Institutional effects on graduate employment: a comparison across six European countries and Japan

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Abstract

Using comparative data from six European countries and Japan, our paper analyses to what extent differences in graduate employment can be explained by differences between higher education institutions, i.e. "institutional effects". In order to estimate the size of these institutional effects we carry out multilevel analysis. This analysis shows that there appears to be large inter-country and field differences in the importance on graduate employment of the institution where the graduate studied. For example, for Business studies, between 20 and 30% of differences in graduate employment prospects are due to differences of institutions in France and Germany, whereas the institution of study has no effect in Sweden.

We attempt to explain these graduate employment differences between institutions in terms of Human Capital theory (illustrated by the teaching quality of each institution) and Filter theory (indicated by the selectivity of each institution). In addition, we consider the cases where the more selective institutions also develop a higher level of Human Capital amongst their students.

Our multilevel analysis shows that the relative impact of either the above institutional selectivity (Filter theory) or teaching quality (Human Capital theory) on graduate employment prospects differs between countries and field of study. For example, again for Business studies, the selectivity of the departments /institutions has a greater impact on graduate employment than their respective teaching quality for France, Japan and the Netherlands. However, the opposite result appears for Germany and Italy, where computer skills such as word processing have a significant impact on graduate employment. Finally, it appears that the skills that have a significant effect on graduate employment are possessed by graduates from all institutions, and not only graduates from selective institutions. Indeed, the skills possessed to a higher extent by graduates the selective institutions do not have an effect on graduate employment; which means that the above effects of institutional selectivity and teaching quality appear also to be distinct from each other.

To conclude, given that the research literature on institutional effects on graduate employment has mainly consisted of American research, it is interesting to note that our present research shows some significant results for some European countries and Japan. Our analysis shows that institutional effects to be generally larger in the case of these European countries and Japan than in previous American research. In addition, the effect of institutional selectivity (filter theory) appears also higher in our present research than in this aforementioned American research. This latter result is interesting in terms of a comparison of the prestige of Imperial universities and *Grandes Ecoles*, respectively in Japan and France, and "Ivy League" universities in the United States.

I. Introduction

Often research into graduate employment focuses on differences between subject areas or levels of study, but does not take into account the differences that can exist within a given subject area or level of study. These studies do not represent the fact that there can be a variation in graduate employment linked to individual characteristics (gender, social background), as well as different higher education institutions. A part of the differences in employment prospects could be explained by the differences in quality of the courses taught and the curriculum given at different institutions.

1. Human capital approach

If certain institutions offer better quality teaching, their graduates can develop skills that will enable them to receive better wages. These institutions can have, for example, more competent teaching staff, better teaching resources (lower student/teacher ratios, better stocked libraries, easily accessible computer hardware and software, etc.), up-to-date and demanding course material, a good working atmosphere, better provision of work placements, etc.

This better quality teaching can enable students to develop certain skills that are valued on the labour market. These skills can be knowledge-based skills (foreign language and computer proficiency, the level of skills in time management, teamwork, analysing, etc.) that, according to the human capital theory (Becker, 1964, cf. also for example, Weiss, 1995), bring about an increase in individual productivity.

In addition, students can acquire skills and attitudes that enable them to be more efficient in their learning. Students can "learn to learn" (Thurow, 1975; de Weert, 1994). Examples of such skills and attitudes can be, learning ability skills or working under pressure. Employers can seek graduates with such learning skills as certain jobs require that graduates are able to learn from experience in order to solve future problems. Given the changing requirements of the labour market, learning skills enable graduates to remain flexible in adapting to these new work requirements (cf. for example, Teichler, 1999).

However, students do not choose to study at the same types of institution. According to Foster and Rodgers (1979, p.23), *"Students are not randomly distributed among schools; the best, the brightest, the most highly motivated, and the richest tend to cluster at the best schools."*.

Moreover, there are differences in the extent to which higher education institutions select students for entry into different courses. In seven of the countries (the United Kingdom, Spain, Finland, Sweden, Norway, Czech Republic and Japan) surveyed by the CHEERS project (Careers after Higher Education: a European Research Survey)[1], higher education institutions can select students in all fields. In the other five countries (France, Germany, the Netherlands, Italy and Austria), higher education institutions can only select students in some fields (Vossensteyn, 1997; Eurydice, 1999).

[1] This European TSER research project, funded by the European Commission, made it possible to put together, using a common questionnaire, a database detailing the higher education studies and subsequent employment of 36,000 graduates of a 1995 cohort, across 11 European countries and Japan.

In the main, higher education institutions only select students in the vocationally orientated fields: especially Medical studies, but also for example, Engineering and Business in France and Germany, or Biology in Germany and the Netherlands (Vossensteyn, 1997; Eurydice, 1999).

In the above cases where higher education institutions can legally select students, we can ask the following questions:

Do students who are selected for entry go on to learn more in higher education and gain better employment?
Is there a match between the academic level of graduates on starting the course, and the quality of educational training they receive during studies and the level of competencies they develop?

2. Selection on entry and the matching of student initial abilities with course demands

If we assume that there is a difference in the academic level of students on entering higher education, we can also assume that certain institutions can attempt to select the best of the students in order to promote more demanding teaching. This in turn could enable the students to reach a high level of knowledge (cf., for example, Foster and Rodgers, 1979, and more recently, Shattock, 2000).

In a system where certain institutions select the "best", the other institutions would take on the other students and would adapt their teaching to the ability of their students, who in this case would reach a lower level of knowledge (only if the financial resources of the latter institutions are not greater than those of the former).
If there is indeed a match between the academic level of the students and the teaching demands within the selective institutions (i.e., the students reach a higher level of knowledge and skills), the employment differences between selective and non-selective institutions should become very noticeable (Murdoch, Paul and Zanzala, 2000).

However, we can argue that the students' good academic level on entering higher education means that selective institutions do not have to have a higher level of teaching.

3. Filter or signalling approach

In the case of the filter or signalling theory frame of reference, the education system seeks instead to select individuals according to their intrinsic skills and competencies, rather than develop others (Arrow, 1973, Spence, 1973, and more recently Weiss, 1995).
In this case, the best quality institutions will be those who attract the individuals whose intrinsic skills are valued most by employers. Up to a certain point, there is no need for there to be any real differences in the quality of the courses taught. There only needs to be a screening or filter mechanism that picks out the right individuals. Entry requirements can then serve as a filter mechanism for employers.

For the filter or signalling theories, it is a case of a self-fulfilling prophecy: all it takes is for us to believe that an institution is better for it to attract the applicants, whose profile fits best the one expected by employers.

II. Review of the literature

School quality and student labour market outcomes

Studies already carried out in the field concerning higher education institutions and graduate employment

There have been over forty studies on the effect of the quality higher education institutions on graduate employment; a large majority dealing with the United States. These studies have used various variables to indicate institutional quality and also have found rather contradictory results. A very good summary of the results of most of the research in the United States can be found in an article by Brewer and Ehrenberg (1996). In addition, Murdoch, Paul and Zanzala (2000), present some results from various European countries (France, Germany and the United Kingdom).

We can single out six principle groups of variables that have been used to indicate institutional quality.

The first three are input and process related:

- **financial indicators** (the budget per student of the institutions or net tuition fees of each institution) (measurement of financial input);
- **qualifications of teaching staff** (proportion with a PhD.) (measurement of the input of teachers);
- **number of student or teaching staff related indicators** (size of institutions; student/teaching staff ratios (measurement of the learning process));

The other three types of variables cover:

- **the status of institutions** (research oriented institutions vs. teaching institutions, Private vs. Public institutions, universities vs. polytechnics or Oxbridge vs. other universities in the United Kingdom, *Universitäten* vs. *Fachhochschulen* in Germany, universities vs. HBO or universities with religious denomination (e.g. Catholic or Protestant) vs. other universities in the Netherlands);

- **the proportion of certain social groups** (female, black and ethnic minority students) within each institution;

- and finally, **entry requirements of institutions**.

In addition a few studies have looked at the effect of indicators of the **educational learning provision** (in terms of inputs) on graduate employment. However, none have looked at the effect of outputs, in terms of **developed skills** and **competencies** on graduate employment.

III. Analysis

The case of Business studies[2]

In this analysis we will present the results from three models. The first being the empty or null multilevel model (**Model 0**), which shows the decomposition of the residual income variance between the two levels analysed (individual level and institutional level). In other words, we can see what proportion of the total observable income variance is due to differences between institutions compared with differences between individuals, within a same institution. Logically, the inter-institutional variance is smaller than the intra-institutional (individual) variance.

We will then present results from models that consider the effect on the above inter-institutional income variance of institutional selectivity (mean entry grades) and institutional teaching quality, whilst controlling for institutional differences in region, type of institution, and student composition (gender and social background).

1. Empty models (Model 0)

Table 1: Empty multilevel models in Business

	IT	FR	DE	NL	UK	SE	JP
Business	11.7% (5.7)	27.6% (10.8)	23.8% (9.1)	12.6% (6.5)	6.9% (4.8)	0% (0)	14.7% (7.3)
	17 inst	*19 inst*	*19 inst*	*21 inst*	*13 inst*	*11 inst*	*13 inst*

The Standard errors are in brackets

Comments concerning results from empty models

The proportion of the total income variance which is explained by differences between institutions (level 2), ranges between less than 5% to between 20 and 30% according to the country. We can class each county case in the following four groups.

1) **less than 5%:** Business in Sweden;
2) **between 5 and 10%:** Business in the United Kingdom;
3) **between 10 and 15%:** Business in Italy, Netherlands and Japan;
4) **between 20 and 30%:** Business in France and Germany.

[2] We will present in this paper the example of results from one field: Business studies. The results are taken from a doctoral thesis by the author (Murdoch, 2002). In this latter research data from Spain, Austria, Norway and the Czech Republic, are not analysed for Business as the number of institutions is too small (less than 10). We selected for each field of the study the institution that had at least 10 graduates who indicated their income in the questionnaire.

Institutional differences are naturally larger within systems that cover a large variety of institutions (both in number and in type). Indeed, France, Japan and Germany have the most institutional diversity (cf. Kaiser and Neave, 1993; Paul and Murdoch, 2000; Harayama, 1998; Frackmann and de Weert, 1993). We can imagine employers of graduates in each country are more or less aware of the institutional variety in their countries.

According to Teichler (1999, p.298), *"Modes of diversification undoubtedly generally reflect the specific traditions of higher education as well as those of links between higher education and the world of work in the respective countries. This does not mean, however, that the scope for innovation is bound to be viewed as limited."*.

However, as Teichler concludes the fact that institutional effects are stronger in more institutional diverse systems does not mean that there exist no effects in less diverse systems. These effects do exist as in the Netherlands or Italy in Business studies, but they are smaller.

Finally, in two (the United Kingdom and Sweden) of the seven cases, the multilevel analysis showed the inter-institutional income variance to be very small (less than 7%) or almost zero (cf. **Table 1**). For the former country, this could be partially explained by the absence of both Oxbridge universities in the British sample.

We will look now at how differences in the selectivity (mean entry grades) and teaching quality of the different institutions (educational inputs and outputs), could explain some of these graduate income differences between institutions.

2. The impact of selectivity on income

Research described in the research literature on the impact of institutional quality items on graduate employment, shows that there is a significant and positive link, in the few countries were research has been carried outside the United States[3] (the United Kingdom, Japan, France, Colombia), between the institutional selectivity and graduate employment prospects.

Our analysis shows that in **four** cases out of the seven present for Business studies there is a significant and positive link between institutional selectivity (mean entry grades) and graduate income. The four cases are Italy, France, the Netherlands and Japan. In the case of the United Kingdom it is important to note that neither of the Oxbridge universities were sampled by the British team. This could explain the fact that institutional selectivity is not significant in the United Kingdom data (Murdoch, Paul and Zanzala, 2000).

[3] The results for the United States are mitigated, that is to say half the studies find a significant effect, whereas half find the effects not to be significant.

3. Differences in the level of teaching quality items and their effect on graduate income differences

We must also explain first that the teaching quality items are graduate ratings of their study provision and study conditions (inputs) and the skills or competencies they felt they possessed on graduating in 1995 (outputs).

The five item Likert scale of these variables at an individual level is: 1 = "Very High"; 5 = "Very Low".

These items correspond to the following questions in the Master questionnaire:

B9 " *How do you rate the study provision and study conditions you experienced in the course of study that you graduated from in 1994 or 1995?";*

B10 *" How do you rate your expertise in selected software areas at the time of graduation 1994 or 1995?* ;

B11 *" How do you rate your language proficiency at the time of graduation 1994 or 1995? Please answer in respect of any listed language and tick the kind of proficiency in each row. Multiple reply possible in each row.";*

E1A *" Please state the extent to which you had the following competencies at the time of graduation in 1994 or 1995 and to what extent they are required in your current work. If you are not employed please answer only (A)".*

We decided to consider the above teaching quality items (provision and skills) at an individual level when looking at their impact on graduate income.

This is because first the efficiency of school inputs (provision) in the production of learning outputs vary according to each student (Wagner (1988).
The latter author remarks (Ibid, p.79) that *"Pupils and students are not raw material –like iron ore in a crucible- but a living part of the educational process.".*

In addition learning outputs measure individual levels of learning. Within a given institutions, graduates can achieve different levels of learning due to different individual inputs (initial level and also motivation). Moreover, the comparison of the levels student learning between institutions should be measured using individual ratings of skills, rather than aggregated measures (means or percentages, etc.).

We present the teaching quality items that have a very strong significance (at least .05 level of significance) in the regressions even when control variables (region, type of institution and individual graduate characteristics) are introduced, and have a noticeable impact (a reduction of at least 5%) on the residual inter-institutional (between institution) income variance.

Concerning the effect of the teaching quality items there is a different picture between, **Germany**, **France**, **the Netherlands (**and to lesser extent **Italy)**, on the one hand, and the **United Kingdom**, **Sweden**, and **Japan**, on the other (cf. Table A in appendix).
In the first group of countries, a certain number of differences in teaching quality items explain differences in income, whereas in the second group of countries no items are significant.

In the countries where differences in teaching quality items appear to explain differences in graduate income, it is not the same array of teaching qualities that stand out.

In **France,** differences in the supply of "Teaching material" and the teaching quality of "Technical equipment", and also "Work experience" appear to explain graduate income differences between institutions.

Concerning **Germany**, different emphases on the development of outputs such as specific computer skills ("Word Processor" and "Database") appear also to explain these income differences.

Moreover, as far as the **Netherlands** is concerned, different levels in cognitive skills such as "learning abilities" and "Initiative" have a similar effect.

Finally for **Italy**, only differences in the specific computer skill, "Word Processor" have an impact.

It is interesting to note that all the above teaching quality items that have a significant effect on graduate income differences between institutions, are stated to higher extent by graduates across all the institutions and not only by graduates in the most selective ones. These teaching quality effects are not especially a product of a match between the initial level of the students and course demands (cf. Introduction).
Moreover, the teaching quality items that are stated to a higher extent by graduates from the selective institutions do not have a significant effect on the aforementioned income differences.

IV. Relative impact of selectivity vs. teaching quality

1. Presentation of results

Table 2 below shows the "gross" impact that the selectivity, teaching quality and control variables have on the level 2 (inter-institutional) variance. The percentages shown represent the proportion of the total variance that remains unexplained (residual variance) once the variables have been introduced on their own.[4]. **Table 2** also indicates the residual variance at individual level (level1).

Table 2: Residual institutional variance by category of variable for Business studies

		IT	FR	DE	NL	JP
Individual characteristics only	Residual institutional variance	91%	77%	92%	89%	83%
Region of study only	Residual institutional variance	14%	80%	79%	N.A	84%
Type of institution only	Residual institutional variance	N.A	N.A	17%	0%	N.A
Selectivity only	Residual institutional variance	83%	**56%**	N.S	**65%**	**39%**
Quality of teaching only	Residual institutional variance	**67%**	72%	**83%**	95%	N.S
Total residual institutional variance	Selectivity	0%	30%	N.A	0%	16%
	Teaching quality	0%	42%	0%	0%	N.A
Total residual institutional variance	Selectivity and teaching quality	0%	26%		0%	
Total residual individual variance	Selectivity	95%	94%	N.A	95%	90%
	Teaching quality	95%	91%	92%	94%	N.A

Key:
N.A: Not Applicable
N.S: The variable or variables in question do not have a significant effect in themselves on graduate income

To analyse the impact of each group of variables on the inter-institutional income variance (level 2), we compare the residual inter-institutional variance in **model 0** (empty or null model) with that of **model 1** (i.e. when each group of variables has been introduced on its own). We divide the model 1 residual variance by that of model 0. These calculations show us the proportion of the residual income variance that still remains after the introduction of the different groups of variables. The smaller the proportion of residual variance in model 1, the larger the impact of each group of variable.
We decided to consider the impact of each group of variables in terms of the proportion of the residual variance remaining, rather than the proportion of the variance explained. This is because we wish to remain cautious concerning the extent each group of variables does indeed "explain" the institutional variance.

[4] In Table 2, no information is shown for either Business studies in the United Kingdom and Sweden. This is because, already described in section III, the small variances between institutions (between 0 and 7% of the total variance) are not explained either by the selectivity or teaching quality variables.

It is not possible to calculate "net" impacts due to interactions between both the selectivity and the teaching quality variables, and the control variables (such as region or type of institution). To some extent selective or high teaching quality institutions can be located in wealthy or poor regions, or can belong to certain types of institutions (e.g. universities). However, given that the selectivity and teaching quality variables remain significant even when control variables have been introduce, we can consider the result for each type of variable as close to a net effect.

2. Impact of selectivity or quality of teaching variables[5]

According to **Table 2**, it appears that only in two cases (**France** and **Japan**) does the introduction of either the selectivity variable or the teaching quality variables reduce in itself the highest amount of the residual inter-institutional income variance.

2.1 Selectivity

If the selectivity variable is introduced on its own, the residual inter-institutional variance remains 56% in the above French case, and 39 % in Japan.
In the other cases, the latter residual variance is between 65% in **the Netherlands** and 83% in **Italy**. However, the selectivity variable is not significant in itself in **Germany.**

2.2 Teaching quality

Table 2 also shows that once the teaching quality indicators have been introduced on their own, the residual inter-institutional income variance ranges between around 70% in **Italy** and **France**, and 80% in **Germany**. In the case of **the Netherlands**, 95% of this variance remains. Finally in **Japan**, no teaching quality variables had a significant effect on graduate income.

3. Relative impact of Selectivity vs. Teaching quality

According again to **Tables 2**, it appears that the selectivity variable has a greater impact (proportion of residual inter-institutional variance) than the quality of teaching variables in three cases (**France**, the **Netherlands** and **Japan**). The contrary however is also true in two cases (**Italy** and **Germany**).

[5] As already mentioned above we consider the effects of the indicators of selectivity and teaching quality to be independent from each other, given that the teaching quality items developed most by the selective institutions do not have an effect on their own on graduate income differences between institutions.

4. Impact of the control variables

In the other five cases (i.e., apart from **France** and **Japan)**, the region of study or even type of institution (university vs. *HBO* in the **Netherlands**[6] *or Universitäten* and *Fachhochschulen vs. Fachhochschulen für Verwaltung* (College of Public Administration) in **Germany**)[7], explain in themselves most of the inter-institutional variance (cf. **Table 2**)

5. Total explained institutional variance

Once all the significant selectivity or /and teaching quality variables, as well as and the control variables have been introduced, there remains no residual inter-institutional variance in certain cases. However, other cases this residual variance remains important.
In the cases of **Italy**, **Germany** and **the Netherlands**, residual variance at the institutional level variance is zero or almost. However, there still remains at least a quarter of the residual variance at this level in **France**.

6. Total explained individual variance

Finally, we observe that our models explain very little of the residual individual level (intra-institutional) income variance

Table 2 shows that the residual individual level (intra-institutional) income variance is still very high in all the five country cases (between 90 and 95%), even when all the variables in each model have been introduced (including individual graduate characteristics, such as gender).

Conclusion

How do these results from the CHEERS data compare to previous analyses?

Results from previous analyses

Results from American and Dutch higher education studies show that the inter-institutional variance (level 2) represents less than 10% of the total income variance (i.e. level 1 and level 2).
In the case of the United States, previous studies show that the inter-institutional is different according to field of study (1% for Engineering, 5.6% for Health, 6% for Education, 7% for Science and Maths, 8.6% for social science and 9% for Business) (Rumberger and Thomas, 1993).

[6] This result is in line with previous Dutch research, in that there exists very small income differences between universities or HBO institutions themselves, i.e., around 6% of the total income variance for university graduates and around 2% of that of HBO graduates (Bosker et al., 1997; Allen et al., 2000; Ramaekers and Huijgen, 2000).

[7] The fact that there appear no large differences between *Universitäten* and *Fachhochschulen* in Germany is also in line with previous German research (Brennan et al, 1996; Schomburg, 2000).

In the Dutch case (with field as a third level), the inter-institutional variance amounts to less than 6% of the total variance in the case of universities (covering all fields) (Allen et al., 2000) and is around 2% for HBO graduates (Ramaekers and Huijgen, 2000).

Our results show that the inter-institutional variance is generally more important in our present research than in the above American and Dutch studies (especially, in France and Germany). This means that the effect of where the student studied can explain to a certain degree differences in graduate employment prospects.
Our research also shows that differences between higher institutions in terms of graduate employment prospects can be at least as large as those between secondary or primary schools in terms of learning differences.
This is an interesting result given the remarks made by Bosker et al., 1997, p.1-2), *"...one might argue that differences in the educational output will also be reflected in differences in labour market outcomes. The school effects in labour market outcomes however will probably be less strong, because of the intervening effects of the other factors."*.

Our analysis of the inter-institutional variance also shows that the selectivity (filter theory) variables (filter theory) have a greater impact (% of residual variance remaining) than the teaching quality (human capital) variables in three cases (**Business** in **France**, the **Netherlands** and **Japan**). In the other two cases (**Business studies** in **Italy** and **Germany**) the contrary is true.

Moreover, the impact of selectivity, in terms of residual inter-institutional income variance, varies between 39% for **Japan**, 56% for **France** and 65% for the **Netherlands**, 83% in **Italy** and is not significant for **Germany**.

We can compare the above impact of the selectivity variable with that found in, previously mentioned American research by Rumberger and Thomas (1993) and Ethington (1997) (only for Business).

In this American research, the selectivity variable has a significant effect (at least .05 level) on graduate income in four (Business, Health, Social science and Science/mathematics) of the six fields analysed. The impact on the inter-institutional variance is lower than our above results. For Business studies, the residual income variance is respectively 92% and 87% when the selectivity variable is introduced on its own in the studies. For the other three fields, Rumberger and Thomas (Ibid) show that the residual variance with the introduction of the variable in question, is respectively 83 and 75% for science/mathematics and Social science. Moreover, in the case of Health, the selectivity variable has very little impact, the residual variance is still very high for Health (96.4%).

Concerning the impact of the teaching quality variables we can compare their on the total income variance (institutional + individual level variance), with similar results from prior studies. Indeed these teaching quality variables are individual level variables that can "explain" both institutional and graduate level income variance.[8]

The introduction of the teaching quality variables reduces by 10% the total income variance in **France**, whereas the introduction of similar variables in **Italy** and **Germany** reduces this variance by 5%. In the Dutch case, teaching quality items only reduce the total variance by 2%.[9]

Comparable research carried out in **Germany** using similar teaching quality items (as measured by study conditions and provisions (inputs)) has shown a smaller impact of single items on graduate employment (less than 1% of total variance) in three fields (Business and Engineering studies and Social work) (Brennan et al., 1996; Schomburg, 2000).
In addition, the German authors show that, as a whole, the introduction of all the aforementioned study conditions and provisions, on average, between 5 and 7% of graduate employment prospects (Brennan et al., Ibid ; Schomburg, Ibid).

However, similar research in **the Netherlands** by Ramaekers and Huijgen, (2000), find that the teaching quality items (also representing study conditions and provisions (inputs)) only reduce as a group less than 1% of the total graduate income variance for HBO graduates.

We cans say that generally the impact of teaching quality variables seems slightly higher in this case in France, than in the previous studies in Germany and the Netherlands.

However, the impact of teaching quality in Italy and Germany seems more or less in line with previous German research (as we consider that word processing captures on its own most of the observable teaching quality effects (using our data)).
In addition, on the same lines the impact of teaching quality in the Netherlands is in line with the previous Dutch research.

[8] Which is not the case for the selectivity variable. Given that the selectivity is only an institutional level variable, it only explains institutional level variance.

[9] The calculations use the following formula:
total explained variance = residual variance **Model 0** (level2+level1) - residual variance **Model 1** i.e. teaching quality variables (level2+level1)

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Appendix

Table A: Links between teaching quality and income in Business

	IT	FR	DE	NL	UK	SE	JP
Work experience		**					
Teaching material		***					
Technical equipment		***					
Word Processor	***		**				
Database			**				
Learning ablities				**			
Initative				***			

KEY:

**** The quality item has a significant effect on income (.01 level)*
and reduces by at least 5% the residual inter-institutional income variance (between institutions)

***: The quality item has a significant effect on income (at .05 level)*
and reduces by at least 5% the residual inter-institutional income variance (between institutions)