (657 in 2011 vs 620 in 2007) but,
- (v) direct support for research has plummeted (€ 1.0M in 2012 vs € 11.5M in 2007) ^a.

Notwithstanding the recent losses of teaching staff, budget reading demonstrates that personnel figures at Pavia remain disproportionate to the level of funding currently available and comparison with a group of selected Italian Universities (Torino, Padova, Pisa, Genova, Parma, Verona and Siena) confirms that Pavia has one of the highest ratios of academic staff to students (Fig 1b) and technical-administrative staff to students (Fig 1c). On the current level of resources, the University needs to reduce further the level of staff, including the technical/administrative one, in order to avoid operational paralysis due to insufficient cash flow.

An obvious course of action would be to minimise further staff losses inasmuch as possible within the resources available. This course of action is intuitive but may not be in the best interest of the University of Pavia and there are reasons to believe that more radical cuts would serve Pavia better because they would offer the University greater freedom to operate.

Minimal cuts imply that the University of Pavia would do everything in its capacity to promote existing staff and recruit new staff within the framework of the nation-wide appointment system. This system cannot be ignored (it is the only mechanism by which Italian Universities can appoint permanent staff) but is ineffective beyond description and grossly distorts University strategy because candidates receiving national endorsement, on whatever ground, influence staff resource allocation at their University. The national appointment procedure is a striking reminder that Italian Universities are independent by name and not by fact.

I argue here that, until a better system for appointing permanent members of staff may emerge, the University of Pavia should **shift resources** overcommitted to permanent staff **to fixed-term teaching and research contracts and research support**, where it has full control. A reduction in academic staff of 22.5% (213 posts from 997 to 784, dashed line in Fig 1b) would bring the academic staff/student ratio at Pavia in line with the University of Padova, hardly the worst of Italian Universities, and still higher than the ratios for Torino, Genova, Verona and Parma. Similarly, a 17.8% reduction in technical-administrative staff (165 posts, from 927 to 762, dashed line in Fig 1c) would bring the technical-administrative staff/student ratio in line with Padova. These personnel levels would be financially more sustainable and remaining staff can cope with a ~ 20% increase in productivity (similar demands have been made at the majority of Northern-European Universities in the last 20-30 years). In essence, if carefully managed, the cuts advocated would have no impact on student intake and, crucially, would free funds in the order of ~ € 120M over 6 years (see right column and Fig 2a) enabling substantial investments in teaching, research, enterprise and Colleges (Fig 2b).

Budget reduction by staff cuts, however, has two problems. Firstly, staff cuts can seriously damage selected areas of teaching/research as they hit randomly. Accordingly, the current notes envisage a **contingency fund** in order to offset any negative effect (page 5). Secondly, cuts by retirement occur slowly (in the model used here 6-7 years are needed to achieve a ~ 20% staff reduction) and the savings achieved are partially eroded by inflation.

^a Some recent University papers mention additional budget headers, ie a € 7.5M income figure and a € 8.0M loan toward stage 1 development of a new Medical School. These funds are not discussed here because the entries do not appear consistently in different documents.

Financial Implications

A saving of ~ € 120M in staff cuts over 6-7 years is arrived at assuming a 3% per year turnover in permanent staff and an inflation rate of 2.5% per year (the official inflation average for the last 3 years). See Fig 2 and Fig 2 legend for further details.

Thus the University may also need to undertake a parallel and thorough Review of **loan exposure** and reassess critically its borrowing requirements in order to manage proactively the current transition and cash flow. Borrowing requirements cannot be quantified here as they will depend ultimately on current exposure and the development strategy adopted by the new Senate and Chancellor but it appears likely that, beyond the income from the government, student fees and staff cuts, additional resources may be needed over the next management cycle in order to preserve existing estate, fund new building programmes essential for competitiveness and redistribute income from staff cuts (the bulk of such funds are needed early in the management cycle but the majority becomes available later, see Fig 2a).

I urge the new Senate, Financial Board and Chancellor to explore every source of finance that may help with debt restructuring and strategic development. Cambridge has taken the world by surprise a few weeks ago by issuing a bond for £ 350M instead of raising a guaranteed loan (funds are for two new Colleges and a new research Institute). This will save Cambridge millions in interests over the next 40 years. Other Universities, including Pavia, should take notice and use all means available to reduce borrowing costs and protect assets.

Development Office

The University of Pavia needs a strong Development Office, as any modern University does, seeking donations from public and private sources. Existing staff may be transferred to such Office but fund raising is a difficult art and, in the wrong hands, it is a waste of money and not a resource. It is essential therefore that the Head of Office is a new appointment of a person head-hunted from another University and with a strong and successful track record.

Technical/administrative staff

Page 9 of the provisional 2012 University budget splits the cost of technical/administrative staff in three categories (technical, teaching and administrative) but the number of technical vs administrative staff is unclear, at least in that document. Technical and administrative staff have different roles and their distinction is critical. The new Senate needs to ensure that the University clarifies number, role and affiliation of all non-teaching staff for the sake of policy making and international auditing/ranking procedures.

Teaching

Radical overhaul

Teaching reforms in the Italian University system are typically a top-down procedure. Ministry consults, deliberates and ultimately requests Universities to implement new lines. Little is seen in the way of a bottom-up approach in which Universities lead the changes and Ministry follows. Pavia needs to take proactive steps that enhance its national/international standing in teaching. The Medical School is ranked 11th in the country ² and, whether this ranking is fully deserved or not, the simple notion of 11th place is clearly unacceptable. Fortunately, non-medical Schools feature considerably better.

The new Senate and Chancellor should press for a comprehensive Review of Teaching and far-reaching reforms. Pavia should: reduce the number of undergraduate Courses, replace a teaching policy based primarily/exclusively on lectures with one based on a balance of lectures (~50%) and seminars/tutorials/practicals (~50%), provide every Department with a teaching officer, define the remit of the recent role of Head of Teaching, - tackle problem Courses without fear or delay, introduce new strategic teaching where appropriate, provide postgraduate medical schools with the means to teach, solve current bottlenecks in Course coordination, logistic and timetable, introduce external teaching assessment and set in place a teaching contingency fund. An outline of these points follows.

Financial Implications

Universities typically raise funds through guaranteed bank loans but less expensive routes are available and should be explored. Cambridge for example has raised £ 350M for future development a few weeks ago with a 40 year bond (see www.timeshighereducation.co.uk/story.asp?storycode=421474).

Gross salary for the Office Head will have to be ~ € 100K in order to recruit a suitable post-holder.

Syllabus

The new Senate should request that Schools and Departments change the way in which the Course syllabus is assembled. At least at Medicine, the current process of 'spontaneous generation' of the syllabus is deeply ineffective. Each lecturer teaches a self-approved syllabus and I have seen no instance in which groups of lecturers discuss the syllabus jointly. A **collegiate discussion of the syllabus** brings key topics into focus, enables synergies, avoids repetitions and fills crucial gaps. In other words, it generates a cohesive curriculum as opposed to mosaic-style learning. The new Senate should promote this approach and demand full coordination of Courses and exams, a point that borders the obvious but continues to waste a formidable - and unacceptable - amount of student's time.

Course number

The number of degree Courses taught at Pavia is too high. Pavia has pursued a systematic policy of expansion of the number of degree Courses and teaching staff, as opposed to research staff. It should concentrate on Course quality and not quantity, as top Universities do, reduce the number of Courses and make these highly attractive nationally and internationally. A decrease in the number of Courses to ~ 50 - still higher than Cambridge - can be engineered without causing a drop in the number of students, would help the staff cuts and would mitigate the current shortage of lecture theatres.

Course structure

Much of the teaching I have seen in Pavia is flat. Students are far more concerned about absorbing and returning unprocessed information than questioning, debating and researching key topics. The Senate should reflect on the following: the **number of lectures is excessive** and many lectures are mere narration of textbooks chapters that students are perfectly able to read in their College rooms without narration, the reading/criticism of original work, a key feature of the teaching at top Universities, is rare and student **exposure to practical work is abysmally low**. If the University of Pavia wishes to attract top Italian and foreign students, the quality of lectures and lecture-based teaching material needs to increase. Students at top Universities expect well written and **original handouts** at every lecture but the sight of this material in Pavia is rare. Further, tutorials/practicals need to move to centre stage, on equal foot with lectures in undergraduate Courses, and with a clear predominance in postgraduate Courses. These changes have budget implications (tutorials and practicals are costly) but are essential if Pavia is to claim a place among the teaching elite.

Problem Courses

There are Courses that require urgent action, beyond the general changes outlined above. A notable example is the Medicine Course taught in English (so-called Harvey Course) that has failed for several years at attracting high-quality students from Italy and abroad. The Senate should promote urgent and in-depth analysis of such Courses by a fast-track procedure while awaiting the results of the University-wide teaching Review.

MB/PhD

The Senate should also request that Departments develop innovative teaching that will define learning at Pavia in a national/international landscape. An example is the MB/PhD Course, a scheme for research training of clinical scientists developed in the USA and later in Europe. I made a proposal for an MB/PhD Course at Pavia in May 2010. The University of Pavia has yet to implement such a proposal but other Italian Universities such as Padova (www.medicina.unipd.it/on-line/Home/articolo2311.html), Milano (www.unimi.it/ricerca/dottorati/57778.htm) and Torino (www.medicinamdpdphd.unito.it/do/home.pl) have jumped at the idea with Pisa and Napoli following. Pavia needs a top MB/PhD scheme and a top-flying Harvey Course in order to regain the ground that the Medical School has lost.

Financial Implications

Course restructuring with emphasis on Seminars, Tutorials and Practicals is resource-intensive. Thus an initial budget of € 2.0M pa is allocated through an Additional Teaching Fund (ATF), pending a full Review.

Extra resources will be essential in order to make this Course more attractive and may be provided through special access to the ATF (see above)

The scheme will cost € 90K in year 1, € 180K in year 2 and € 275K at capacity, from year 3.

Postgraduate Medical Schools

Postgraduate medical teaching is a key feature of advanced medical education and a bastion of top Medical Schools (Harvard has 6 postgraduate medical students for every medical undergraduate). Pavia currently has more than 900 medical graduates but the relevant postgraduate Schools have no financial means to produce high-level lecture/seminar programmes. The Senate should urgently rule that adequate resources are made available. In exchange, Schools should demonstrate that they are able to attract top students from Italy and abroad and secure funds from dedicated graduate funding schemes, such as the ones embedded in Horizon 2020.

Teaching Officers

Each Department needs a teaching officer whose main duties should be to coordinate teaching within and among Departments at a much higher level than currently achieved, act as a first point of contact with students and prepare reports for the Head of Teaching for submission to University bodies, Ministry or Quality Control Agencies.

Head of Teaching

The University has recently appointed a Head of Teaching. The new Senate and Chancellor must ensure that the post-holder will fulfill the key tasks expected from such a role, namely: articulate the learning and teaching policies at Pavia and convey these at Ministerial and EU levels, assemble and monitor data on the number and profile of teaching staff throughout staff cuts and reduction in the number of Courses, submit regular reports to Quality Control Agencies, submit an annual report on the state of University teaching to the Chancellor and Senate, submit occasional reports on changes in pre-University curricula that University should study in order to review admission policies. Finally, the Head of Teaching should maintain close links with other Universities and professional bodies ensuring that Pavia is informed by developments at top Universities and policy-making Institutions.

Assessment

The University has a system for assessing teaching standards (Nucleo di Valutazione). The Senate must ensure that feedback from students and Nucleo di Valutazione are acted upon, as many of the problems that students report are recurring in nature and this demonstrates that problems are not tackled or not tackled at root level. The Senate should also formulate guidelines for external assessment in line with the policies of the European Association for Quality Assurance Agencies (ENQA) ³.

Contingency Fund

The staff cuts and radical teaching reforms advocated here, however well managed, can lead to temporary difficulties in specific Courses or Modules. This should be rationally anticipated and dealt with via a Teaching Contingency Fund (TCF) set aside to **tackle in advance critical teaching issues** before they emerge. The TCF will provide short term teaching contracts in order to cover for losses of permanent staff and/or Course restructuring. It may also be used, under a broader mandate, in order to test pilot Courses or Modules on emerging topics.

Financial Implications

Schools should be provided with a €0.5M pa to raise the standard of their teaching

These roles can be filled by staff re-assignment from other offices

Submission to external Quality Agencies may involve costs, unknown at the time of writing, but probably modest

A Teaching Contingency Fund (TCF) of € 2.0M pa throughout the 6 yr transition outlined here

Research

Turning the tide

The flourishing of University league tables over the last decade has offered Universities multiple perspectives on their standing and many Universities, but not Pavia, have aptly learned from governments the art of choosing the most favourable rankings for their press releases. The limitations of league tables are clear to any academic of any distinction but less so to government offices and policy makers. As a result, league tables are casting a long shadow over higher educational policies - in Germany most recently - but they actually need neither being demonised or worshipped. They just need being addressed.

The dataset used here are the ones from the Center for World-Class Universities at Shanghai J.T. University because Shanghai scores are used in preference by a number of grant-giving bodies as a way to assess applicant's Institution. Shanghai league tables, therefore, will impact on future funding at Pavia far more than any other league table.

The picture emerging from the Shanghai analysis is that the University of Pavia has gradually and consistently lost ground moving from a worldwide 251-300 ranking in 2003 to one outside the top 500 in 2012 (see Fig 3). This negative trend, with the notable exception of the School of Mathematics that preserved a strong ranking throughout, is not merely the result of the fast growth of a number of 'new Universities' in a globalised educational arena, obviously a real factor. The decline at Pavia is largely the result of local policies, as confirmed by the fact that several other Italian Universities, by the same criteria, have preserved their standing. These include the Italian top ranked Pisa, but also Padova and Torino (Fig 3). Pavia's negative trend is the compound result of two factors: - a policy that, throughout the nineties and the earlier part of the first decade of this century expanded the number of Courses and permanent teaching staff but not the research base and, - the recent freeze in government funding that has dissipated direct support for research in order to safeguard a budget overcommitted to the salaries permanent staff and estate running costs.

The current Chancellor of the University is right in stating that Pavia should strive to be a Research University. The Vice Chancellor for Research has acted to the best of his capacity to promote a research culture and the number of PhD studentships, a strong indicator of research intensity, has been maintained throughout recent years. These are valuable assets and the research profile of the University of Pavia emerges favourably in the national arena. Yet, it is equally clear that much further work is needed before Pavia possesses the staff, infrastructure and facilities typical of research-intensive, world competitive, Institutions (see Figs 4 and 5 for a comparison between Pavia and a typical research-intensive University).

The future Chancellor and Senate need to be specially aware that it takes a number of years to see the results of research policies. Pavia is now collecting the fruits of insufficient investments in its research base that occurred 10-15 years ago and of the recent budget freeze. Similarly, research policies adopted now may yield results, if the right steps are taken, in 5-10 years. The new Senate and Chancellor should and will articulate detailed proposals of future University research policy but a few points are brought into focus here because they constitute essential building blocks of any research strategy.

Infrastructure

The University needs a thorough assessment of the current status and future requirements of its research infrastructure. Infrastructure is both the availability and fitness for purpose of research buildings as well as the availability of facilities that only University can provide (the missing cold rooms in the Golgi/Spallanzani building are an example in case). The Senate should commission a Review of research infrastructure and projected requirements over 10 years in order to build a viable research base but initial budgetary provisions are made here (see right column) because a substantial investment is anticipated in this area.

Financial Implications

Provisional assignments of € 2.0M pa are made here to the Research Infrastructure Fund (RIF) and Research Equipment Fund (REF) respectively, pending full Reviews.

Equipment

Similar to research infrastructure, large equipment, essential for the vast majority of science-based research projects, cannot be provided by external grant-giving bodies. The new Senate may wish to know that several Grant agencies, including the European Commission, have recently declined funding at the Grant negotiation stage to prospective Grantees who failed to demonstrate access to adequate research infrastructure and core equipment. The Senate needs a full Review of the large equipment secured by the University over the last 10 years and a projected list of the equipment to be acquired over the next 10 years in order for Pavia to stay competitive in key research areas.

Research Professorships

There is no research-intensive University that does not hold Research Professorships, ie full time appointments in strategic areas free from teaching duties. The University should offset, at least in part, the impact of the staff losses discussed above with a first line of appointments of Research Professors (RP) and Junior Investigators (JI, see below). An initial package of 6 Research Professorships named after distinguished scholars who have worked at Pavia (one each for the Humanities, Social Sciences, Medicine/Pharmacy, Engineering, Science and Mathematics) would constitute a landmark step in the strive to research-intensiveness and enhance the ability of the University to compete for international funds in key research fields.

Junior Investigatorships

Together with the 6 Research Professorships, Pavia should introduce junior investigatorships (JI). JI will provide the principal mechanism through which the University will widen and strengthen its Research capacity. It is proposed that 8 JI are filled each year for an initial period of 6 years each. JI are independent positions awarded to outstanding young researchers recruited world wide. They carry provisions for salary, an initial Grant of € 200K and will be assigned to individual Departments on a competitive basis, subject to Departments providing assurances that prospective investigators are offered adequate space, facilities and, where relevant, access to equipment. Thus the current proposal envisages that, with funds saved in permanent staff costs (see above), in a period of 6 years the University acquires 54 new research groups (6 RP and 48 JI) headed by first-class, full time investigators chosen by Pavia alone, and not by the tortuous and error-prone national appointment system.

Strategy Committee

I understand that the University has a Research Committee (Commissione Ricerca). The new Senate should ensure that this or another suitable body acts as a true Research Strategy Committee with the mandate of overseeing medium and long term research policy. This Committee, or a sub-Committee, should meet regularly with **other Research Institutions active in Pavia** (CNR, IRRCS and IUSS) in order to identify potential synergies at the level of infrastructure, large equipment or specific research programmes. Pavia needs to mobilise all local resources coherently and more effectively than in the past.

Graduate Union

The University of Pavia does not have a strong Graduate Union, another distinctive feature of research-intensive Universities. In fact Pavia has no Graduate Union at all and needs one in order to bring the work of ~ 1,000 PhD students and post-docs (the local 'assegnisti') to centre stage. The Union will promote interactions among members and hold a dedicated seminar programme and annual Graduate Symposium. Many ground-breaking projects at research intensive Universities are born at graduate meetings. The new Graduate Union at Pavia will nurture new research programmes and Grant proposals in exchange for strong, and overdue, recognition for the role of young investigators in this University.

Financial Implications

Each Research Professorship will have to carry an initial Grant (€ 0.25M for Social Sciences, Humanities and Maths, € 0.5M for the others, € 3.0M in total). Gross salary costs will be € 0.9M pa

Each junior investigatorship will require €450K toward salary (€75K pa for 6 years) and a € 200K startup Grant (€ 650K in total, equivalent to € 5.2M pa)

€ 5K pa are allocated over the initial 6 year timeframe

Intellectual property

University intellectual property (IP) is essential for research exploitation and is a key parameter for national and international ranking and league tables. The 2012 report on University teaching, research and technology transfer shows that the number of patent applications at Pavia has considerably decreased in the last 4-5 years ⁴. This cannot be solely the result of the recent budget freeze and suggests that there are other bottlenecks in the process of safeguarding University IP rights. The new Senate and Chancellor need a Review of IP procedures and ensure that these are fit for purpose. This requires, as for the Development Office, recruitment of new staff with a demonstrable track-record (see right column).

Colleges

The University of Pavia has a true Collegiate system that supports ~ 2,500 students. This is a valuable resource but the number of Colleges needs to expand in the long term in order to preserve the status of Collegiate University and Pavia should seek every opportunity in order to expand its College base. An opportunity currently at hand is the accommodation available in Palazzo Vistarino, which can be conceived as a **College for Visiting Scholars** and transferred to EdISU for management. Every Collegiate University has special Colleges along such lines (Cambridge has four: Clare Hall www.clarehall.cam.ac.uk/, St Edmund's College www.st-edmunds.cam.ac.uk/, Lucy Cavendish www.lucycav.cam.ac.uk/ and Hughes Hall www.hughes.cam.ac.uk/). The accommodation at Palazzo Vistarino offers a perfect opportunity to widen and diversify the Collegiate system at Pavia.

The University also needs doing more in order to attract top students. The four Colleges funded directly by Ministry offer a number of bursaries but Pavia needs a far greater number of top students than these Colleges are able to attract. I propose here that the University creates a new bursary scheme offering an extra 100 bursaries pa at € 10K each (~ half to Italian students, ~ half foreign students). These bursaries are distinct from - and are in addition to - the ones currently handled by EdISU. They should constitute a new scheme of official and prestigious **University of Pavia Studentships** to be advertised nationally and internationally and awarded after a selection procedure based solely on academic ability.

Further actions are needed on the College front. Foreign applicants cannot presently form a meaningful view of the Collegiate system in Pavia because the information on the University web site is hidden (in contrast to typical Collegiate Universities, ie www.cam.ac.uk and www.ox.ac.uk). Further, the net contribution that the Colleges make to the development of the University, however valuable, remains well below potential. The new Senate and Chancellor must set up a **University-College Committee** that meets regularly to discuss and strengthen admission policies, College bursaries and research fellowships.

Outlook

This proposal focuses primarily on teaching and research at Pavia over a 6 year cycle (2014-19) but is concerned about long term sustainability. Permanent staff reductions will ensure that a sizeable fraction of the government grant will remain available in subsequent years to extend Research Professorships. Similarly the Junior Investigatorship scheme will extend (a ~ 50% tenure rate is suggested) and lead to a parallel expansion of the number of PhD studentships. With resources in hand, the University should discuss with Ministry the statutory basis of long term research appointments. This process is fundamental for the future of Italian Universities and Pavia should lead the way toward statutory reform alongside other top Italian Universities, such as Pisa and Padova, which will surely share a demand for greater independence and the right to shape their future and standing in the world.

Financial Implications

The Head of the Technology Transfer Office office may have be recruited from abroad at a gross salary of € 100K pa. A University Enterprise Fund (UEF) of 1.0M pa is further envisaged toward IP protection and investment in early stage University-backed companies

There will clearly be costs in running the accommodation at Palazzo Vistarino but there will be no extra costs from running it under College status

€ 1.0M pa (100 bursaries at € 10K each for University fees, College accommodation and travel)

References

- ¹ Relazione al bilancio di previsione per l'esercizio finanziario 2012. Università' di Pavia (2012)
- ² Classifica raggruppamento facoltà' medico-farmaceutiche. Censis Servizi (2012)
- ³ Quality Assurance Agency for Higher Education. www.qaa.ac.uk/Pages/default.aspx. The International Network for Quality Assurance Agencies in Higher Education (INQAAHE www.inqaahe.org/)
- ⁴ Relazione sulle attività di formazione, di ricerca e di trasferimento tecnologico anno 2012. Università' di Pavia (2012)
- ⁵ Student data are from statistica.miur.it/ Data for academic staff and contract research staff are from cercauniversita.cineca.it/php5/docenti/cerca.php.

Figures

Fig 1

a: Number of students studying at the Universities listed, *b*: ratio of academic staff to taught students (undegraduates, MSc students and Master students) and, *c*: ratio of technical/administrative staff to taught students. The two dashed, vertical lines in the central and right panels cross the University of Pavia bars at values corresponding to a number of academic staff of 784 (currently 997) and a number of technical/administrative staff of 762 (currently 927). These values would bring staff figures at the University of Pavia in line with the the current figures of the University of Padova.

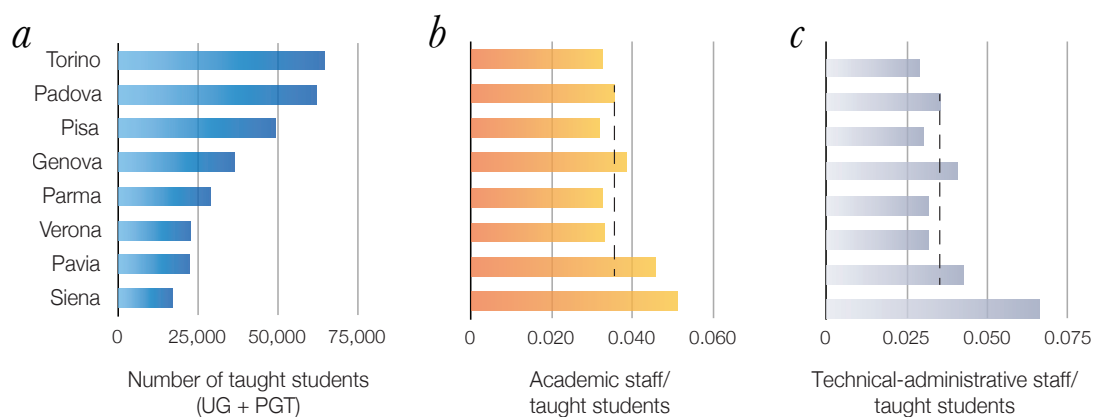
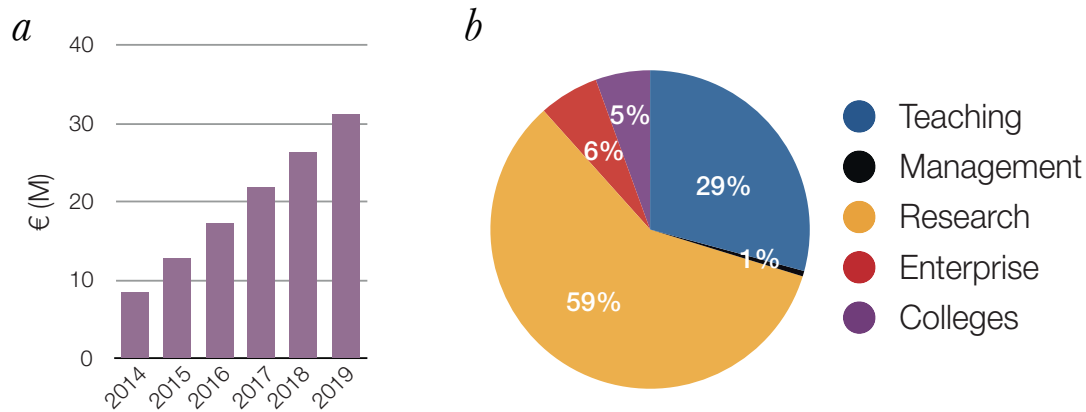


Fig 2.

a: Projected savings on permanent staff costs at the University of Pavia for the years 2014-2019 based on 3% staff reduction per year and a 2.5% inflation rate. Figures are calculated using a baseline cost of € 136.8M for 2012 and are corrected for 2.5% inflation. Savings over the 6 years are € 118.1M of which € 38.6M in 2014-2016 € 79.5 in 2017-2019.

b: Proposed allocation of € 108.5M from the savings in permanent staff costs toward: Management (€ 0.6M), Teaching (€ 31.7M), Research (€ 60.1M), Enterprise (€ 6.4M) and Colleges (€ 7.5M).

**Fig 3**

International ranking of the Universities of Torino, Padova, Pisa, Genova, Parma and Pavia according to the Center for World-Class Universities at Shanghai JT University (www.shanghairanking.com/). Data cover years 2003 to 2012. The highest ranking Italian University among the group, and for the whole of Italy, is the University of Pisa (101-150). The rankings for Padova (151-200), Torino (201-300), Genova and Parma are shown as well. The University of Pavia declined from a ranking in the 201-300 class (2003) to one outside the top 500 in 2012.

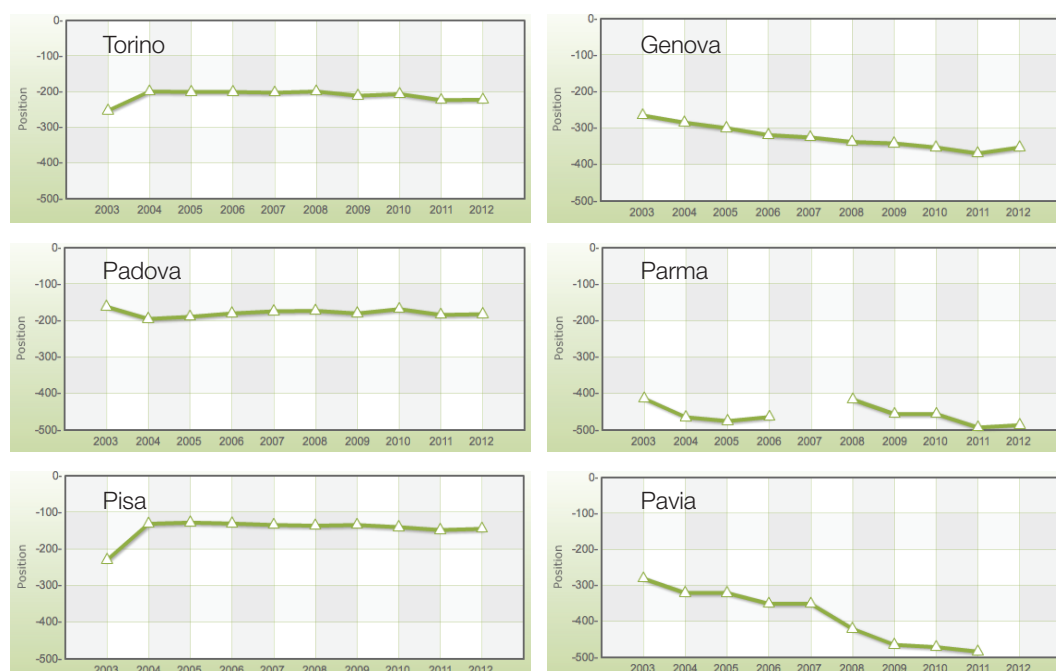
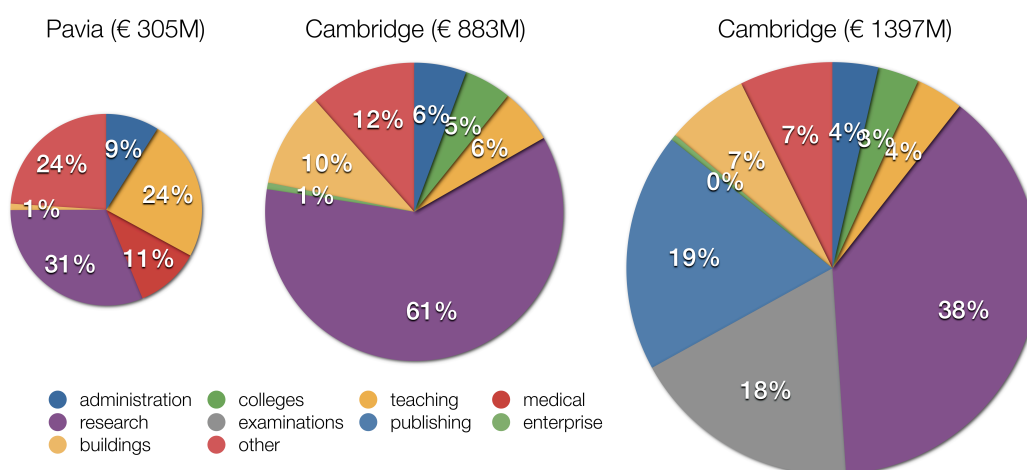
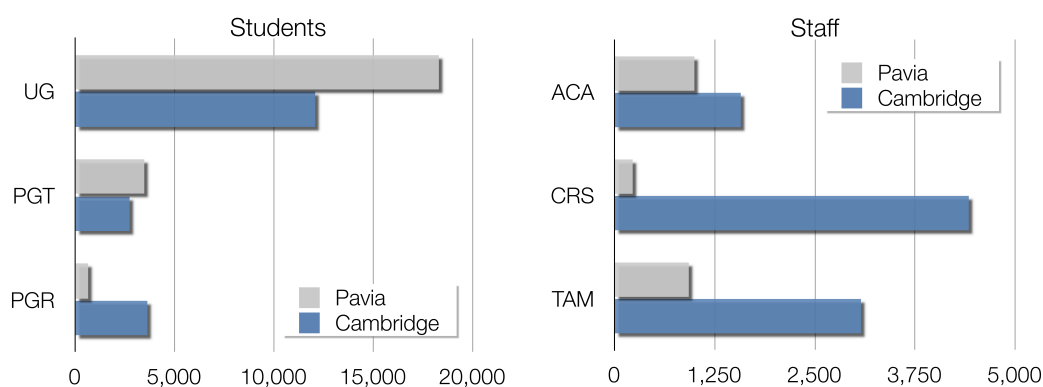


Fig 4

The budgets of the University of Pavia and Cambridge are compared. The pie charts show expenses among major budget headers (area proportional to expense). The full Cambridge budget is shown on the right but, given the large contribution of Cambridge Assessment (examinations) and Cambridge University Press (publishing), the Cambridge budget is replotted leaving out these two major budget figures in order to facilitate comparison with Pavia (pie chart in the centre). The split of the Pavia budget among teaching and research is based on a number of assumptions discussed by the University in the relevant document¹ and are taken here at face value yielding a figure of € 95M at Pavia against a research expense of € 536M at Cambridge. I personally believe that the assumptions made in the Pavia budget may overestimate its research budget. Data for Pavia are from the provisional 2012 budget. Cambridge data are from the Reports and Financial Statements for the year ended 31 July 2011 (Cambridge University, The Old Schools).

**Fig 5**

Students and staff levels at the University of Pavia and Cambridge. Abbreviations: UG undergraduates, PGT postgraduates taught, PGR postgraduates research, ACA academic staff, CRS contract research staff, TAM technical, administrative and manual staff. The bar charts show that Pavia and Cambridge have comparable numbers of postgraduate students in taught Courses (PGT). Pavia teaches more undergraduates (UG) and Cambridge has a much higher number of PhD students (3,632 vs 654). At staff level, the higher external research income at Cambridge enables a much higher level of contract research staff (CRS, post-doctoral fellows, 4422 vs 227) and technical/secretarial staff. Data for Pavia are from statistica.miur.it/ (students) and cercauniversita.cineca.it/php5/docenti/cerca.php (staff). Cambridge Data are from: January 2012. Facts & Figures. (University of Cambridge, The Old Schools).



Tables

Table 1

List of actions proposed in this paper. The budget allocations made toward the Additional Teaching Fund (ATF), the Teaching Contingency Fund (TCF), the Research Infrastructure Fund (RIF) and the Research Equipment Fund (REF) are provisional and adjustments are to be introduced on completion and availability of the relevant Reviews.

Policy Issue	Time ^(a)	Finances ^(b)		
Management		€ (M)	Cost/Saving	Comments
Review of decision-making	6 months	--	NCI ^(c)	
Staff cuts, academic and support (~ 20%)	84 months	118.1	Saving	
Finance	9 months	?	Cost	Final costs from Review
Development office	12 months	0.6	Cost	Cost and staff transfer
Teaching				
Additional Teaching Fund (ATF)	9 months	12.0	Cost	Final costs from Review
Departmental teaching officers	12 months	--	NCI ^(c)	Staff transfer
MB/PhD scheme	12 months	1.5	Cost	
Postgraduate medical schools	12 months	3.0	Cost	
Teaching Contingency Fund (TCF)	9 months	12.0	Cost	Final costs from Review
Research				
Research Infrastructure Fund (RIF)	6 months	12.0	Cost	Final costs from Review
Research Equipment Fund	6 months	12.0	Cost	Final costs from Review
Research Professorships	12 months	8.4	Cost	
Junior Investigatorships	12 months	31.2	Cost	
Research Strategy Committee	6 months	--	NCI ^(c)	
Graduate Union	1 month	0.03	Cost	
Enterprise				
Technology Transfer Office	12 months	6.6	Cost	Cost and staff transfer
Colleges				
Collegio Vistarino (via EdISU)	12 months	--	NCI ^(c)	
University Studentship Fund (USF) (via EdISU)	12 months	6.0	Cost	
Total funds committed		105.3		

^(a) The times given are approximate times to implementation of the action listed.

^(b) Figures are expressed over a management cycle of 6 years. No allowance for inflation has been made in the Table

^(c) No cost implications (NCI)