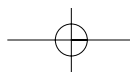
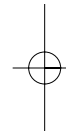
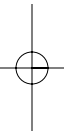


PART III

National patterns



6. Patterns of diversity in the Swiss higher education system

Benedetto Lepori*

6.1 INTRODUCTION

This chapter presents a detailed discussion of the Swiss higher education system across its different institutional levels – governance of the system; individual higher education institutions (HEIs); main internal subunits and subject domains – focusing on the diversity between the units and on the linkages between institutional levels.

In a given sense, this analysis represents a complement to the comparative discussion of university strategies and profiles in other chapters of this book (see in particular Bonaccorsi and Daraio (Chapters 1 and 2) on strategic differentiation and of Lepori et al. (Chapter 3) on funding models) where, thanks to the limitation to a national case, it becomes possible to explore in greater depth the patterns and origins of the observed diversity and to identify some explaining mechanisms.

I shall show that, even if higher education systems in Continental Europe display a reduced level of differentiation according to the strategic profile of individual HEIs – defined in terms of their research versus teaching orientation, respectively, of their research quality – there can be a great deal of diversity between individual HEIs concerning other dimensions (for example, subject mix); moreover, diversity can be situated at other institutional and organizational levels; for example, it might concern institutional rules and governance arrangements – with different HEIs in the same country being subject to different rule systems – or be located at the level of scientific domains or disciplines, with different scientific disciplines showing consistently different profiles across HEIs. Hence the need to understand thoroughly the sources of diversity at the different institutional levels and the linkages between them, since they are clearly not independent.

Switzerland is a good case to perform this analysis for two reasons. First, as I shall show later, it is a case of diversity generated at the national level (rather than at the level of individual HEIs), since, due to the federalist nature of the country, the governance and funding system of higher

education is fragmented to an extent that is probably unknown in other European countries. Thus, it represents an interesting counterexample to the case of larger countries with more uniform governance systems. Second, in a European comparison, Swiss HEIs appear to be quite strong, in terms of the available resources, but also of research output (Bonaccorsi and Daraio, Chapter 2); moreover, HEIs dominate the Swiss research system to an extent that is probably unmatched in other European country (Lepori, 2006a, b) and thus also represent a success in terms of their ability to mobilize political support and funding.

The chapter is organized as follows. In Section 2, I introduce the three main levels of analysis – the governance and funding of the whole higher education system, the individual higher education system and, finally, the organizational subunits inside them. In Section 3, I present the sources that will be used, including the quantitative data collected for the Aquameth project and qualitative sources from interviews regarding university management. The two following sections constitute the core of the chapter: they focus on the analysis of the system as a whole, its governance and the organization and internal structure of individual institutions. Finally, Section 6 proposes some interpretations of the observed patterns.

6.2 FRAMEWORK AND RESEARCH ISSUES

It is useful to organize the presentation of the issues discussed in this chapter and of the Swiss system according to the three main organizational levels normally considered in the analysis of higher education (Clark, 1983; Amaral et al., 2002b), namely the governance of the whole system (mostly at national level) – the governing authorities; rule and funding systems; the individual institutions; their mission, organization, governance structure and internal decision-making processes – and, finally, the organizational subunits as departments (mostly for organizing education) and research institutes and laboratories. However, a major focus of the chapter will be on the linkages between the three levels and, especially, on the impact of the upper (system-level governance) and lower (organizational subunits and disciplinary structures) levels on the strategic capability of individual HEIs.

6.2.1 The Governance System and Institutional Differentiation

The (comparative) analysis of governance systems and its changes over the last few decades is a classical subject of higher education studies (Clark, 1983; Braun and Merrien, 1999; Amaral et al., 2002b). Some stylized facts include attempts to classify national governance systems according to their

general features (Clark, 1983; Braun and Merrien, 1999), a broad distinction between Continental European countries and Anglo-Saxon countries (Amaral et al., 2002b) and, finally, the identification of major changes in governance over the last decades, which have been characterized as the shift from a state control model to a state supervising model (Neave and van Vught, 1994; Maassen, 2003). In this context, the Swiss system has been characterized as a mix of bureaucratic control from the state concerning administrative and personnel rules and the budget: on the one hand, of academic power on careers, teaching and research; and on the other, with a comparatively limited power of central university directions (Perellon and Leresche, 1999; Weber, 1999). However, in the second half of the 1990s some changes were introduced for a better coordination of the system and to reinforce the competence of university management, including a general revision of the legal framework at the national and cantonal levels and the widespread introduction of performance contracts (Perellon, 2001, 2006).

A major concern of this chapter concerns the impact of the differentiation and fragmentation of the governance systems on the strategies of individual institutions. The Swiss case displays two features which, to some extent, also characterize other European countries: first, the federal organization of the country and, second, the 'dual' nature of the higher education system.

First, federal countries where responsibility and funding of higher education is shared between national and regional authorities – as is the case in Germany, Spain and Switzerland – present a much more complex pattern of governance than countries where there is a more or less uniform system of rules across the whole nation; this is especially the case when most of the responsibility for funding HEIs is assumed directly by regional authorities, as in the three countries listed (Huisman, 2003; García-Aracil, Chapter 11). Thus, to some extent, HEIs located in different regions are subject to different political objectives and policies (including different funding systems) and this is likely to have an impact on the strategic choices and differentiation profile of HEIs; moreover, the number of individual HEIs in regions is at best comparable to that of a small European country such as Norway or the Netherlands and we might expect that differentiation works differently in these small-scale environments compared to larger ones. In this context, Switzerland is an extreme case since regional differentiation works at a level which in most other European countries would be considered as subregional and, in many cases, we are close to the situation of having a single HEI for each governing authority.

Second, in many European countries higher education is divided by law into realms having different legal status, mission and access rules and, typically, funding models and levels. Thus, by upgrading and expanding existing tertiary education institutions, countries such as Finland, Germany,

Norway and Switzerland developed a second higher education sector, mostly more orientated towards (professional) education, with lower research intensity and without the right to grant PhDs (Huisman and Kaiser, 2001; Kyvik, 2004). In many cases, higher education studies did not take into account these institutions, since it was assumed that their role in research was marginal; yet, this is not the case in some countries such as Finland (OECD, 2003b), Norway (Kyvik and Skovdin, 2003) and Switzerland (Lepori and Attar, 2006). Moreover, there are typically strong interactions between the two sectors and in most cases non-PhD-awarding institutions have been explicitly created to absorb the increase in student numbers (a typical case being the Netherlands, where *Hogescholen* account for two-thirds of the students at the Bachelor level and then grant access to a university Master's degree; Boezeroy, 2003). The same applies to some extent to distance universities, which in some European countries have been developed as separate institutions with a different mission and funding system (Guri-Rosenblit, 1999). In all these examples, it appears that a great deal of institutional differentiation has been enforced directly by the state by defining different HEI categories and thus that an analysis considering only PhD-awarding institutions might make these systems appear more uniform than they really are (an argument which applies to a much lesser extent to countries such as France or Italy).

6.2.2 Structure and Organization of Individual HEIs

A second dimension concerns the organization and governance of individual HEIs, that is, their governing bodies and decision-making procedures, the definition of organizational objectives and strategies, the internal allocation of funding, the rules concerning personnel and careers and the international organization. There is a large body of literature on the subject, generally based on the detailed study of individual HEIs: these analyses identify a general shift in the balance of power in HEIs with a strengthening of the central board and administration (Amaral et al., 2002a, 2003). As discussed in the introductory chapter to this book, these changes are critical to the emergence of the notion of university strategy (Bonaccorsi and Daraio, Chapter 1).

However, beyond these general tendencies, I shall focus in this chapter on differences in steering capability *between* individual HEIs and the extent to which they are linked to specific features of individual HEIs – for example, size, but especially internal organization and subject mix (for example, degree of specialization) – and to their institutional position, that is, whether institutions located in different parts of the higher education system possess different organizational structures (for example, between

types of HEI or between HEIs in different regions). As I shall show later, Switzerland is a showcase for these diversities since to a large extent each HEI is an individual case.

The stance I shall assume is thus that the conceptions of HEIs as strategic units, with a capability to actively plan and manage their development, or of organizations essentially determined by their institutional environment or, finally, as loosely coupled systems (see Bonaccorsi and Daraio, Chapter 1 for a discussion of the underlying theoretical strands) are by no means excluded, but represent complementary views of a reality which, except in very specific cases, cannot be reduced to just one of them (see Scott et al., 2000 for a similar approach). Hence, the task is to empirically examine case by case the organization of individual HEIs – focusing on aspects such as the central structures, control on resources, division of competences and decision-making power – and to understand the reasons for their diversity.

6.2.3 Disciplinary Differences Versus University Strategies

A final issue concerns the importance not only of disciplinary differences (for example, in the organization of teaching or of research activities), but also of the unifying forces across scientific disciplines in different HEIs.

This argument goes beyond the simple fact that universities are organizations characterized by a large autonomy of their subunits, at the level of departments, but also of laboratories and of individual researchers (Cohen et al., 1972): scientific disciplines and specialties, even if there are national and institutional variations, tend to share cultural models, norms and social relationships on a wider scale and so constitute communities in their own right (Becher and Trowler, 2001). This is not limited to the internal working of research activities, but has strong interactions with the organization and functioning of HEIs. For instance, disciplinary communities largely govern scientific reputation and academic careers, as well as to some extent the allocation of research funding (for example, from research councils). Moreover, disciplinary norms might to some extent dictate research organization (for example, the size of the composition of a typical research team in a domain) or educational activities, for example, structure of curricula, the need for infrastructures such as laboratories or the ratio between students and teachers that is considered to be acceptable.

A similar argument applies in the case of professional domains – such as architects or surgeons – whereby profession-specific rules norms and corporations might be quite important to define the organization of education and research. For instance, in medical clinical research, university

education and the profession are so closely linked – also in organizational and political terms – that the ability of HEIs to steer this domain might be reduced.

In this context, the issue is of course not that of disciplinary differences – a well-known feature of higher education – but of the *interaction and relative importance* of the specific characteristics of disciplines on the one hand, and individual HEIs on the other. For example, considering research intensity, it would be important to measure to what extent it is a feature of a discipline – meaning that disciplines display consistently similar intensities across different HEIs and the research intensity of HEIs is largely determined by their subject mix – or, on the contrary, whether different disciplines in the same HEI show similar levels, meaning that research intensity is a feature of an HEI as an individual institution. In a sense, the whole issue comes down to whether the possibility of positioning HEIs goes beyond the simple choice of the subject mix.

A detailed assessment is well beyond the scope of this chapter and would require a much richer database (both quantitatively and qualitatively). However, using the Aquameth quantitative data, I shall measure not only the variation of some indicators for HEIs – for example, costs, educational quality and research intensity – across individual HEIs, but also, *at the same time*, main subject domains, thus providing some first indications in this direction.

6.3 SOURCES AND QUANTITATIVE INFORMATION

The analysis presented in this chapter combines qualitative information from existing literature, documentary analysis and interviews regarding university management, with a systematic exploitation of quantitative indicators which is a specific feature of the approach promoted by the Aquameth project.

6.3.1 Qualitative Information

In addition to existing publications around the end of the 1990s on the Swiss higher education system (Perellon and Leresche, 1999; Weber, 1999; Perellon, 2001), two quite useful documents are the recent evaluation of the Swiss tertiary education by the OECD (OECD, 2003a) and the background document prepared by the federal administration (Confédération Suisse, 2002) giving a very complete overview of the whole system (albeit from official sources). A more or less complete analysis of the developments over the last 40 years, including quantitative data on the evolution

of funding, is provided in Lepori, 2006a, b. This work also included a systematic analysis of official documents such as legal texts, reports and the explanations accompanying the request of funds for the universities at the national level.

Concerning the strategies and the organization of individual universities, until recently there has been relatively limited empirical material, except some studies on individual institutions such as the Federal Institute of Technology, Zurich (ETHZ) (Herbst et al., 2002). However, in spring 2005, the author carried out a series of (mostly face-to-face) interviews at Swiss HEIs based on a standard questionnaire developed in the EU-funded project CHINC. The questionnaire covered five main items: research strategies; information collection and analysis; changes in funding; policies to increase research and funding; and future perspectives. Moreover, for all Swiss HEIs a description sheet has been prepared describing their legal rules, organization and decision-making process and research activities, based essentially on an analysis of strategic documents and websites. Moreover, thanks to a mandate of the Swiss Innovation Agency a more in-depth analysis has been realized concerning research strategies of the universities of applied sciences (UASs), including more interviews and the provision of an online questionnaire to researchers (Lepori and Attar, 2006).

6.3.2 Data Sources

Most of the quantitative data used in this chapter are provided by the Swiss Federal Statistical Office (SFSO) through the Swiss University Information Database (Système d'Information Universitaire Suisse – SIUS), which is a central database containing data concerning all Swiss HEIs. More specifically, it provides information on the following items:

- students and degrees for each individual student (both at the diploma and PhD levels);
- higher education personnel, classified according to a set of categories (XVIII divided into four main groups); data on personal information (sex, age and so on), salary and funding source and share of activities (education, research, services), for all personnel are collected through a survey every two years;
- financial data on higher education. These include funding disaggregated by different funding sources and expenditures disaggregated between personnel and functioning expenditures. Investments and capital costs are not included, since in most cases they are still directly financed by the state.

SIUS data are collected directly by each higher education organization based on a set of common definitions and transmitted yearly to the SFSO. Data are provided from 1994 for universities and federal institutes of technology (FITs) and are reasonably comparable over this period. Some data are also available for earlier periods, but comparability is not ensured (see Lepori, 2006b, for a long-term reconstruction of funding). All the data are disaggregated by activity domains: the highest-level classification comprises seven domains (human and social sciences; economics; law; natural sciences; medicine; and technical sciences; interdisciplinary), plus a central domain for personnel and expenditures which cannot be attributed to a specific domain.

For the UASs there are similar data (however, with a different classification of domains), but only starting from 2000. Finally, data on scientific publications for Swiss HEIs are provided by the Centre d'Études de la Science et de la Technologie (CEST) who provided time series on ISI (Institute for Scientific Information) publications from 1981 as well as detailed activity and impact profiles of most Swiss HEIs (CEST, 2003). CEST also conducted two surveys of technology transfer activities based on a standard OECD questionnaire (CEST, 2004). A more in-depth survey on cooperation activities between HEIs and private companies at the laboratory level has also recently been published (Arvanitis et al., 2005).

Even if for European standards the coherency and quality of the collected data has to be considered as very good, the reader should not forget that these data are the result of a complex harmonization process, since there are no common definitions of categories such as student and personnel categories across Swiss HEIs (owing to the different legal status of individual institutions). Moreover, comparability concerning costs cannot always be ensured since accounting systems and practices of individual HEIs vary; thus, there are no complete data on investments – which are mostly paid directly by the state – or of capital costs, since buildings are in most cases owned by the state; moreover, for medicine departments, the division of the costs between research and teaching on the one hand, and healthcare on the other is rather problematic and handled differently for each canton, and this could generate significant differences in costs between universities. The introduction of a harmonized accounting system for universities could therefore improve the situation (Conférence Universitaire Suisse, 2006).

Note that in a companion chapter (Filippini and Lepori, Chapter 8) we provide quite detailed indicators concerning Swiss HEIs disaggregated at the level of the main subject domains and of individual HEIs; thus, the reader might refer to that chapter for more detailed quantitative information underpinning the reconstruction presented here.

6.4 A FRAGMENTED GOVERNANCE AND FUNDING LANDSCAPE

At the national level, the central feature of the Swiss case is that there is no common institutional framework for the whole higher education system. This means that different institutions are supervised by different bodies and subject to different rules, as well as to largely different funding mechanisms. We shall see later how an attempt has been made to integrate this system by creating some coordination bodies, but that, unlike other federal countries such as Germany, this process has been strongly impeded by the specificities of the Swiss political system.

The division follows two main axes (Figure 6.1): first, the division of competences between the central state (Confederation) and the cantons concerning higher education, as a consequence of the general organization of the state (Linder, 1999); and second, the division between 'general' and professional education, which characterizes the whole Swiss higher education system from the secondary level (Confédération Suisse, 2002; OECD, 2003a). This distinction has become relevant for higher education, since from the mid-1990s some of the tertiary professional schools have been transformed into universities of applied sciences and thus are part of the higher education sector.¹ For our analysis, the general and professional domains are based on different legal rules and are managed by different governing authorities at the federal level and, in most cases, at the cantonal level.

The HEIs can be situated in this scheme as in Figure 6.1. As I shall show in the next subsections, this position determines to some extent their mission, their supervising authority and funding system and also the

	Confederation	Cantons
General	Federal institutes of technology	Cantonal universities
Professional	Universities of applied sciences	Cantonal schools
	Private schools	

Figure 6.1 The institutional space of Swiss tertiary education

subject mix, thus reducing considerably the freedom of individual HEIs in their strategic choices and positioning.

6.4.1 Legal Framework, Actors and Competences

The Swiss federal constitution attributes explicitly to the cantons the competence in the domain of education (art. 62) and this also applies to tertiary education. However, the Confederation can finance and manage FITs and support cantonal universities, making these funds conditional on some coordination measures. These competences have basically been the same since the creation of the Swiss federal state in 1848, while only very recently has the principle of cooperation between Confederation and cantons in the governance of higher education been inscribed in the constitution (Lepori, 2006a). Indeed, since the 1960s, the cantons have successfully resisted any delegation of coordinating power to the Confederation.

The situation is somewhat different for tertiary professional education, where the Confederation has a general competence which has recently been enlarged beyond technical domains to the whole of professional education (Table 6.1).

First, cantons have the right to establish their own university and rule it through cantonal laws (decided autonomously by the cantonal parliament). In practice this is the case for all large cantons, but also for some medium-sized ones; the financial strength of the university cantons varies accordingly.

Table 6.1 Main legal basis of higher education and research

Name	Date	Comments
University Act	1969/ 1999	New act in 1999 replacing the preceding one
Federal Institutes of Technology Act	1991	General revision in 2004; originally the Act on the FIT of Zurich of 1854
Universities of Applied Sciences Act	1995	Creation of the UAS
Research Act	1983	Direct research promotion of the Confederation
Intercantonal Agreement on Financing of Cantonal Universities	1981	Revised in 2000; only the cantons participate in this agreement
Cooperation Agreement between Confederation and Cantons on Higher Education	2000	Basis of the New Swiss University Conference

Historically, this meant a close relationship between the canton and the university, with the former defining most of the organizational rules and budget as a part of the state budget, but at the same time allowing considerable academic freedom with respect to research and education. During the 1990s, most cantonal laws were revised in the direction of giving a larger autonomy to the university, especially concerning the budget (providing a global envelope), the personnel policy and the internal organization, even if there are large differences between individual cantons with regard to the pace and the extent of this process. Also, the universities are normally represented at the national level by their minister of education (as in the Swiss University Conference: SUC).

Intercantonal coordination (without the participation of the Confederation) plays an important role in education through the Conference of the Ministers of Education of the Cantons. Thus, in 1981, the cantons negotiated an agreement on the financing of cantonal universities. It establishes that the student's origin canton pays to the canton of the university where the student is studying a fixed amount for each year of study.

Second, the University Act of 1969 regulates federal subsidies to cantonal universities and entitles the Confederation to cooperate with the cantons in the university domain, but the Confederation has no authority to issue rules concerning the cantonal universities. The law created the SUC as a joint coordination body for universities between the cantons and the Confederation. With the revision of the University Act in 1999 and the cooperation agreement between Confederation and cantons in 2000, the SUC gained some strength, since it can now issue constraining directives on curricula, accreditation and quality control (through a specific quality accreditation organ). The SUC now comprises two representatives of the Confederation (the secretary of state and the president of the FIT board), by the ministers of education of the university cantons and by two representatives of the non-university cantons.

At the federal level, the most important player is the State Secretariat for Education and Research, which is directly subordinated to the ministry of internal affairs and is responsible for all matters concerning the cantonal universities, the funding of research, as well as the definition of the overall objectives of the higher education and research policy. Note that a structural specificity due to the organization of the state is the absence of a ministry for education and research – the government comprises only seven ministers covering large domains – and the very limited role played by the government and the federal parliament in the decision-making process concerning this domain (Lepori, 2006).

Third, since 1848, the Confederation has the right to manage the FITs. The FIT in Zurich (ETHZ) was created in 1854, while that in Lausanne

(EPFL) was created in 1969 through the take-up of the Cantonal Engineering School of the University of Lausanne (EPUL). The basic organization rules are established in the FIT Act, whose last revision was concluded in 2004. The key player in this domain is the Board of the Federal Institutes of Technology which is responsible for the overall supervision and steering of the whole FIT domain, including the definition of the contract with the Confederation, the nominations of the presidents of the schools and the directors of the four research institutes and the control of the whole sector. The FIT board is composed of nine members, of which four come directly from the FIT domain (including the two presidents of the schools). Indeed, the Confederation has delegated the steering of the FIT domain to the board, which enjoys considerable autonomy, with very limited influence from either political authorities or the federal administration.

Fourth, in tertiary professional education, the Confederation, thanks to its general competence, edicts general rules concerning curricula, diplomas and the functioning of the schools, while the schools are managed by the cantons or by private authorities. In particular, the general mandate and governing rules for the seven UASs were established in a federal law in 1995. At the federal level, the main actor is the Department of Economy and, inside it, the Federal Office for Professional Education and Technology, which supervises the whole UAS domain and manages the federal subsidies. However, the system is extremely complex since in reality most of them cover more than one canton and are thus based on intercantonal agreements.

Finally, there are two representing bodies of the HEIs, the Conference of Rectors of Swiss Universities (CRUS), for the cantonal universities and the FITs, and the Conference of UASs. These bodies are now officially recognized actors in higher education, which assume increasingly coordinating duties; thus, the CRUS has been delegated for the overall planning of the university sector and to supervise the introduction of the Bologna model. This autonomous coordination is a new mode of steering the Swiss HEIs, which is probably linked to the difficulties of achieving political consensus, but also to the wish to allow greater autonomy to the universities themselves.

6.4.2 Budgeting and Funding System

As in most European countries (Millar and Senker, 2000), public funding of higher education can be divided into two major streams, that is, the general budget of the university and so-called third-party funds, to a very large extent in the form of public funds for research projects; the two streams are in a proportion of about 75 to 25 per cent of the budget and this share has not changed significantly over the last 30 years (Lepori, 2006b).

The structure of public funding is closely linked to the governance mechanisms presented in the previous subsection, with separate funding channels for cantonal universities, FITs and UASs (Figure 6.2; see also Benninghoff et al., 2005).

The two FITs are entirely financed by the Confederation. This contribution takes the form of a block grant whose amount is included in the four-year research and higher education budget. The division between the two schools and the four research institutes attached to this domain is essentially based on historical criteria. Since 2000, the relationships between the Confederation and the FIT domain have been ruled by a contract, which establishes a set of criteria (input and performance) and their development over a four-year period; however, there is no direct link between the amount of the grant and the quantitative indicators.

Cantonal universities receive their general budget directly from their home canton; while in the past the university budget was generally part of the state accounts and thus the canton also decided on specific line items and on the personnel structure, in most cases the system has changed to one of a global sum to the university. The cantonal contribution is based on a direct negotiation between the cantonal ministry of education and the university and it is decided by the cantonal parliament in the framework of the annual budget. The cantonal contribution integrates two external sources of funding:

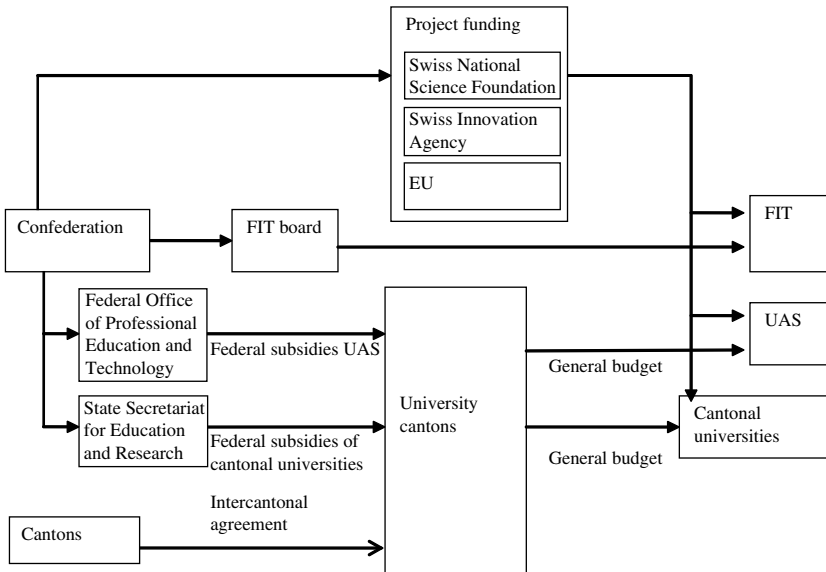


Figure 6.2 Funding of higher education in Switzerland

- *The federal subsidies to the cantonal universities through the University Act* The aggregate amount is decided every four years in the research and higher education budget and is fixed. Until 2000, the division between the individual universities was based on their declared costs; since the new act, it has been formula based, calculated according to the number of university students (70 per cent) and the grants from competitive research (30 per cent).
- *The contribution of other cantons through the intercantonal agreement* Each student's origin canton pays a fixed amount to the canton where he/she studies, based on fixed rates (different for humanities and social sciences, natural sciences and medicine). Thus, the aggregate increases automatically with the number of students.

Although cantonal universities are cofunded by the Confederation and other cantons, the budgeting power generally stays in the hands of their home canton. For the UASs, mechanisms and rules are similar. However, the situation is even more complicated since most UASs are intercantonal schools, with units in different cantons; this gives rise to very complex funding rules and transfers.

Finally, the Research Act of 1983 attributes to the Confederation the competence for direct support of research, which has been progressively put in place since the Second World War. Unlike the German case, where the Deutsche Forschungsgemeinschaft (DFG) is cofinanced by the *Länder*, in Switzerland this task is assumed by the Confederation only. Most of this funding is channelled through a research council – the Swiss National Science Foundation – through the Swiss Innovation Agency, funding cooperation projects with industry mostly in the FITs and the UASs, and through the European Framework Programmes (see Lepori, 2006a).

For the governance aspects, it is important that in most cases third-party funds are directly managed by subunits (laboratories or institutes); thus, they tend to allow a wider autonomy of organizational subunits – and especially of laboratories from their departments – than general funds. Moreover, project funds generally cover only direct personnel costs since there are no overheads (with the exception of European programmes) and thus also influence the division of the general budget, especially in capital-intensive domains; this effect is enhanced by the practice of some HEIs of providing additional cash money to institutes receiving external funding.

Note that there are some important differences between individual HEIs concerning the composition of funds (see Figure 6.3 for cantonal universities and FITs).

While FITs are essentially financed directly by the Confederation, universities in the large cantons (BE, BS, GE, LS and ZH) are still mostly

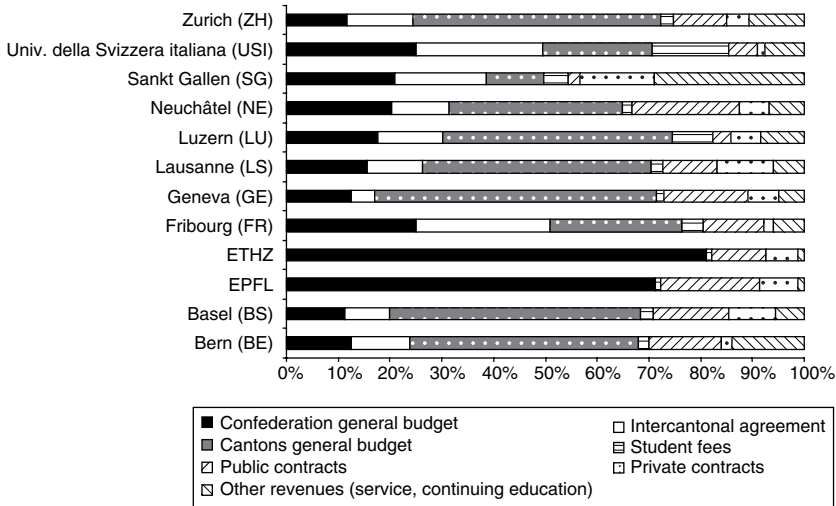


Figure 6.3 Source of funds for Swiss higher education institutions

financed by their home canton; as would be expected, universities in smaller cantons (FR, LU, NE, SG and USI) receive a larger share from students from other cantons, but also from other sources (private contracts and revenues of continuing education for SG, student fees for the USI). Thus, there are some indications of active fund-seeking strategies, but essentially in the cases where the financial resources of the main governing body are limited.

6.4.3 Summary and Implications

There are three noteworthy features of the overall governance of the Swiss HEIs.

1. *Power is strongly fragmented* with the emergence of distinct realms largely distanced from a central coordination of the federal authorities. Of course, this was historically the case before 1848 when the Swiss central state did not exist (most cantonal universities were established before that time). But the same pattern has been reproduced in the FIT domain where after the creation of the EPFL in 1969 the FIT board has progressively developed into a largely autonomous steering body for the whole domain, whose scope was broadened at the end of the 1980s with the integration of four federal research institutes. The FITs successfully resisted their subordination to the State Secretariat for Science and Research (Lepori, 2006a).

Two features of the Swiss political system are a key for this process, namely federalism and a decision-making process which is based on consensus and where large reforms require the consensus of almost all powerful actors and where blocking power is widespread (Linder, 1999). In particular, since the 1960s the cantons successfully resisted a transfer of competences to the Confederation, but at the same time they succeeded in getting additional funds for their universities. As a result, reforms in the past have covered only distinct subdomains and thus ended up increasing the fragmentation of the system by creating parallel structures as in the case of the UAS reform in the 1990s.

2. As a consequence of this blocking, since the end of the 1960s the higher education system has developed a form of *consensual coordination*, whereby joint rules are agreed by all involved actors in representative bodies (based on consensus rather than on majority); the most important examples are the SUC and, until the end of the 1990s, the Swiss Science Council. A similar model has recently been adopted for the introduction of the Bologna reform by the CRUS, where all rectors agreed on the steps and basic rules to introduce into HEIs. Since none of these bodies has the power to enforce decisions, this coordination leaves ample room for individual specificities and in most cases has represented only a minimal harmonization since non-compliance is easy and would destroy even these minimal rules.
3. Finally, as a further consequence, *the funding system is particularly complex and differentiated*. Thus, the funding channels are not coordinated and obey different rules; for example, between universities and FITs. Also, the largest part of the budget – the federal contribution to the FITs and the general contribution from their canton for cantonal universities – is negotiated directly with the political authorities; thus the level of resources available might depend on the bargaining power of the university, but also on the financial strength of their holder; it is not by chance that universities located in smaller cantons have differentiated their income sources more widely than large cantonal universities and FITs.

The possibility of using the funding system as leverage to promote reforms is thus substantially reduced since no actor controls the whole funding system. As a result, since 1999 the Confederation has tried with some success to promote reforms in the cantonal universities through additional financial contributions managed by the SUC.

Note that a broad reform has recently been proposed, with the creation of a unique governance authority for the whole HEI sector and a uniform financing of education based on a standard cost per domain and a fixed

overhead on project funds paid by the Confederation to cover the general costs of research (Département Fédéral de l'Intérieur, 2004). However, this new system would also be based on a gentleman's agreement since the Confederation has no right to impose these rules on the cantons.

6.5 COMPARING INDIVIDUAL HIGHER EDUCATION INSTITUTIONS

Table 6.2 presents some basic data on the 19 Swiss HEIs. Note that all UASs have been created after 1995, even if their individual schools existed earlier. They can be divided into groups according to their status and activities:

1. Ten cantonal universities: seven of them are generalist covering most of the scientific disciplines, while the three newest ones – Sankt Gallen (economics and law), Università della Svizzera italiana (architecture, communication sciences, economics and informatics) and Lucerne (theology and human sciences) – are specialized in some subdomains.

With the exception of Fribourg, all generalist universities existed *before* the creation of the Swiss federal state in 1848. The major difference between these universities concerns medicine, where only five (Basel, Bern, Geneva, Lausanne and Zurich) offer a full curriculum including the practice years. This can be readily explained since a full medicine curriculum requires having a university hospital and brings quite high costs (for these universities medicine accounts for more than half of the total costs).

Note that there is a clear correlation between the size of the hosting canton and the nature of its university since the largest and generalist universities are located in the largest cantons, while the three specialist universities are all located in medium-sized cantons; Fribourg and Neuchâtel are exceptions to this pattern.

2. The two FITs, covering only natural and technical sciences. The specialization in the technical domain was a deliberate choice in the second half of the nineteenth century: when the Confederation became involved in higher education, it chose a domain which was not covered by the cantonal universities and technical sciences never developed in cantonal universities.

However, this division of labour has become more complex in the last few years for two reasons: first, the development of sciences with the emergence of new domains bridging basic sciences and technology such as materials, informatics and life sciences, ensured that the FITs became progressively the strong players in all domains from natural

Table 6.2 Basic data on higher education institutions, 2002

Name	Type	Foundation	Under-graduate students	Human and social sciences	Natural sciences	Technical sciences	Medicine	PhD degrees
University of Basel	Cantonal	1460	6307	X	X	-	X	1678
University of Bern	Cantonal	1528	10,219	X	X	-	X	1379
University of Fribourg	Cantonal	1889	8634	X	X	-	X	945
University of Geneva	Cantonal	1559	10,132	X	X	-	X	1522
University of Lausanne	Cantonal	1537	7851	X	X	-	X	1538
University of Lugano	Cantonal	1996	1481	X	-	X	-	77
University of Luzern	Cantonal	1574	536	X	-	-	-	74
University of Neuchâtel	Cantonal	1838	2598	X	X	-	-	483
University of Sankt Gallen	Cantonal	1898	4104	X	-	-	-	811
University of Zurich	Cantonal	1833	19,104	X	X	-	X	3095
Federal Institute of Technology Zurich (ETHZ)	FIT	1854	9275	-	X	X	-	2449
Federal Institute of Technology Lausanne (EPFL)	FIT	1968	4465	-	X	X	-	906
Fachhochschule Nordwestschweiz	UAS	1995	4159	X	-	X	-	0
Haute École Spécialisée de Suisse Occidentale	UAS	1995	7441	X	-	X	-	0
Berner Fachhochschule	UAS	1995	3609	X	-	X	-	0

Fachhochschule Zentralschweiz	UAS	1995	2337	X	-	X	-	0
Fachhochschule Ostschweiz	UAS	1995	2403	X	-	X	-	0
Zürcher Fachhochschule	UAS	1995	7305	X	-	X	-	0
Scuola Universitaria Professionale della Svizzera italiana (USI)	UAS	1995	1084	X	-	X	-	0

- sciences to technology. Second, the development of the UASs, which are strong in research in technical domains.
3. The seven UASs were constituted in 1995 by the grouping of existing tertiary schools in the domains of technology, construction, economy, social work and arts. With the reform, the UASs have received an extended mandate that also covers continuing education, applied research and technology transfer, especially to small and medium-sized enterprises (SMEs), but they do not have the right to award a PhD. The grouping has been realized according to political and geographical criteria, by dividing Switzerland into seven regions: as a result, some of the UASs cover a large number of cantons and merged more than 10 existing schools, resulting in a very complex legal and organizational structure. While the original core of UASs was in technical domains and economy, they are progressively integrating schools in social, health, art and teacher training, thus evolving towards a more generalist type of school (Lepori and Attar, 2006).

6.5.1 Organization and Governance

It is difficult to give a general overview of the governance of Swiss universities since one of them is to some extent a special case. However, the main divide separates the two FITs from cantonal universities and from UASs.

The two FITs are directed by a president, who is appointed by the Federal Council on the recommendation of the FIT board, and has the right to nominate the other members of the school board. The president is designated as the person responsible for the school and the other members of the board are subordinate to him/her; he/she has wide competences including the decision concerning the budget and the proposal for the nomination of professors and directors of departments; moreover, he/she is an *ex officio* member of the FIT board. Both institutions also possess a quite detailed internal strategy including comprehensive planning of teaching, research and chairs. Moreover, both FITs have a developed internal monitoring system including basic data on budget, personnel, students and outputs and routinely perform bibliometric analysis concerning research groups and departments.

Traditionally, cantonal universities have been considered as a typical case of weak strategic governance, where the budgetary and administrative power has been retained by the canton, while decisions on teaching and research are taken by individual chairs (Weber, 1999). The situation has to some extent evolved in the last two decades: in most cantonal universities the central steering bodies have been restructured and the rector has received more competences and, in some cases he/she is now appointed by

the government (as in Lausanne, Geneva and Basel). Also, most cantonal universities received a greater autonomy to decide their own budget (based on an overall funding volume defined by the canton) and personnel matters. As a result, most cantonal universities had to develop some sort of strategic planning with a widely variable degree of detail. However, my interviews show that these changes should not be overestimated: in most cantons, the basic rules for the functioning of the university are still rooted in cantonal law; moreover, given the proximity between the political authority and the university, most major changes – like the internal organization of the university or the closure of institutes or departments – are still subject to political discussion, even if *de iure* they fall within the competence of the university alone. Also, the interviews show that the internal budgetary allocation process is still largely based on history, even if most universities are striving to create some strategic reserve to be used to promote selectively the most promising research domains. In fact, quantitative data show a great deal of rigidity in the internal allocation of funds (Filippini and Lepori, Chapter 8).

The governance of UASs is even more complex since the restructuring phase following their creation has not yet been concluded (Commission Fédérale des HES, 2002). Some UASs (for example, that of Ticino) have been reorganized in departments with a strong central direction, while others are rather loose joint ventures between individual schools having their individual strategy. The situation is complicated by the geographical dispersion of most UASs, by differences between technical schools and social sciences and by their legal statute: with two exceptions only, UASs cover different cantons and thus are based on intercantonal agreements which cannot be modified without the consent of all the partners. A major difference with universities is that, thanks to the federal competence in the domain and to the existence of a framework law, the federal administration has a much stronger power to rule over the functioning of these schools even in quite detailed matters like personnel, budget and accounting rules; also, most strategic planning takes the form of mandatory plans to be submitted to the Confederation periodically (master plans 2004–07).

The internal organization of the HEIs also presents large differences (Table 6.3). Most cantonal universities are still organized on the basis of disciplinary faculties, such as literature, social sciences, natural sciences and so on, where the exact division varies from university to university; however, recent years have witnessed the creation of more interdisciplinary faculties, such as geosciences in Lausanne or educational sciences in Geneva. The two FITs had a better organization in about 15 departments, but the EPFL recently switched to a five-faculty structure to promote interdisciplinarity. At a more detailed level, there is a common organization in

Table 6.3 Internal organization of the Swiss HEIs, 2005

HEI	Internal organization
University of Basel	7 faculties: theology; law; medicine; human sciences; natural sciences; economics; psychology
University of Bern	8 faculties: theology; law; economics and social sciences; medicine; veterinary; history; human sciences; natural sciences
ETHZ	15 departments: architecture; construction and environment; machine and production processes; information technologies and electrotechnics; informatics; materials; management, technology and economics; mathematics; physics; chemistry and applied biosciences; biology; earth sciences; environmental sciences; food and agriculture; human and social sciences
EPFL	5 faculties: basic sciences; engineering sciences; architecture, civil and environmental engineering; computer and communication sciences; life sciences. Plus, two colleges: College of Humanities and College of Technology
University of Fribourg	5 faculties: literature; theology; law; social and economic sciences; sciences
University of Geneva	7 faculties, plus the institute of architecture and the translation school: sciences; medicine; literature; economics and social sciences; law; theology; psychology and education sciences
University of Lausanne	6 faculties: theology; law; literature; social and political sciences; environment and geosciences; medicine and biology. Plus the Haute École des Études Commerciales
University of Luzern	3 faculties: theology; law; human sciences
University of Neuchâtel	5 faculties: literature and human sciences; natural sciences; law; theology; economic and social sciences
University of Sankt Gallen	4 departments: management; economics; law; cultural sciences. Plus a large number of research institutes which are highly autonomous
USI	4 faculties: architecture; communication sciences; informatics; economics
University of Zurich	7 faculties: theology; law; economics; medicine; veterinary; arts; sciences

research institutes, especially in natural and technical sciences; in this case, the responsibility for the curricula is attributed to the faculty/departments, while the institutes are in charge of organizing research. However, in human and social sciences, an organization in (disciplinary) sections managing education and research jointly is still common.

UASs are also undergoing a transition from a model based on individual schools and closely linked to education, to a departmental structure organized according to the main activity domains, as well as research institutes inside departments, but the advancement of this process varies strongly from school to school.

6.5.2 Curricula and Access to Study

Access to higher education is free in Switzerland to all those possessing the required secondary-level diplomas. In some courses, there might be some additional requirements concerning foreign languages or ancient languages (in humanities). The main exception is medicine, where study places are limited by laboratory capacity and availability of places in hospitals for the practical stage. Thus, admission in medicine is coordinated at national level by the CRUS and students are required to sit an aptitude test; moreover, students can be enrolled in different universities according to the availability of places. Until now this measure has been sufficient to reduce enrolments to a level compatible with available capacities, but in principle it would be possible to refuse enrolments based on the results of the test. This form of national coordination has been decided through an agreement between the cantons that have a faculty of medicine, since the Confederation is not involved in this domain.

Entry requirements are based on secondary-level diplomas: students can enrol in a cantonal university or FIT if they possess a general secondary diploma, while they can enrol in a UAS if they have a vocational secondary certificate (vocational Matura). The distinction between a general and a professional curriculum, which is already apparent at the secondary level, is a basic feature of the education system, which explains why higher education enrolment ratios (at the ISCED 5A level) are much lower in Switzerland than in most other European countries. Students with a general secondary certificate (Matura) can enrol in a UAS only after one year of practicum.

The lack of a central governance structure has an impact on the courses offered and on access to study. Until recently, each university not only had the right to decide which subjects to offer, but also the content, duration and organization of the courses; as a result, mobility of students between Swiss universities has been very limited, since there is neither a uniform

curriculum plan at national level, nor the automatic recognition of courses followed in other universities. This situation is changing to some extent with the progressive adoption of the Bologna model, which should make it easier to change university after completing the Bachelor's degree and, at least in some domains, could promote competition between universities at the Master's level. Note that an external factor – the need to deliver Euro-compatible diplomas – is bringing about a major reform in the Swiss higher education system.

As a matter of fact, the cantonalization meant a very limited specialization of universities on different subjects, except for the broad patterns presented in the introduction to this chapter; thus in social and human sciences and in natural sciences most universities offer a wide curriculum irrespective of the number of students (see Table 6.4). Coupled with a very unequal distribution of students, this has brought large differences in the ratio of students to teachers according to the domains: enrolment ratios are between 10 and 20 students per professor in natural and technical sciences and in medicine, while on average they are between 30 and 80 in human social sciences, but exceed 100 in social sciences, psychology, history and communication sciences (Office Fédéral de l'Éducation et de la Science, 2002).

The situation has deteriorated in the last two decades since most of the increase in the number of students has been concentrated in social sciences and in economics. In reality, three disciplines only – social sciences, economics and law – account for half of the total number of students in Swiss cantonal universities and FITs (see Figure 6.4). UASs normally offer three-year curricula, which are being transformed into 180-credits Bachelor studies (however, these are not equivalent to a university Bachelor's degree); it is likely that in the next few years they will also offer Master's courses with a stronger professional orientation than in universities. Transferring between universities and UASs is generally possible, but normally with the loss of some study years (Confédération Suisse, 2002). Moreover, UAS graduates are normally not admitted to PhD studies or to university Master's courses. The distinction between general and professional curricula and the rules for switching between UAS and university (especially after obtaining a Bachelor's degree) are a major issue in the context of the introduction of the Bologna reform.

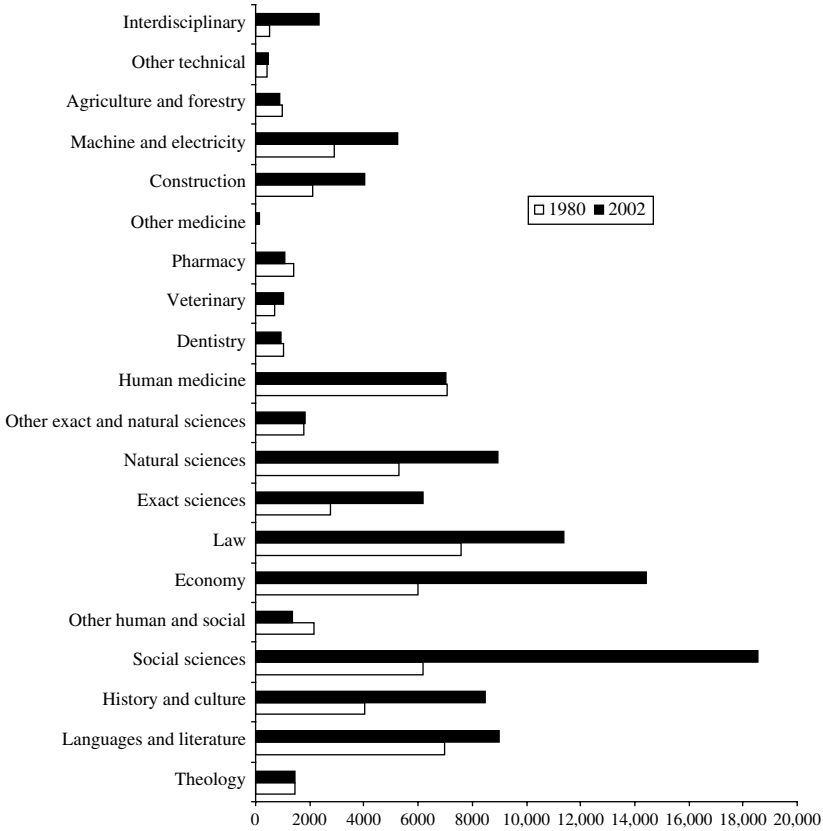
6.5.3 Research and Third-mission Activities

It is difficult to give a precise analysis of research in Swiss HEIs without going into detail in each scientific domain. Therefore, I shall limit myself to illustrating some main structural facts with the help of selected indicators.

Table 6.4 Main subjects offered in Swiss universities (2002)

Subjects	HEI											
	Basel	Bern	Fribourg	Geneva	Lausanne	Luzern	USI	Neuchâtel	Sankt Gallen	Zurich	EPFL	ETHZ
Theology	X	X	X	X	X	X	-	X	X	-	-	-
Law	X	X	X	X	X	X	-	X	X	X	-	Y
Economics	X	X	X	X	X	-	X	X	X	X	-	Y
Sociology and political sciences	X	X	X	X	X	X	X	X	X	X	-	Y
Pedagogy and psychology	X	X	X	X	X	-	-	X	Y	X	-	Y
Philosophy, languages and literature	X	X	X	X	X	X	Y	X	-	X	-	Y
History	X	X	X	X	X	X	Y	X	-	X	-	Y
Exact and natural sciences	X	X	X	X	X	-	Y	X	-	X	X	X
Medicine and pharmacy	X	X	X*	X	X	-	-	X**	-	X	-	X
Architecture and engineering sciences	-	-	-	X	-	-	X	X*	-	-	X	X

Note: X Main subjects; Y Secondary subjects; * first degree only; ** first year only.



Note: All study levels including PhD students; cantonal university and FIT only.

Source: SFSO.

Figure 6.4 Number of students by discipline, 1980–2002

First, HEIs dominate the Swiss research system to an extent unmatched in other European countries except perhaps Sweden or Belgium. Even if we exclude the four research institutes attached to the FIT domain, HEIs account for more than 66 per cent of the R&D expenditures in the public sector, receive about 75 per cent of project funds (Lepori, 2006b) and produce 85 per cent of the ISI publications of the public sector (CEST, 2003). This dominance is not only quantitative, but also *institutional*: since HEIs are supported by strong political actors, the cantons for their universities and the FIT board for the two FITs, while non-university research institutes are either attached to the higher education sector or largely

Table 6.5 *PhD degrees per 100 undergraduate students by domain and by university, 2002*

	Social sciences	Natural sciences	Medicine	Technical sciences	All
Bern	0.8	12.5	18.3	–	5.1
Basel	1.9	16.4	15.6	–	6.4
EPFL	–	7.3	–	4.1	5.1
ETHZ	–	9.9	6.8	3.8	6.7
Fribourg	0.7	11.1	–	–	1.5
Geneva	1.0	15.3	8.8	1.7	3.0
Lausanne	–	16.6	5.5	–	2.6
Luzern	–	0.0	–	–	0.4
Neuchâtel	1.1	14.8	–	21.0	3.7
Sankt Gallen	3.1	–	–	–	3.1
USI	0.5	–	–	–	0.3
Zurich	1.4	9.4	16.4	–	3.7

isolated (Lepori, 2006a). A long-term analysis shows that this dominance developed in the 1960s and 1970s, when, in the face of massive student growth, public authorities reacted strongly, increasing the general funding for higher education; the ability of the cantonal universities to mobilize a key political actor in the political system, namely the cantons, was essential to get additional resources at the federal level (Lepori, 2006b).

Second, research is part of the explicit mission of *all* HEIs – as established in their legal framework – and all HEIs consider it as one of their main tasks. The strength of this model can be judged from the fact that only in 1985 were UASs attributed an explicit research mission. This is rather exceptional since in most countries research function tends to be marginal for non-PhD-awarding institutions (Huisman and Kaiser, 2001). Moreover, there is limited internal specialization since it is considered that there should be a research element in all subject areas offered by the institution (even if with different intensities): thus, UASs are striving to develop research in all UAS domains, even in sectors such as social work and arts where it is largely nonexistent.

Overall, some indicators suggest that intensity of research in Swiss universities and FITs is quite high in international comparison: for instance, the average number of PhD degrees per 100 undergraduate students is about 2.9, which is double the German or French average (Jongbloed et al., 2005). Moreover, a cross-disciplinary analysis shows that differences between universities are to a large extent explained by their subject mix (see Table 6.5).

Bibliometric indicators confirm this pattern since in the Aquameth database Swiss universities have a high number of publications per undergraduate students (Bonaccorsi and Daraio, Chapter 2), however, these data should be interpreted cautiously since they are normalized for the different publication practices in each domain. Note that the difference in the number of publications between the largest universities is relatively small, ranging from about 2400 publications for the University of Zurich to 900 for the EPFL (average 1997–2001). However, impact indicators are significantly higher for the two FITs than for the cantonal universities (CEST, 2003). Thus, while there is little concentration concerning the level of activity, it seems that the quality of research is on average higher at the FITs, while most cantonal universities have only some domains at world-class level (these data to a large extent match the opinions expressed in the interviews).

Finally, technology transfer activities have been rapidly institutionalized in the last few years, with most HEIs creating a technology transfer service and defining an official policy concerning technology transfer and licensing (Vock et al., 2004). FITs are much more advanced in this domain as a result of a longstanding cooperation with industry, while for cantonal universities the cooperation is more concentrated in specific domains. A recent survey at laboratory level shows that cooperation between university institutes and private companies is well developed and is handled essentially at a very decentralized level (Arvanitis et al., 2005). Note also that consultancy and service to the economy and public administration in the form of contracts is very important in social sciences and economics, as a result of the weakness of the non-university public research sector.

A major change in this respect has been the creation of the UASs which received a specific mandate to develop applied research and cooperation with the private economy and especially with the SMEs. Cooperation with private companies had a longstanding tradition for some engineering schools located near to the main companies in the machine sector (Sulzer in Winterthur and Brown Boweri in Brugg), but has strongly increased since 1995 as a result of the development of research in these schools (Lepori and Attar, 2006).

6.6 CONCLUSION: STRIVING FOR ROOM TO MANOEUVRE

The analysis presented here leads to some interesting results concerning the source of diversity in the Swiss higher education system, but also the concept of HEIs as strategic units and diversity implementation in the Swiss context.

First, we could identify two major sources of diversity which determine to a large extent the functioning of HEIs. The first one is their *institutional positioning*: by this I mean not only that to a large extent the mission and rules of HEIs are determined at the field level, but also that individual HEIs are caught in different positions, which also largely determines their subject mix and funding sources; thus, FITs by political decision are specialized in natural and technical sciences, while a university in a large canton invariably has a faculty of medicine and a cantonal hospital.

The second is *disciplinary differences*: all examined indicators, from enrolment ratios to average costs per student to the number of PhDs, show that differences between scientific domains are significantly larger than differences between universities (for the same domain); thus, natural sciences indicators in a small cantonal university like Neuchâtel are more similar to those of the ETHZ than to human and social sciences in the same university. Thus, at least for the examined indicators, field-level 'horizontal' forces – homogenizing the same disciplines across universities – are stronger than vertical forces, bringing homogeneity between disciplines in the same university.

This pattern conforms largely to the traditional governance model of Swiss higher education, where the political power controlled the budget, the administration and the general structure of the university, while the organization of research and teaching was essentially left to the faculties. This is not at all surprising since most reforms trying to reinforce the role of the rector and the university board have been recent and to some extent are still largely partial. Moreover, in the case of cantonal universities, proximity with the political authority makes this process more difficult. It is not by chance that the two FITs, which are supervised by an intermediary organization such as the FIT board and thus largely distanced from political control, have developed much further towards a strong central direction and strategy.

However, the interviews show that almost all of the HEIs are attempting to play a more active role in steering the future of their university and that there has been an important development of instruments such as strategic plans, information systems and evaluation mechanisms over the last few years. The key of this process has been the transfer of the responsibility to prepare the budget to the university management (even if cantonal authorities still retain some degree of control): this requires arbitrating between financial limitations of the public powers, the financial requests of the faculties and departments and, finally, the strategic objectives for the development of the whole university.

Thus, university management are conscious of the need to position their university especially with regard to research, and some of them clearly

emphasized the need for stronger specialization in selected domains. At the same time, cantonal universities are subject to strong pressure from the increase in the number of students in social sciences, but university management lack the power to redistribute resources across domains since the budget is to a large extent still decided on the basis of historical considerations and direct negotiations with the units. Most of them have tried to create (or are envisaging the creation of) a strategic fund to promote selective research, but, in general, these funds can be augmented only through additional means and do not exceed some percentage of the overall budget. Only in the case of the University of Lausanne has the proximity of the EPFL allowed for a large-scale restructuring with the transfer of almost all basic sciences to the EPFL, thus freeing resources for the launch of new activities.

It seems that the fate of most Swiss university management is to be given – by the law, but also by the new university management models – the responsibility of steering the whole university and to position it in the higher education system (at both national and international levels), but at the same time to be squeezed by strong system-level forces that limit their ability to act. What emerges clearly from this analysis is the complexity and ambiguity of this process, beyond the rhetoric of strategic management.

NOTES

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1. Thus, there is a large professional sector outside higher education, comprising public but also private schools offering professional diplomas and continuing education. In fact, two-thirds of the tertiary diplomas are professional diplomas (International Standard Classification of Educational Degrees (ISCED) 5B) and this explains to a large extent the lower enrolment ratio in Swiss higher education compared with other European countries.

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