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Lecturers' qualifications and activities as indicators of convergence and differentiation in the Swiss higher education system

Christine Böckelmann [a], Carole Probst [b], Christian Wassmer [b] and Sheron Baumann [a]

aBusiness School, Lucerne University of Applied Sciences and Arts, Lucerne, Switzerland; bHigher Education Development, Zurich University of Applied Sciences, Winterthur, Switzerland

ABSTRACT

In Switzerland, universities of applied sciences were created with a strong applied research mandate in the mid-1990s. Together with traditional universities they form a functionally differentiated higher education system consisting of equivalent but different types of institutions. The state of the differentiation is discussed controversially and there is speculation about a decreasing practical orientation of lecturers at universities of applied sciences. Through a comparative analysis of data on lecturer profiles from two different surveys, this contribution explores whether differentiation or convergence between the two types of higher education institutions can be observed. The comparison of the lecturers' qualifications and their activities in research and teaching shows that overall, the differentiation required by educational policy is mostly met. While traditional university lecturers have a stronger academic background and are oriented more towards research, their colleagues at universities of applied sciences accumulate considerably more practical experience and are less involved in research. However, there are indications that research at traditional universities is to a certain extent applied in its character. Also, disciplinary differences may play a stronger role in differentiation than the type of institution.

1. Introduction

Since the 1960s, several European countries established binary higher education (HE) systems, usually by founding universities of applied sciences (UAS). This structural reform aimed at horizontal and functional differentiation of the HE system, by creating two different types of higher education institutions (HEI) (de Boer et al. 2017; Huisman and Kaiser 2001; Kyvik 2004). Switzerland is among the latecomers in this process, establishing its binary system only in the 1990s (de Lourdes Machado et al. 2008; Goastellec

CONTACT Sheron Baumann ✉ sheron.baumann@hslu.ch 🖂 Business School, Lucerne University of Applied Sciences and Arts, HSLU W, Frankenstrasse 7, Lucerne 6002, Switzerland

2017). Presently, UAS enrol roughly one third of the 260,000 HE students in Switzerland (FSO Federal Statistical Office 2021).

UAS and traditional universities are considered 'equivalent but different' types of HEI by article 3b of the Swiss HE Act. However, at the legal level there is no formally defined difference in the purpose of the two types of HEI. A description of the profiles is found in a report by the State Secretariat for Education, Research and Innovation (SERI 2016a, 3314; cf. also swissuniversities 2011). It describes UAS' mandate to offer scientifically sound, practice-oriented and professionally relevant education and to conduct applied research as well as traditional universities' science-oriented character and their mandate to conduct basic research.

In all HE systems with functionally differentiated HEI, a relevant question is whether segmentation develops and is maintained over time or whether convergence leads to a neglect of the particular mandates. There is thus a longstanding scientific discourse about convergence and differentiation of different types of HEI (Meek et al. 1996; Kyvik 2009, 136–137; Hüther and Krücken 2016, 99–100; Lehmann 2016; Böckelmann and Nagel 2018).

Existing research indicates that convergence and differentiation can be specific to certain areas of performance (Lepori, Huisman, and Seeber 2014; SERI 2016b): Due to the expansion of HE, certain subjects of study are offered at both types of HEI, which leads to a gradual convergence of the teaching profiles (Kreckel 2010). In the area of research, the findings are not very clear. Lepori and Kyvik (2010) conclude in their analysis that in Switzerland the focus of UAS on applied research is likely to maintain the binary system – also because incentives are used to achieve differentiation (see also Fumasoli and Lepori 2011), while Zechlin (2012) states that the overall research orientation of UAS is moving towards traditional universities due to a lack of excellence criteria for the profile of UAS. Finally, disciplinary differences in convergence and differentiation processes are also observed, as the situation is highly dependent on environmental conditions with respect to competitors or niche opportunities (Lepori 2008) and, for UAS, on the initial level of research when they were founded.

A framework for classifying such findings is provided by two theses outlined by van Vught (2008) based on an analysis of theoretical and empirical studies. Firstly, he postulates, that a relatively low degree of uniformity in the environmental conditions of universities combined with a differentiated type of government control lead to a diversified system. The second proposition states that a large influence of academic norms and values reduces the degree of diversity of the HE system. Here he connects to the discourse on academic drift, i.e. the isomorphic tendency for non-university institutions to approach the university profile (Neave 1979). In this respect, universalistic values of the academic profession are a common driver of academic drift (Tight 2015). Thus, the convergence of institutions, might be observable as converging qualifications of faculty members. In this paper, we therefore use lecturers' qualification profiles as an indicator for the level of convergence within the Swiss HE system.

In Switzerland, no overarching formal definition of the profiles for the two types of lecturers exists. A non-binding description can be found in the annex to the National Qualifications Framework for HE (swissuniversities 2011) and more concrete requirements are defined by the individual HEI. UAS lecturers commonly need a dual competence profile, combining practical and scientific competences (e.g. Swiss Science and

Technology Council 2013, 11). Usually, lecturers at traditional universities are not required to have practical competences. Whether qualification profiles of the two types of lecturers are converging, has been the subject of repeated public discussions in Switzerland in recent years. In particular, there are speculations about the decreasing practical orientation of lecturers, as UAS increasingly employ traditional university professors (e.g. Krummenacher 2018; Interview with Crispino Bergamaschi in Jäggi 2018). Unfortunately, comparable data on qualification profiles of lecturers are not available.[1]

Besides the qualification profiles, we use the lecturers' academic portfolios – their activities – as indicator for the level of convergence within the Swiss HE system in this paper. There is an ongoing debate at the political level about the status of publicly commissioned research at UAS. With the current system of distribution of financial resources, not all UAS lecturers can be active in research, which is politically also not seen as necessary. Thus, the basic idea that each lecturer should combine teaching and research is not achievable, leaving the potential in the connection between teaching, science and practice only partially realised.

Also concerning lecturers' portfolio, the availability of data is unsatisfactory. While the proportions of total working hours per HEI invested in teaching and research are available (FSO 2019), nothing is known about the details of the academic portfolios of individual lecturers and the importance they attribute to each area of performance.

Because of these blind spots, two independent studies on these topics were conducted in 2018. This article uses them to investigate similarities and differences of qualification profiles and academic portfolios of lecturers in both types of HEI. As the cross-sectional data are unique, no statements about developments over time are possible. However, if we assume that the institutional profiles of the HEI are reflected in the qualifications and activities of their lecturers, then indications of the current state of convergence between the types of HEI might emerge, allowing for initial exploratory statements.

In the following, we first explain the data used for our analyses, by characterising the two studies and the samples used for this article. We then present and compare our data regarding four aspects: formal qualifications, practical experience, academic portfolios, as well as lecturers' preferences and compatibility of research and teaching. We round off our paper with concluding remarks, limitations, and possible implications.

2. Method and data

In autumn 2018, a nationwide survey of lecturers at Swiss UAS was conducted to investigate their qualification profiles, careers and academic portfolios (Böckelmann et al. 2019). Simultaneously but independently, the international APiKS study (2018/19) collected information on similar attributes of scientific staff at Swiss HEI.

The fact that the data used to compare the qualification profiles and academic portfolios of academic staff come from two different surveys designed for different purposes and the low response rate of the APiKS survey lead to limitations in comparability and generalisability. Thus, the results are only preliminary indications for the topic of interest.

The analysis not only relies on an overall comparison between lecturers at UAS and traditional universities but also considers disciplinary differences, taking into account the influence of disciplinary diversity on the organisation of academic life and styles of

inquiry (see e.g. Whitley 1984; Becher and Trowler 2001). Despite the limitations of our data and the different disciplinary structures of the two types of HEI, two fields could be identified with a reasonable number of respondents: economic sciences (ECO) and chemistry and life sciences (CLS). These two subject areas clearly differ in their nature, in the sense that they represent two sides of Becher and Trowler's (2001) hard/soft cognitive dimension. Our data will show to what extent the pure/applied dichotomy also applies. Previous studies on Swiss HEI give some indications:

- An evaluation of institutional research activities (SERI 2016b, 207) found that a differentiation of tasks between traditional universities and UAS has only been established to a very limited extent in ECO. In this subject area, it is difficult to differentiate between basic and applied orientation of research, particularly in business administration (e.g. Ulrich 2001). This might be reflected in the qualification profiles and academic portfolios of lecturers.
- Within Swiss UAS, the subject area of CLS is characterised by a particular strength in research (Lepori and Müller 2016, 22). UAS lecturers in CLS might thus show more similarities with their colleagues at traditional universities in terms of their qualification profiles and academic portfolios than in other subject areas.

The survey of lecturers at UAS (hereafter UAS survey) involved all public UAS. Their central administrations sent a link to the online questionnaire to 7,117 persons with full-time or part-time contracts who, following the FSO's definition, belong to the personnel category of lecturers, including professors. 24% completed the questionnaire, their answers are included in the analysis. The sample is representative regarding institutional and gender distributions (e.g. 37% women in the population, 34% in the sample). Concerning subject areas, statements on representativeness are more difficult to make because official statistics use broader categories for them. The FSO reports 1,041 full-time equivalents (FTEs) for ECO at UAS. If we multiply our 316 responses by the average employment, 201 FTEs result from it. That is 19.3% of the FTEs reported in the FSO statistics for ECO. This calculation cannot be made for CLS, due to the mentioned differences in the categories for subject areas. The following analyses of UAS lecturers rely on the answers of 1,438 individuals.[2]

All HEI in Switzerland were invited to participate to the international APiKS study.[3] 20 of them sent the questionnaire to their scientific staff on a one-off basis, reaching roughly 24,500 individuals. The 1,411 valid responses represent a response rate of around six percent. From this sample, the answers of 223 professors and lecturers and 128 senior assistants and post-docs working at traditional universities with full-time or part-time contracts are used for this article. The limitations regarding representativeness consist of a slight overrepresentation of women among the responding professors. Also, humanities and social sciences are strongly overrepresented (44.9% in the sample vs 24.4% in the population), while medicine/pharmacy, law and the technical sciences are underrepresented (8.5% vs 22.6%). The share of the other disciplines in the sample, including CLS and ECO, differ only slightly from the population.

For the comparison in ECO, 316 answers from the UAS survey and 34 answers from the APiKS study were analysed. The comparison in CLS relies on 77 answers from the UAS survey and 66 answers from the APiKS study.

Table 1. Employment situation.

	UAS				Universities			
	Employment status[a]			If part-time[b]		Employment status[a]		If part-time[b]
	N	Full-time employed (%)	Part-time employed (%)	Average employment (%)	N	Full-time employed (%)	Part-time employed (%)	Average employment (%)
Professors	n/a	n/a	n/a	n/a	223	74.9	25.1	58.0
Sen. Assistants	n/a	n/a	n/a	n/a	128	43.0	57.0	67.4
Total	1392	44.0	56.0	63.6	351	63.2	36.8	63.3

[a]A Chi-square test was used to compare HEI and the distribution of full- and part-time lecturers. The results suggest a significant relation between the variables X^2 (1, $N = 1743$) = 41.77, $p < .01$, $\varphi = 0.155$.
[b]Since the data neither follow a normal distribution nor exhibit homogenous variances, a Welch's t-test was performed. No statistically significant difference ($t = .289$, $p = 0.7730$) was found in the average employment of part-time lecturers between the two types of HEI.

Both studies indicate that in Switzerland a larger proportion of lecturers is employed part-time at UAS than at traditional universities (cf. Table 1). This is probably related to the high proportion of UAS lecturers working in a practical field in parallel to their academic activities (cf. section 3.2). At universities, there are strong differences between professors and senior assistants. At both types of HEI, the average employment rate of part-time employees is nearly 65% of a full-time position.

In the following, we refer to professors and lecturers at UAS as 'UAS lecturers' to simplify matters. Professors, lecturers, senior assistants and post-docs at traditional universities are referred to as 'university lecturers'. If a distinction is made between professors and lecturers on the one hand and senior assistants and post-docs on the other hand, the terms 'professors' and 'senior assistants' are used.

The studies were designed and carried out independently of each other but largely related to similar topics. Thus, with all comparisons it should be kept in mind that questions were formulated differently in the two surveys (cf. questionnaires in annex 1). Furthermore, the samples are not identical regarding the range of subject areas, because some of them are only found at one type of HEI. Also, the following descriptions of qualification profiles, current academic portfolios, as well as assessments and preferences regarding teaching and research including their compatibility are merely indications of how pronounced the practical competences of the lecturers might be.

3. Comparative results

3.1 Formal qualifications

The professional and academic careers of lecturers can shape their practical and scientific orientation in their current activities. The educational qualifications of the lecturers of the two types of HEI are therefore of interest – both in terms of academic degrees and vocational training. The latter is particularly relevant because UAS are politically intended as a continuation of the vocational training path at the level of academic HE.

Regarding academic degrees, the overall picture corresponds to the different types of HEI (cf. Table 2): While the largest share of UAS lecturers holds either a Master's or a doctoral degree and only a very low percentage has a habilitation (i.e. a postdoctoral

Table 2. Highest academic degree.

		N	Highest academic degree				Chi square tests	Relation between type of HEI and distribution of degrees
			Habilitation (%)	PhD (%)	Master (%)	Bachelor (%)		
Total	UAS	1438	4.6	43.5	41.5	6.3	$X^2(4) = 354.07$	Strong
	universities	351	27.4	68.4	1.4	0.0	$p < .001$	
							$n = 1789$	
							$CC = .407$	
							Cramer's V = .445	
CLS	UAS	77	5.2	67.5	20.8	2.6	$X^2(4) = 35.26$	Strong
	universities	66	30.3	68.2	0.0	0.0	$p < .001$	
							$n = 143$	
							$CC = .445$	
							Cramer's V = .497	
ECO	UAS	316	2.8	50.0	42.1	3.5	$X^2(4) = 29.62$	Medium
	Universities	34	14.7	79.4	2.9	0	$p < .01$	
							$n = 350$	
							$CC = .279$	
							Cramer's V = .291	

qualification and the classical way to a professoriate in German speaking universities), almost all respondents from traditional universities hold at least a doctorate. The share of people with a habilitation is obviously larger among professors than among senior assistants. FSO data show that roughly 60% of all lecturers at Swiss UAS have obtained their highest academic degree from a traditional university (FSO 2019, no such data available for university lecturers).

Particular differences can be observed in the separately studied subject areas. University lecturers in CLS have qualifications similar to the overall university sample, while their UAS colleagues are significantly higher qualified academically than the total UAS sample, with three-quarters having at least a doctorate. In ECO, the qualification of UAS lecturers is roughly equivalent to the total sample at UAS, whereas at universities in our sample the share of lecturers with a habilitation is only about half as high as in the respective total sample.

Less than one sixth of all UAS lecturers completed an apprenticeship before starting their careers in HE. Generally speaking, the higher the average academic degree of a group, the lower the proportion of people with vocational training. At universities, only three percent of all respondents completed an apprenticeship. A third of them have pursued academic careers up to a habilitation, while the others have a doctorate.

Even though nation-wide HE legislation does not define lecturer profiles for the two types of HEI, the data suggest that a differentiation has developed. University lecturers are more academically oriented, while the profile of UAS lecturers contains more professional elements – even though with disciplinary differences. As expected, UAS lecturers completed an apprenticeship significantly more often than their colleagues at universities, but still at a rather low share. The educational policy intention that a significant share of UAS lecturers follows a similar vocational training path as their students has only been realised to a limited extent so far. However, in view of the high barriers for UAS graduates to obtain a doctorate in Switzerland, this is not surprising. Only traditional universities can award doctorates, and UAS professors are rarely involved in supervising doctorates (cf. swissuniversities 2021). As a result, the path from a UAS Master's to a doctorate is still very rocky today.

3.2 Practical experience

To determine the extent of the relevant practical experience of lecturers at both types of HEI, the frequency of current parallel as well as past professional activities in all fields of work outside of HEI were examined. In addition, the entire duration of such professional activities was analysed (cf. Table 3).[4]

The UAS survey reveals that a good third of all UAS lecturers currently works either employed or self-employed in parallel outside of the HE sector. This figure is notably lower in CLS, while in ECO it corresponds to the overall UAS level.

For university lecturers a different picture emerges. Only one sixth works in parallel outside of a HEI. Professors do so more often than senior assistants, who are presumably more intensively occupied with their academic careers. There are clear accentuations within the two subject areas: While university lecturers in CLS show a below-university-average rate of professional activities outside HE, this rate is above-university-average in ECO.

The share of lecturers who have ever been employed or self-employed outside HE also indicates clear differences in the two HEI profiles, with the highest accentuation in CLS.

The expected differences between the two types of HEI also emerge when the duration of professional activities in fields outside of HE is considered. UAS lecturers are distinguished by extensive practical professional activity in their students' potential future fields of work. The average duration is 13 years, increasing to 15 years if only lecturers with at least a 50% employment level outside of HE are considered. While the duration of professional activity for UAS lecturers in ECO only marginally differs from the average at UAS, it is lower in CLS.

Among university lecturers, the average duration of any practical work outside HE is less than two years if only full-time is considered, around three years if part-time is included. However, it should be noted that only around two-fifth of university lecturers indicated professional activity outside the university since their first degree. If only this group is considered, the average duration of extramural employment amounts to eight years – still considerably less than at UAS. The average figures for lecturers in ECO only marginally differ from those for all lecturers at universities, while in CLS it is clearly lower, also due to the lower share of lecturers ever employed outside HE.

The differences between UAS and university lecturers are thus distinct, even though the two studies are not fully comparable in this respect: The APiKS study only surveyed the duration of employment outside HE after obtaining the first academic degree, while the UAS survey considered the entire lifetime. But since university lecturers rarely exhibit a professional apprenticeship with corresponding work experience prior to their studies, the difference in the two studies is unlikely to significantly influence the results presented here. Also, the APiKS study considered any kind of professional activity while the survey of UAS lecturers asked specifically for activities in fields where their students might be employed in the future. The difference might thus be even more pronounced if the same questions were asked.

In the UAS survey, the participants were asked to rate their agreement with the statement 'I find the research-related aspects of my work more interesting than the practice-related aspects'. Almost one third of the respondents took a neutral position, not preferring one aspect over the other. About 20% of the respondents completely agree or tend to

Table 3. Employment outside HEI.

| | UAS | | | | Universities | | | | |
| | | % Employed/self-employed outside HE | | Average duration employment/self-employment outside HE In years | | | % Currently employed/self-employed outside HE | % Ever employed/self-employed outside HE | Average duration employment/self-employment outside HE | |
	N	Currently	Ever			N			Full-time In years	Total In years[a]
Professors	n/a	n/a	n/a	n/a		223	18.4	40.4	2.3	4.0
Sen. Assistants	n/a	n/a	n/a	n/a		128	14.1	37.5	0.8	1.8
CLS	77	23.4	84.4	9.4		66	7.6	24.2	0.9	1.9
ECO	316	37.0	90.9	12.8		34	23.5	41.2	1.7	3.3
Total	1438	36.2	83.3	12.9		351	16.8	39.3	1.8	3.2

[a]Average of sum of full-time employment and part-time employment in three categories (public organisations, private organisations, self-employment). If a person was (part-time) employed simultaneously in two of these categories, the corresponding years are counted twice. These figures might thus be slightly inflated.

agree with the statement, while around 45% completely disagree or tend to disagree with the statement. The more extensive practical experience of UAS lecturers is therefore reflected in a preference for practice-oriented aspects of teaching.

In summary, it can be stated that UAS lecturers have very pronounced and, compared to their peers at universities, considerably more extensive practical professional experience. This can be observed both regarding the parallel work in a professional field and regarding the total duration of practical experience. In this respect, the prerequisite for different profiles at both types of HEI is fulfilled and the overlap between the lecturer types is minimal. Regarding the two subject areas considered, a less intense practice-orientation can be observed for UAS lecturers in CLS, approaching the average university lecturer. However, university lecturers in this subject area also exhibit a less extensive practical experience than the average of all university lecturers, especially when parallel activities are considered. Thus, the affiliation with CLS appears to have a strong influence. UAS lecturers in ECO have a similarly pronounced practical orientation as their UAS colleagues overall. Their colleagues at universities show above-average frequencies for parallel activities in a practical field, similar to the average lecturer at UAS. Concerning the duration of their employment outside HE, the values do not differ from the university average. This means that the above-mentioned convergence with UAS is not as pronounced in ECO as in CLS.

3.3 Academic portfolios

In order find indications for the state of convergence in academic portfolios, we examine the current frequency with which lecturers in both types of HEI work in the areas of research and teaching, and what average proportions of an FTE they currently devote to them (cf. Table 4). Additionally, data from the APiKS study on the nature of research activities are considered.

At both types of HEI, most lecturers are active in teaching. While virtually all university professors teach, the proportion for senior assistants is considerably lower. The differences between the overall sample and the separately investigated subject areas are negligible in the case of UAS and ECO at universities, while among university lecturers in CLS, almost every sixth is not teaching.

In contrast to the frequencies of teaching activities, the examination of time resources spent on teaching points out considerable differences between HEI types and subject areas. For UAS lecturers, teaching is the field of activity absorbing the most working hours. On average, it amounts to nearly half of an FTE, almost one working day per week more than in the university sample. UAS lecturers in ECO devote an above-UAS-average proportion of their working hours to teaching and more than twice as much as their peers at universities. While the time spent on teaching by UAS lecturers in CLS hardly differs from the UAS average, it is significantly more than what their university colleagues invest. Thus, concerning time spent on teaching there is no indication of a subject area specific convergence.

Concerning research, we find pronounced differences between the types of HEI also regarding the frequency of activities: Nearly 60% of UAS lecturers are active in research, compared to virtually all university lecturers, with no significant differences between professors and senior assistants. UAS lecturers in CLS have an about 20 percentage points

Table 4. Frequencies, proportion of time spent on teaching and research activities.

Area of activity	Subject area/ Sample	UAS		Universities		Chi-square tests	Welch's tests
		% of lecturers active in area[1]	At (mean % of full-time employment)[2]	% of lecturers active in area[1]	At (mean % of full-time employment)[2]		
Teaching	Total sample	95.5	46.1	91.7	27.6	$X^2(1) = 1.93$ $p = 0.17$ $n = 1789$	$t = 15.38$ $p < .001$ $d = 0.79$
	Professors	n/a	n/a	99.6	29.8		
	Sen. Assistants	n/a	n/a	83.6	22.9		
	CLS	94.8	46.2	84.5	19.2	$X^2(1) = 3.99$ $p = 0.05$ $\varphi = 0.17$ $n = 143$	$t = 9.06$ $p < .001$ $d = 1.45$
	ECO	96.8	50.8	91.2	24.4	$X^2(1) = 2.75$ $p = 0.10$ $n = 350$	$t = 8.73$ $p < .001$ $d = 1.16$
Research	Total sample	58.0	24.8	96.9	44.5	$X^2(1) = 189.29$ $p < .001$ $\varphi = 0.33$ $n = 1789$	$t = 13.85$ $p < .001$ $d = 1.09$
	Professors	n/a	n/a	96.4	38.6		
	Sen. Assistants	n/a	n/a	97.7	57.7		
	CLS	76.6	23.0	95.5	58.3	$X^2(1) = 10.06$ $p < .01$ $\varphi = 0.27$ $n = 143$	$t = 10.28$ $p < .001$ $d = 1.83$
	ECO	58.5	24.1	100.0	42.0	$X^2(1) = 22.53$ $p < .001$ $\varphi = 0.25$ $n = 350$	$t = 4.63$ $p < .001$ $d = 1.06$
Research and teaching	Total sample	57.6	60.4	89.2	70.0	$X^2(1) = 138.23$ $p < .001$ $\varphi = 0.28$ $n = 1789$	$t = 5.12$ $p < .001$ $d = 0.29$
	Professors	n/a	n/a	96.0	66.6		
	Sen. Assistants	n/a	n/a	82.8	76.8		
	CLS	76.6	64.2	83.3	74.2	$X^2(1) = .32$ $p = 0.32$ $n = 143$	$t = 2.00$ $p = .05$ $d = 0.37$
	ECO	58.2	63.2	91.2	64.6	$X^2(1) = 14.07$ $p < .001$ $\varphi = 0.20$ $n = 350$	$t = 0.15$ $p = .89$

[a]Chi-square tests were used to compare the distribution of lecturers between the types of HEI ($\alpha = .05$).
[b]Since the data neither follow a normal distribution nor exhibit homogenous variance, Welch's t-tests were performed to determine if there are statistically significant differences in the mean % between the two types of HEI ($\alpha = .05$); $d =$ Cohen's D.

higher probability of being active researchers than their colleagues in ECO and the average UAS lecturer. Among university lecturers, the proportion of researching lecturers in CLS hardly deviates from the average, whereas in ECO it increases to 100%.

When considering the time spent on research, the picture emerging from the comparison shows the opposite of teaching, but even more pronounced. While UAS lecturers can only invest an average of about a quarter of an FTE in research activities, the figure for university lecturers is almost 20 percentage points higher, whereby the average of senior assistants is considerably higher than for professors. The comparison of the subject areas confirms the clear difference between the different HEI types: at universities, the individual time investments for research in ECO and in CLS exceed those at UAS by a factor of 1.75 and 2.5, respectively.

Also, the proportions of lecturers active in both teaching and research differ. Around 57% of UAS lecturers are active in both areas, compared to almost 90% of university lecturers. Professors are more likely to be active in both areas than senior assistants. Among UAS lecturers, we find an average proportion in ECO, while in CLS it increases to 77%.

Following their mandates, research conducted at UAS should be of an applied nature and practice-oriented, while universities should focus on basic research (SERI 2016a, 3314). However, the latter conduct also research with a practical orientation. The APiKS study provides indications of this, offering insights into the nature of university lecturers' research activities and the likely extent of convergence or even overlap with their colleagues at UAS in this regard. Only about 60% of the university lecturers state that their research has a strong to very strong basic character. The proportion in CLS corresponds to this average, compared to about 40% in ECO. Also, around 55% of the university lecturers state that their research activities have a high to very high practical relevance, around 37% declare to generally work together with practitioners and around eight percent describe their research as commercially oriented. Differences between the studied disciplines are evident: While 71% of the lecturers in ECO declare at least a high practical relevance of their research, it is 39% in CLS. Also, regarding the cooperation with practitioners and the commercial orientation of research, there are significantly higher proportions among the university lecturers in ECO (56% and 15%, respectively) than in the overall sample and among the lecturers in CLS (33% and 10%, respectively). In terms of the practice-orientation of their research, the university lecturers in CLS thus differ only slightly from the overall university sample, while those in ECO exhibit a significantly stronger practice-orientation.

According to the self-assessment of some university lecturers, their research is thus both basic and practice oriented. However, the latter is not entirely self-motivated. Rather, 17% and 38% in ECO declare that their employer expects them to do applied research. In summary, we cautiously conclude that a considerable proportion of university lecturers carry out research that is conceptually associated with UAS through the policy-induced differentiation. There is thus a certain degree of convergence between UAS and traditional universities in the nature of research activities and a potential overlap of lecturers' portfolios, which is particularly evident in ECO.

When relating the nature of research to the hours spent on research, it becomes evident that more applied research is likely to be conducted at universities than at UAS. However, based on the two surveys, it cannot be determined whether lecturers at both types of HEI have the same understanding of 'applied research'. Although

basic and applied research can be distinguished conceptually (e.g. in SERI 2020, 27–28), this is probably more difficult in the day-to-day research activities of the lecturers.

In summary, it can be stated that the academic portfolios of UAS lecturers are more strongly oriented towards teaching than the ones of university lecturers. The requirement to combine teaching and research in their portfolio can only be met by a good half of UAS lecturers, with a significantly higher share in CLS. In contrast, most university lecturers work in both areas. The frequent practice-orientation as well as the widespread cooperation with practitioners among university lecturers suggests some degree of convergence or even overlap between the research of the two lecturer types, which is particularly pronounced in ECO.

3.4 Research and teaching: lecturer preferences and compatibility

The situation that only about 57% of UAS lecturers are simultaneously active in teaching and research is certainly due to structural reasons. Swiss UAS do not have the financial resources to enable all lecturers to carry out research. However, motivational reasons may also play a role: Indications of this can be found in the answers to questions regarding personal preferences and experience of compatibility of the two areas in everyday work.

Swiss UAS offer their lecturers individual combinations of teaching in basic and continuing education, research, and services. The UAS survey asked lecturers in which area they would like to increase their workload. Interestingly, barely a third are satisfied with their current academic portfolios. Lecturers active exclusively in teaching are more often satisfied with their portfolio than those with activities in several areas (cf. Table 5).

Around 25% of all UAS lecturers surveyed would like to do more teaching. Most frequently, higher quotas for research are desired, predominantly by lecturers who are already active in this area. Overall, 44% of them express this wish. Only a small proportion of those not active in research wish to change this situation. Presumably, this is an indication of the fact that the presence of both areas in an academic portfolio is not only related to structural reasons but also to motivational aspects. In addition, the desire for (more) research could also be influenced by the level of academic socialisation: Around 83% of those with neither a doctorate nor any research activities do not want to do research.

Lecturers in CLS, who frequently work in research, particularly often express a desire for change, which could be related to their comparatively high academic orientation (cf. section 3.1). Barely 20% of them are satisfied with their current academic portfolio.

For the APiKS study, participants were asked whether their interests were stronger in research or teaching (cf. Table 6). About two thirds of university lecturers are more or mainly interested in research, about one third in teaching. Professors prefer teaching significantly more often than senior assistants, possibly because most senior assistants are employed on a temporary basis and depend on a high research output for their future careers. Also, a significant proportion of them do not perform any teaching activities. Looking at the subject areas, the interest in research is above average for university lecturers in CLS and ECO.

In comparing the findings of the two studies, it can be cautiously stated that the research affinity of university lecturers is greater than that of UAS lecturers.

Table 5. UAS lecturers: Changes in work portfolio.

	%	N
Satisfied with the situation, no desire for change		
- Total sample	30.9	1438
- Lecturers who work exclusively in teaching	49.6	139
- Lecturers in CLS	18.2	77
- Lecturers in ECO	31.3	316
Desire for higher quotas for teaching		
- Total sample	25.2	1438
Desire for higher quotas for research		
- Total sample	34.3	1438
- Lecturers who are currently working in research	43.7	834
- Lecturers without any research activities	20.9	604
- Lecturers with neither a doctorate nor any research activities	17.3	427

An interesting question is to what extent lecturers can implement the postulate of combining teaching and research, which is important for all types of HEI. In the APiKS study (cf annex 2) 52% of the respondents do not see major difficulties in combining teaching and research, rejecting the statement 'Teaching and research are hardly compatible with each other'. 26% agreed with the statement and 22% took a neutral position. Senior assistants are slightly more likely to see difficulties, which again might be due to the high research pressure they experience. In ECO, the compatibility is seen more critically: a particularly small proportion (38%) somewhat to strongly rejects the statement, and a particularly large proportion (35%) remains neutral. Conversely, the lecturers in CLS rarely see difficulties, with 58% rejecting the statement and 20% taking a neutral stance.

In the UAS survey (cf annex 2), participants were requested to rate their agreement with a statement that – turned the other way around – focusses on a comparable dimension and addresses all areas of the public mandate. Around 63% agreed with the statement 'At my HEI it is possible for lecturers to work in different areas at the same time without any problems'. Only a quarter of the respondents tended to reject the statement or rejected it completely, around 13% were undecided. In contrast to the situation at universities, UAS lecturers in ECO do not take an especially critical view of the situation (about 64% tend to agree or agree completely with the statement). UAS lecturers in CLS assess the situation – as at universities – as particularly problem-free as 81% tend to agree or agree completely with the statement.

The possibility to combine research and teaching in everyday work thus seems to be perceived as less of a problem in the two subject areas at UAS than at universities. Overall however, the perception of the compatibility is similar in the two types of HEI. However, around two-thirds of all UAS lecturers also fully agree or tend to agree with the statement that, in terms of work organisation, it is easiest to work primarily in teaching. The

Table 6. University lecturers: Interests primarily in teaching or research.

	N	Primarily in teaching (%)	In both, but leaning towards teaching (%)	In both, but leaning towards research (%)	Primarily in research (%)
Total sample	346	4.9	25.4	53.5	16.2
Professors	219	6.4	26.5	54.3	12.8
Sen. Assistants	127	2.4	23.6	52.0	22.0
CLS	65	0.0	13.8	56.9	29.2
ECO	34	5.9	14.7	58.8	20.6

possibility to combine teaching and research at UAS therefore also appears to be associated with some complexity.

To which extent science-based teaching requires own research activities or whether such activities qualitatively strengthen teaching is controversially discussed. Both studies were interested in the extent to which the respondents see a positive connection here. Corresponding questions were worded differently (cf annex 2), but nevertheless allow for a comparison. Around 79% of the university lecturers tended to agree or fully agreed that their research reinforces their teaching, while in the UAS survey, only 61% tended to agree or completely agreed that work in both teaching and research was necessary. Considering that a large proportion of UAS lecturers is not active in research, this seems quite understandable. However, almost three quarters of UAS lecturers also tend to agree or completely agree with the statement that they base their teaching on current research results. Thus, not conducting research does not necessarily lead to a reduction in the science- or research-orientation of one's teaching.

The answers of the university lecturers in CLS match the ones in the university sample. Their counterparts at UAS, on the other hand, stand out clearly in comparison to the whole UAS sample: The proportion of those who consider the combination of both areas necessary is 15 percentage points higher and is therefore similar to the university sample. A different picture emerges in ECO. At universities, lecturers in this field differ from the total sample as fewer (by 12 percentage points) see an influence of their research on teaching. This frequency approaches that of their colleagues at UAS, whose view on the necessity of parallel activities approximates the overall proportion at UAS (62%).

In summary, it can be noted that the research-orientation of UAS lecturers is less pronounced than that of university lecturers. This observation is well in line with the decreed profiles of the two types of HEI. Moreover, there are strong indications for the presence of lecturers at UAS who do not want to do research at all, although the importance of the principle of science-based teaching is upheld. Interestingly, the everyday juggling between the two areas is somewhat less problematic for UAS lecturers than for their colleagues at universities. Regarding the two separately examined subject areas, it is notable that the UAS lecturers in CLS are similar to their university colleagues in terms of their preferences for teaching or research. The strong research affinity of this subject area at UAS is again reflected here. In ECO, there are no clear peculiarities. However, the ratio of university lecturers that attribute a positive effect of their own research on teaching is clearly below the overall frequency for this type of HEI. The lower value is similar to that of UAS lecturers. One assumption is that the conspicuously applied nature of research in ECO at universities (cf. section 3.3) impedes its transfer to the more basic orientation of teaching there.

4. Discussion and conclusion

Overall, we conclude that the differences in the qualifications of lecturers at UAS and traditional universities correspond to the intended profiles of the two types of HEI. The different distribution of doctorates and habilitations among the two samples indicates that university lecturers are more research oriented than UAS lecturers. On the other

hand, the UAS lecturers have considerably more in-depth and relevant practical experience than their colleagues at universities.

Regarding the areas of performance, there is evidence that UAS lecturers have a stronger affinity for teaching than traditional university lecturers, while the latter have a greater affinity for research. Furthermore, barely 60% of the UAS lecturers are active in both teaching and research, while for university lecturers this is the norm. Nevertheless, UAS lecturers consider the science-based nature of their teaching to be important. Overall, the data suggest that teaching at UAS is both practice- and science-oriented, even if not all lecturers are actively involved in research. Based on the qualification profiles and the academic portfolios, teaching at universities is likely to be more scientifically oriented, which is in accordance with the intended differentiation.

In this context, it should be noted that the courses of study at UAS and traditional universities are aimed at students with different professional and educational biographies. Studying at UAS requires previous professional experience unlike studies at a university, and data from the Graduate Survey conducted in 2017 by the FSO (2020, own analysis) show that UAS students also gain more practical experience during their studies. UAS lecturers are therefore likely to be challenged to invest more than the university lecturers in relating their teaching to practice.

Regarding differentiation in research, the situation is not entirely clear, although convergence or even a certain degree of overlap may be observed here. It is notable that university lecturers often categorise their research as application-oriented, which is more attuned to the profile assigned to UAS. However, we do not know what exactly they understand by this orientation. Furthermore, no data are available regarding the extent to which UAS lecturers conduct basic research, while the results show that many lecturers at UAS would like to do more research than they currently do.

The comparison between the two separately examined subject areas makes it clear that the findings for the two HE sectors presented here are general trends. According to Becher and Trowler's (2001) differentiation, there are indications from our data that CLS is more a 'pure' and ECO is more of an 'applied' discipline. Thus, UAS lecturers in CLS are similar to the 'average' university lecturers regarding their qualifications and preferences. Conversely, the research of university economists is particularly similar to that of 'average' UAS lecturers. Overall, the above-mentioned findings by SERI (2016b, 207) regarding the lack of division of tasks between universities and UAS in ECO are confirmed by our findings.

As data from two separate studies were compared in this article and the response rate in the APiKS study was low, the significance of the findings is limited. However, since they refer to a topic for which no consistent data is yet available, they are important in the sense of an exploration. Applying van Vught's (2008) conceptual framework to our results, two divergent trends can be observed: Concerning teaching, our analysis confirms that relatively different environmental conditions of HEI, which include different student profiles, combined with a differentiated nature of state control, lead to a diversified system. Concerning research, van Vught's second proposition, that a large influence of academic norms and values reduces the degree of diversity of the HE system, is confirmed by our data. In the Swiss case, general academic norms predominate for research, often giving little weight to application orientation. There is also hardly any differentiation in the state control of research.

A differentiation in teaching and a tendency towards convergence in research is thus plausible. However, further research is needed, e.g. exploring the variety within each type of HEI or the potential hybridity between the two types. It would also be important to include other sources and methods, such as publication lists and bibliometric or altmetric analyses.

Notes

1. The only available statistical indicator is the highest academic degree of UAS lecturers.
2. The data of lecturers of universities of teacher education and of the arts are excluded from the present analysis as these are specialised HEI with no comparable equivalents in the traditional university sector.
3. APiKS = Academic Profession in Knowledge-Based Societies (https://apiks.hse.ru/, last accessed March 15, 2021). Only data from universities are used in this article.
4. The specific wording of the questions can be found in the annex.

Disclosure statement

Notes on contributors

Christine Böckelmann, Dean of the Lucerne School of Business, worked for several years as a psychotherapist and as a consultant for human resources, team and organisational development. She has held various university management positions since 2002. First, she was Head of a Department at the University of Teacher Education Zurich, then General Secretary of the University of Teacher Education North-western Switzerland. In 2011, she was elected Rector of the University of Teacher Education Karlsruhe. Since 2016, she works in Lucerne. In addition to her management duties, her research and teaching is focused on people management, especially in expert organisations, professional careers, and counselling. She was a member respectively chair of the expert panels for the German federal-state programmes 'Innovative University' and 'Recruitment and promotion of professorial staff at universities of applied sciences'. She is furthermore member of the university council of Karlshochschule International University.

Carole Probst is a senior researcher at the Higher Education Development Unit at the Zurich University of Applied Sciences ZHAW and co-responsible for quality development at this higher education institution. She holds a PhD in Communication Sciences from the University of Lugano, Switzerland, where she started her journey into higher education research. A social scientist by training, she combines both experience in research on higher education and practice as a higher education professional. She is the coordinator of the Swiss APiKS project group, a role reflecting her research interest in the academic profession. Furthermore, her research and professional interests lie in the fields of science indicators, knowledge management at higher education institutions, evaluation and quality development.

Christian Wassmer, PhD, is a senior researcher at the Higher Education Development Unit at the Zurich University of Applied Sciences ZHAW in Winterthur (Switzerland). He is currently researching and publishing on issues such as the higher education system and policy. In his position, he is also involved in the institutional research and the strategic development of the ZHAW. In this regard, he directs the Strategic Observatory, a tool for early detection of trends in higher education. Moreover, he is co-coordinator and founding member of the recently created REHES (Research on Higher Education and Science in Switzerland) network, member of the Sustainable Development Committee of the ZHAW and associated member of the CHESS - Center for Higher Education and Science Studies of the University of Zurich.

Sheron Baumann is a research associate at the Business School of the Lucerne University of Applied Science and Arts and a PhD student at the Center for Higher Education of the Technische Universität Dortmund, Germany. An economist and teacher by training, his work in Lucerne includes surveying the individual student benefits of the various continuing education programmes of the Lucerne Business School, applied and often interdisciplinary research activities in the context of new work and the platform economy, and teaching bachelor students who study social work or business administration. His PhD thesis examines how the non-university higher education sector in Switzerland has managed the transition from teaching-only institutions of higher vocational training and education to higher education institutions with a wider public mandate.

ORCID

Christine Böckelmann 🄳 http://orcid.org/0000-0002-1694-444X
Carole Probst 🄳 http://orcid.org/0000-0003-4820-3571
Christian Wassmer 🄳 http://orcid.org/0000-0003-3917-2857
Sheron Baumann 🄳 http://orcid.org/0000-0002-9781-9818

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Annex 1. Survey questions used in analysis

APiKS questionnaire:

What is your academic rank (If you work in a research institutions with ranks differing from those at higher education institutions, please choose the rank most closely corresponding to yours)?

- Full professor (or similar)
- Associate professor (or similar)
- Assistant professor (or similar), other types of professorship
- Adjunct professor (Titularprofessor/in)
- Lecturer with professorship at university of applied sciences
- Lecturer
- Senior teaching and/or research assistant (Oberassistent) / post-doc

Not considered categories:

- Academic associate (wissenschaftlicher/r Mitarbeiter/in)
- Teaching and/or research assistant and/or doctoral candidate
- Doctoral candidate Swiss National Science Foundation
- Administrative and technical staff
- Other, please specify:

Please, identify the academic discipline or field

- Teacher training and education science
- Humanities and arts
- Social and behavioural sciences
- Business and administration, economics
- Law
- Life sciences
- Physical sciences, mathematics
- Chemistry
- Computer Sciences
- Engineering, manufacturing and construction, architecture
- Agriculture, forestry
- Medical sciences, health related sciences, social services
- Personal services, transport services, security services
- Social work and services
- Other (please, specify)

How is your employment status in the current academic year at your higher education institution/ research institute? (Check one only)

- Full-time employed
- Part-time employed

Not considered categories:

- Part-time with payment according to work tasks
- Other (please, specify)
- No answer

For each of your degrees, please indicate the year of completion and the country in which you obtained it (year).

- apprenticeship
- higher education entrance qualification
- Bachelor degree
- Master degree or similar
- PhD
- Habilitation
- further degree

Are you employed or self-employed in another organization besides your employment mentioned above? (multiple answers possible)

- Yes, at another higher education institution
- Yes, with another employer
- Yes, self-employed
- No
- No answer

Since your first degree, how long have you been employed in the following?

- Higher education institutions
- Research institutes (outside higher education institutions)
- (Other) Government or public sector institutions
- (Other) Industry or private sector institutions
- Self-employed

For each category:

- Full-time employment in years
- Part-time employment in years

Are you currently or have you been (for the past three years) working in teaching and / or research?

- in teaching
- In research
- In teaching and research
- Neither in teaching nor in research

Considering all your professional work, how many hours do you spend in a typical week on each of the following activities?

- Teaching (preparation of instructional materials and lesson plans, classroom instruction, advising students, reading and evaluating student work)
- Research (reading literature, writing, conducting experiments, fieldwork)
- Externally oriented activities (services to clients and/or patients, unpaid consulting, public or voluntary services)
- Administration and services within academia (committee work, paper work, activities in academic associations, reviews, etc.)
- Other academic activities (professional activities not clearly attributable to any of the categories above)

How would you characterize the emphasis of your primary research?

- Basic/theoretical
- Applied/practically-oriented
- Commercially-oriented/intended for technology transfer
- Socially-oriented/intended for the betterment of society
- International in scope or orientation
- Based in one discipline
- Multidisciplinary

Value label

- 1 Not at all
- 2
- 3
- 4
- 5 Very much

Please characterize your research collaboration undertaken?

- Do you have collaborators in any of your research projects?
- Do you collaborate with doctoral students?
- Do you collaborate with scholars/researchers at your institution?
- Do you collaborate with scholars/researchers at other institutions in your country?
- Do you collaborate with international colleagues?
- Do you collaborate with colleagues outside your discipline?}
- Do you collaborate with practitionners?
- Do you not collaborate with others?

Possible answers:

- Yes
- No

To what extent do you consider yourself to be exposed to the following expectations by your institution?

- Conducting applied (and possibly commercially oriented) research

Value label

- 1 Not at all
- 2
- 3
- 4
- 5 Very much

Regarding your own preferences, do your interests lie primarily in teaching or research? (Check only one)

- Primarily in teaching
- In both, but leaning towards teaching
- In both, but leaning towards research
- Primarily in research

Please indicate your views on the following (Scale of answer 1 = Strongly Agree to 5 = Strongly Disagree)

- Teaching and research are hardly compatible with each other

Value label

- 1 Strongly disagree
- 2
- 3
- 4
- 5 Strongly agree

Please indicate your views on the following: (Scale of answer 1 = Strongly Agree to 5 = Strongly Disagree)

- Your research activities reinforce your teaching

Value label

- 1 Strongly disagree
- 2
- 3
- 4
- 5 Strongly agree

UAS lecturers survey
Information regarding your person and employment

- Sex
  o Female
  o Male
- In what subject areas are you currently active at your UAS, to what percentage of a full-time employment?
  o Applied linguistics … %
  o Applied psychology … %
  o Architecture, construction and planning … %
  o Chemistry and Life Sciences … %

o Design and other fine arts … %
o Health … %
o Agriculture and forestry … %
o Music, theatre, film and other performing arts … %
o Social work … %
o Sports science … %
o Technology and IT … %
o Business … %
o Other subject area, please state: … … %

Which of the following degrees did you hold when you were first employed as a lecturer at a UAS or its predecessor?

- Apprenticeship
- Vocational Baccalaureate
- Academic Baccalaureate
- Master Craftsman's Certificate/ Advanced Federal PET Diploma
- Teaching diploma
- UAS Bachelor's degree
- Traditional university bachelor's degree
- UAS Master's degree
- Traditional university master's degree
- Doctorate
- Habilitation
- Certificate of Advanced Studies
- Diploma of Advanced Studies
- Master of Advanced Studies
- Other degree, please state: …

Which of the following degrees have you obtained while employed as a lecturer at a UAS or its predecessor?

- Apprenticeship
- Vocational Baccalaureate
- Academic Baccalaureate
- Master Craftsman's Certificate/ Advanced Federal PET Diploma
- Teaching diploma
- UAS Bachelor's degree
- Traditional university bachelor's degree
- UAS Master's degree
- Traditional university master's degree
- Doctorate
- Habilitation
- Certificate of Advanced Studies
- Diploma of Advanced Studies
- Master of Advanced Studies
- Other degree, please state: …

Do you have another occupation in parallel to your current employment at a UAS?

- Yes
- No

Where do you work in parallel to your current employment at a UAS?

- Traditional university
- Educational institution
- Private enterprise
- Non-profit organization or non-governmental organization
- Public administration
- Self-employment
- Other, please state: …

For how many years have you been professionally active in professional fields for which your students are being qualified (part-time or full-time)?

- State number of years …
- I have never been professionally active in professional fields for which my students are being

Please rate your agreement with the following statements:

- I find the research-related aspects of my work more interesting than the practice-related aspects.
  o Not at all correct
  o Not correct
  o Rather not correct
  o Neither correct nor incorrect
  o Rather correct
  o Correct
  o Fully correct

What percentage of a full-time employment do you currently invest in the following areas? (In case of more than one employment, please provide details for the one with the highest number of working hours)

- Teaching/training (including supervision of theses)
- Supervision of internships
- Teaching in continuing education (including supervision of theses)
- Research and development
- Services (e.g. consulting, expert opinion, tests, conceptualizations etc.)
- Organizational and managerial activities without line management positions
- Managerial function in line management
- Individual continuing education
- UAS Administration
- Other area, please state: …

In which areas would you like to invest more of your working time than currently possible?

- Teaching/training (including supervision of theses)
- Supervision of internships
- Teaching in continuing education (including supervision of theses)
- Research and development
- Services (e.g. consulting, expert opinion, tests, conceptualizations etc.)
- Organizational and managerial activities without line management positions
- Managerial function in line management
- Individual continuing education
- UAS Administration

- Other area, please state: …
- None of the above, I am satisfied with the composition of my work areas.

At my higher education institution, it is possible for lecturers to work simultaneously in different areas without any problems.

- Not at all correct
- Not correct
- Rather not correct
- Neither correct nor incorrect
- Rather correct
- Correct
- Fully correct

At my higher education institution, it's easiest to be active in teaching considering the way work is organized.

- Not at all correct
- Not correct
- Rather not correct
- Neither correct nor incorrect
- Rather correct
- Correct
- Fully correct

I regard it as absolutely necessary for lecturers to be active in teaching as well as in research.

- Not at all correct
- Not correct
- Rather not correct
- Neither correct nor incorrect
- Rather correct
- Correct
- Fully correct

Current research results form the basis of the knowledge I convey as a lecturer

- Not at all correct
- Not correct
- Rather not correct
- Neither correct nor incorrect
- Rather correct
- Correct
- Fully correct

Annex 2. Research and teaching: compatibility and activities in both

	N	Rejection (strong or tendentially strong) (%)	Neutral (%)	Agreement (strong or tendentially strong) (%)
Uni lecturers: 'Teaching and research are hardly compatible with each other'				
Total sample	348	52,0	21,8	26,1
Professors	220	54,5	20,5	25,0
Sen. Assistants	128	47.7	24.2	28.1
UAS lecturers: 'At my university there are no difficulties for lecturers to be active in different areas at the same time'				
Total sample	1347	23.9	12.9	63.2
UAS lecturers: 'In terms of work organisation, it is easiest to work primarily in teaching'				
Total sample	1350	14.9	18.5	66.6
Uni lecturers: 'Your research activities reinforce your teaching'				
Total sample	319	8.8	12.5	78.7
Professors	217	6.9	11.5	81.6
Sen. Assistants	102	12.7	14.7	72.5
UAS lecturers: 'I consider it absolutely necessary for lecturers to be active in both teaching and research'				
Total Sample	1367	26.3	12.7	60.9
UAS lecturers: 'Current research results are the basis for the knowledge that I teach'				
Total Sample	1425	14.8	10.9	74.3