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ORIGINAL PAPER

One-and-a-half decades of global research output in Finance: 1990–2004

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Abstract We provide a ranking of world finance research output by countries and institutions. Based upon 21 finance journals, the top five most productive countries are in the following order: U.S., U.K., Canada, Hong Kong, and Australia. We find that higher per capita GNP, English-speaking countries, and a capital market that offers her investors more protections are associated with higher level of finance literature production. New York University, the University of Pennsylvania, Harvard University, the University of Chicago, and UCLA take the top five spots among the 1,126 academic institutions with most JF-pages appeared in 21 finance journals during the 15-year period from 1990 to 2004. The share of U.S. in the top-100 institutions is overwhelming; 78 out of the top-100 institutions come from U.S. We also show some factors that help to explain the cross-institutional variations among a sub-sample of the institutions. Specifically, faculty size, catalyst effect, and per capita budget are positively associated with research output.

Keywords Finance research · Institutional ranking · Investor protection

JEL classification G00 · J40 · J62

1 Introduction

Institutional ranking has attracted attention because it signals the quality of an educational program, draws research funding, and is influential on the recruitment of faculty and students. Various media such as the *U.S. News & World Report, Business Week, Forbes*, the *Financial Times, Money*, and *Fiske Guide to Colleges* have undertaken

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statistical and reputational rankings of colleges to provide information to the public. Increasingly, the importance and validity of college rankings has become a hotly debated issue.

While ranking agencies use different instruments to derive the ranking, faculty research productivity always, directly or indirectly, plays a significant role in the determination of overall academic reputation. Studies in research productivity are abundant. For example, Hasselback and Reinstein (1995), Brown (1996), and Stammerjohan and Hall (2002) examine rakings in accounting; Niemi (1987), Alexander and Mabry (1994), and Borokhovich et al. (1995) in finance; Conroy et al. (1995), Scott and Mitias (1996), and Collins et al. (2000) in economics. All of these studies, however, focus their rankings on the North America institutions. Few exceptions, such as Chan et al. (2005a, b) study accounting and finance research output in Asia-Pacific countries, respectively. To be sure, the ranking competition goes beyond the US, and has attracted international attention.[1] The interest in global ranking is not without precedence. For example, the *Financial Times* publishes its world rankings of the top 100 MBA programs annually. The globalization of the world's economies definitely stimulates a stronger interest in a worldwide ranking for academic institutions.

The objective of this study is twofold. First, we study the global research output in finance during a 15-year period from 1990 to 2004. Unlike previous studies in the literature, our sample extends to a larger set of finance journals and a considerably longer period. We rank the production of finance literature by countries. Since productivity varies significantly across countries, we attempt to find the sources of such research productivity variations among different countries. Second, we rank the production of finance literature by academic institutions. This global ranking allows an institution to find its academic ranks in the world during the study period. We then examine the cross-institutional variations of research productivity among academic institutions.

The results of our research offer two major conclusions: First, based upon 21 finance journals, the top five most productive countries are in the following order: U.S, U.K., Canada, Hong Kong, and Australia.[2] We find that per capita GNP, English-speaking country factor, and rule of laws are significantly related to the production of finance literature. Second, New York University, the University of Pennsylvania, Harvard University, the University of Chicago, and UCLA take the top five spots among the 1,126 academic institutions with most JF-pages appearing in 21 finance journals during the fifteen-year period from1990 to 2004. The share of the U.S. institutions among the top-100 programs is overwhelming; 78 out of the top-100 institutions are U.S. universities. Cross-institutional variations in finance research can be explained by their financial resources, faculty size, and research catalyst effect.

The rest of the paper is organized as follows: Section 2 shows the data source and methodology. Section 3 presents descriptive statistics. Ranking by countries is reported in Sect. 4, and ranking by institutions in Sect. 5. Section 6 concludes.

[1] Recently, Shanghai Jiao Tong University of China has provided academic ranking of universities in the world. See http://ed.sjtu.edu.cn/ranking/htm.

[2] Hong Kong is a special region of China. Since its political system, accounting standard, and rule of laws is significantly different from China, we treat it as a de facto country for the purpose of this study.

2 Data and methodology

We manually collect all data from the hard copies of a set of 21 core finance journals for a period of 15 years from 1990 to 2004. The data include authors' names, their affiliations, the country origin of the institutions, and the length of the article. The set of 21 finance journals are: *Financial Analysts Journal, Financial Management, Financial Review, Journal of Banking and Finance, Journal of Business, Journal of Corporate Finance, Journal of Empirical Finance, Journal of Finance, Journal of Financial Economics, Journal of Financial and Quantitative Analysis, Journal of Financial Markets, Journal of Financial Research, Journal of Portfolio Management, Journal of Financial Intermediation, Journal of Financial Services Research, Journal of Futures Markets, Journal of International Money and Finance, Journal of Business Finance and Accounting, Review of Financial Studies, Pacific-Basin Finance Journal*, and *Review of Quantitative Finance and Accounting*.

We select these 21 journals for several reasons. First, 16 of the 21 journals have been used in earlier research such as Chan et al. (2002) and Heck and Cooley (2005). The five new journals (*Journal of Corporate Finance, Journal of Empirical Finance, Journal of Financial Markets, Pacific-Basin Finance Journal*, and *Review of Quantitative Finance and Accounting*) have received attention from faculty members as quality research outlets but were not included in prior research. Second, these 21 journals include journals with a general scope (e.g., *Journal of Finance*) as well as specialized journals, such as *Journal of Financial Markets, Journal of Futures Markets*, and *Journal of Corporate Finance*. The inclusion of journals with general scope and journals with specialty takes into account the research productivity of faculty with different research interests and expertise. These journals are considered influential not only by the Americans, but also by the European and Asian authors as suggested in Oltheten et al. (2005).

Similar to Chan et al. (2002), we have four potential caveats in this database. First, not all authors in these 21 journals are finance faculty. While finance faculty members write a vast majority of the articles published in these journals, authors from other disciplines, such as accounting and economics, also contribute to the finance literature. Since often authors' departmental affiliations are typically not specified in these journal articles, it is cost prohibitive to classify authors based upon their disciplines. Most importantly, there is no reliable source to identify the departmental affiliations of all authors during the entire 15-year period. Therefore, this study may overstate the ranks of certain finance departments. Nevertheless, as Chan et al. (2002) have argued, the impact of this bias, if any, is negligible because publications of finance articles by authors from other disciplines within the same institution also enhance the reputation of the finance program in that same institution.

Second, some journals such as *Journal of Business, Review of Quantitative Finance and Accounting*, and *Journal of Business Finance and Accounting* publish non-finance but finance-related papers (i.e., economics and accounting in these cases) as well. Many of these papers, however, can be related to finance research and any subjective exclusion of some articles may create another form of bias. Hence, we include all papers from all 21 journals.

Third, some elite economics journals (e.g., *American Economic Review*, and *Journal of Political Economy*) are not included in this study, although these journals occasionally publish influential research related to finance. They are not included

because these economics journals publish mostly non-financial economics articles. The same arguments apply to top accounting journals such as *Journal of Accounting Research*.

Fourth, while all 21 journals are considered major finance journals, their quality is by no means identical. Aggregating all journals thus results in bias against elite journals. However, since a commonly used benchmark to account for journal quality, *Social Science Citation Index* (SSCI) is not available for some finance journals; adjusting journal quality becomes a difficult task. We employ two measures to mitigate this issue. First, using the methodology of Chan et al. (2002), we calculate the *Journal of Finance* equivalent pages (hereafter JF-pages) for each article. Since elite journals usually publish longer articles that are more thorough, using JF-pages as a weighting scheme helps to mitigate the differential qualities among journals. Second, we also rank institutions based upon top-5 finance journals only.

To measure research productivity, we made some adjustments to the raw data. First, similar to Chan et al. (2002), we first calculate the JF-pages for each article; then we adjust the JF-pages per author by dividing the article with the number of authors for multi-authored papers. Second, when an author has more than one affiliation, his/her contribution is divided equally among the stated institutions. For example, if an article has three co-authors (Professors A, B, and C) with the first author having two affiliations (X and Y) and the second and the third author each has one affiliation (W and Z), then institutions X and Y each receives 1/6 credit for the article and institutions W and Z each receives 1/3 credit for the article. Moreover, we proofread the manually collected data for possible errors. Additional verifications by studying university catalogs and websites are also conducted in case of doubt. We find that some authors or institutions use slightly different names over the 15-year sample period. For instance, we find several universities changed their names. We convert all the old names to the new names in such cases. An example is replacing Memphis State University by the University of Memphis because they represent the same institution with a name change occurred in the mid 1990s.

3 Descriptive statistics

For the period of 1990–2004, all 21 journals contain 11,501 weighted articles written by 8,554 authors from 1,126 universities and 1,035 non-academic institutions.[3] Among these 8,554 authors, 6,767 (79% of all authors) are affiliated with academic institutions writing a total of 9,633.7 weighted articles (83.8% of all articles). We plot a cumulative percentage of JF-pages authored by academic authors against the total number of universities in Fig. 1. The distribution is highly skewed. The top-5, top-10, top-25, and top-50 universities account for 10.3, 16.6, 29.5, and 43.7% of the total number of JF-pages, respectively. Therefore, 4.4% (50/1,126) of the universities account for more than 43% of the total production in finance literature. We also compute the Gini coefficient of finance publishing. The results are in the Appendix. Essentially, Gini coefficient measures the degree of concentration (inequality) in a distribution, with zero being no concentration (perfect equality) and one being total concentration (perfectly inequality). For all 1,126 institutions, the Gini coefficient is 0.7725, which indicates a high degree of concentration in finance

[3] We do not include articles, which are ''discussions'', ''comments'', and ''replies''. ''Weighted articles'' are articles weighted by institutions and co-authorships.

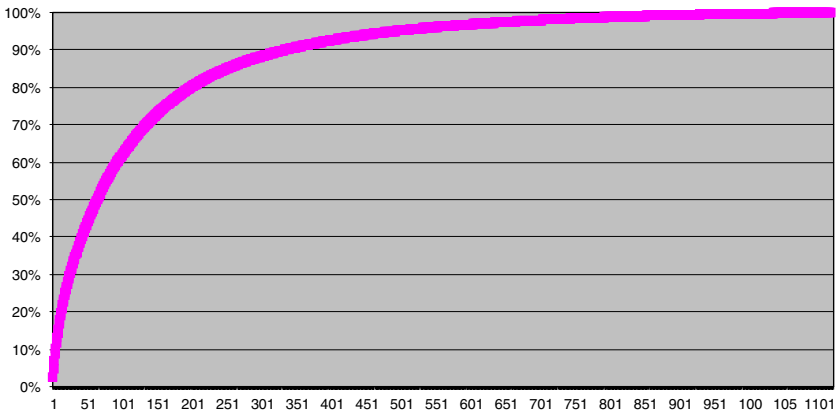

Fig. 1 Cumulative percentage of JF-pages appeared in 21 finance journals for 1,126 universities (1990–2004). This figure plots a cumulative percentage of JF-pages authored by academics against the total number of universities. The distribution is skewed. The top-5, top-10, top-25, and top-50 universities account for 10.3%, 16.6%, 29.5%, and 43.7% of total number of JF-pages respectively

research (i.e., a steeper Lorenz Curve). Among the North America, Asia-Pacific, and European regions, the Gini coefficients are 0.7587, 0.7306, and 0.6924, respectively. Therefore, concentration in finance research is observed across all regions of the world.

Table 1 reports the summary statistics of research productivity by academic institutions and by academic authors. We report the JF-pages as well as the weighted number and the unweighted number of articles published. In Panel (A), the mean values of the JF-pages, weighted number and unweighted number of articles per academic institution are 162.84, 8.56, and 17.51, respectively. Since the median values of these variables are very small relative to their respective means, the distribution is highly skewed as shown in Fig. 1. The skewness and kurtosis statistics are positive and large for all research productivity measures. The maximum JF-pages per institution is an impressive 4,971.91, while the minimum is a miniscule 1.04.

Panel (B) of Table 1 summarizes research output by authors affiliated with academic institutions. A small number of these authors, however, may have both academic and non-academic affiliations. A total of 6,767 academic authors contributed to writings in these 21 journals. An average author would produce 27.22 JF-pages, 1.43 weighted articles, or 2.83 unweighted articles during the period of 1990–2004. The median value of JF-pages is 13.59, the median weighted article is 0.83, and the median unweighted article is 1.0. Since all median values are smaller than the means, the distribution is again skewed although the skewness is smaller than that is reported in Panel (A) based upon institutions. Similar to Panel (A), both research productivity measures also show large skewness and kurtosis. The most productive author produces 562.12 JF-pages; 24 weighted articles; or 43 unweighted articles during this period. The least productive one comes up with 0.65 JF-pages.[4]

[4] This is defined as the least productive among all authors who are able to publish in at least one of the 21 journals. There are many authors who have never published in these 21 journals.

Table 1 Summary statistics of the research productivity in a set of 21 finance journals from 1991 to 2004

	JF-pages	Weighted number of articles	Unweighted number of articles
Panel (A): By academic institutions			
Mean	162.84	8.56	17.51
Median	28.00	1.67	3
Mode	9.28	0.50	1
Standard Deviation	393.56	18.52	37.30
Kurtosis	44.09	39.06	43.70
Skewness	5.61	5.03	5.14
Minimum	1.04	0.08	1
Maximum	4,971.91	245.51	526
Sum	183,360.30	9,633.69	19,719
Number of institutions	1,126	1,126	1,126
Panel (B): By academic authors			
Mean	27.22	1.43	2.83
Median	13.59	0.83	1
Mode	6.19	0.50	1
Standard Deviation	37.03	1.81	3.51
Kurtosis	24.52	21.63	19.89
Skewness	3.96	3.74	3.69
Minimum	0.65	0.20	1
Maximum	562.12	24.00	43
Sum	18,4218.18	9,692.35	19,144
Count	6,767	6,767	6,767
Panel (C): Number of unweighted publications for all authors in academic institutions			
Number of unweighted publications (1990–2004)	Number of authors	% of total	Cumulative %
One publication	3,583	52.95	52.95
Two publications	1,099	16.24	69.19
Three publications	580	8.57	77.76
Four publications	371	5.48	83.24
Five publications	253	3.74	86.98
Six publications	192	2.84	89.82
Seven publications	151	2.23	92.05
Eight publications	93	1.37	93.42
Nine publications	97	1.43	94.86
Ten publications	74	1.09	95.95
Eleven publications	57	0.84	96.79
Twelve publications	44	0.65	97.44
Thirteen publications	31	0.46	97.90
Fourteen publications	24	0.35	98.26
Fifteen or more publications	118	1.74	100

Table 1 continued

	JF-pages	Weighted number of articles	Unweighted number of articles
Total	6,767	100.00	

This table contains some preliminary summary statistics of the research productivity that bases on a set of 21 core journals. The set of 21 finance journals are: *Financial Analysts Journal, Financial Management, Financial Review, Journal of Banking and Finance, Journal of Business, Journal of Corporate Finance, Journal of Empirical Finance, Journal of Finance, Journal of Financial Economics, Journal of Financial and Quantitative Analysis, Journal of Financial Markets, Journal of Financial Research, Journal of Portfolio Management, Journal of Financial Intermediation, Journal of Financial Services Research, Journal of Futures Markets, Journal of International Money and Finance, and Journal of Business Finance and Accounting, Pacific-Basin Financial Journal, Review of Financial Studies*, and *Review of Quantitative Finance and Accounting*. The ''sum'' statistics are not identical in Panel (A) and Panel (B) because (1) some articles have missing authors or institutional information, and (2) some authors may have more than one affiliation. For authors with both academic and non-academic affiliations, we treat them as academic authors. Panel (C) suggests that there are only about 13% of the academic authors who have published at least five articles (unweighted) or more

In Panel (C) we report the frequency of publications for individual authors affiliated with academics. Among the 6,767 academic authors, 3,583 (53% of total) have published only one unweighted article in the 21 finance journals during the entire 15-year period. Cumulatively, 69% of all authors have published two articles or less during the 15-year period. Publishing ten or more articles in 15 years, therefore, places a researcher in the top five percentile of the productivity distribution. Less than two percent of the authors publish more than 14 unweighted articles, i.e., approximately one article (single or coauthored) per year.

Figure 2 shows the total JF-pages published each year over the 15-year sampling period. For all 21 journals, the total JF-pages increased from 8,050 in 1990 to 18,019 in 2004, representing a 123.8% increase, or an annual increasing rate of 5.5%. For the top-5 finance journals,[5] the total JF-pages also increased from 3,899 in 1990 to 7,458 in 2004, representing a 91.2% increase, or an annual growth rate of 4.4%. The growth in JF-pages over time reflects both the increases in the number of articles published and the average length of manuscripts.[6]

In addition to these aggregate data, we examine in Figs. 3 and 4 the annual research output from 1990 to 2004 partitioned by regions of the world, i.e., North America (including US and Canada), Europe, Asia-Pacific, and others. Figure 3 shows the share of research output by world regions using all 21 journals. North America produced 89.45% of the total JF-pages in 1990, and it steadily declined to 66.24% in 2004. On the other hand, the share of both Europe and Asia-Pacific regions gained ground during this 15-year period. Specifically, Europe's share of JF-pages increased from 6.35% in 1990 to 20% in 2004, and Asia-Pacific from 2.79% to 12.05%. All other countries contributed 1.39% of the total JF-pages in 1990, and 1.64% in 2004.

[5] Top-5 journals are: *Journal of Finance, Review of Financial Studies, Journal of Financial Economics, Journal of Financial and Quantitative Analysis*, and *Journal of Business*.

[6] The average length (in terms of JF-pages) for a typical article in all journals gradually increased over 1990–2004. The average JF-pages in 1990, 1995, 2000, and 2004 for all articles in all journals are 13.77, 16.96, 21.04, and 22.76 pages, respectively.

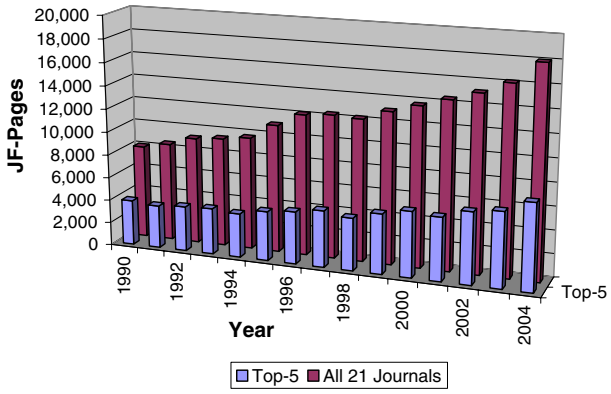

Fig. 2 Total number of JF-pages published in the Top-5 and all 21 journals. This diagram plots the total number of JF-pages published in the top-5 and all 21 finance journals from 1990 to 2004

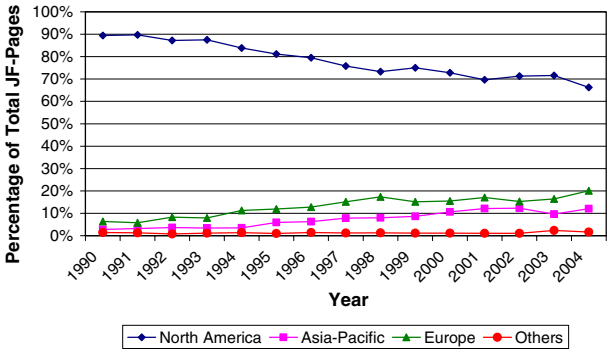

Fig. 3 Share of total JF-pages in various regions. This diagram plots the share of total JF-pages in 21 finance journals contributed by institutions in North America (US and Canada), Europe, Asia-Pacific, and others

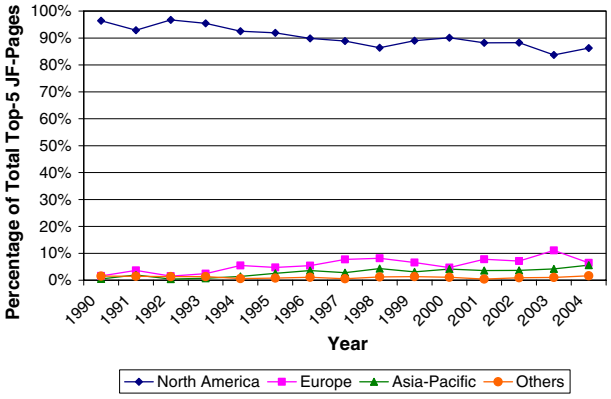

Fig. 4 Share of total Top-5 JF-pages in various regions. This diagram plots the share of total JF-pages in the top-5 finance journals contributed by institutions in North America (US and Canada), Europe, Asia-Pacific, and others

Figure 4 shows the share of research output by regions using only the top-5 journals. Although North America also lost share during the 15-year period from 96.38% in 1990 to 86.27% in 2004, the decline is not as steep as using all 21 journals. Europe gained share from 1.59% in 1990 to 6.46% in 2004, while Asia-Pacific from 0.49% to 5.62%. North American, mainly US, institutions, therefore, still have a quasi-monopoly position in the top-5 journals.

4 Ranking by Countries

Table 2 reports the ranking in aggregate research output by countries. We also report the number of institutions in each country contributed to the literature, the mean productivity of contributing institutions, and the standard deviation of JF-pages. We do not rank

Table 2 Summary statistics of JF-pages appeared in 21 finance journals by countries

Rank	Country	Total JF-pages	Number of school	Mean	Std. deviation
1	US	133,667.62	550	243.03	524.31
2	UK	12,687.49	76	166.94	248.50
3	Canada	6,809.91	35	194.57	254.70
4	Hong Kong	4,436.13	8	554.52	444.51
5	Australia	3,720.93	28	132.89	179.41
6	Netherlands	2,309.72	10	230.97	247.56
7	France	2,238.36	37	60.50	139.69
8	Taiwan	1,659.58	30	55.32	71.14
9	Singapore	1,622.70	5	324.54	398.31
10	Israel	1,584.45	10	158.44	186.13
11	Germany	1,479.60	47	31.48	44.04
12	Korea	1,328.67	39	34.07	50.25
13	Italy	1,144.05	44	26.00	32.86
14	Spain	1,073.46	25	42.94	36.58
15	Japan	954.10	31	30.78	33.78
16	Belgium	892.40	12	74.37	88.73
17	New Zealand	732.93	7	104.70	93.06
18	Finland	620.07	6	103.34	118.65
19	Swiss	547.40	10	54.74	55.71
20	Ireland	440.58	8	55.07	55.46
21	Norway	422.82	7	60.40	97.48
22	Austria	421.14	5	84.23	66.31
23	Denmark	382.24	5	76.45	63.28
24	Sweden	318.24	6	53.04	18.44
25	Greece	270.90	9	30.10	26.43
26	Cyprus	234.71	1	234.71	
27	China	155.32	9	17.26	17.67
28	Chile	141.77	4	35.44	30.95
29	Portugal	106.62	6	17.77	13.93
30	Turkey	105.32	6	17.55	12.95

Table 2 continued

Rank	Country	Total JF-pages	Number of school	Mean	Std. deviation
31	India	104.46	5	20.89	18.15
32	Brazil	94.56	2	47.28	32.61
33	Thailand	94.32	4	23.58	19.21
34	United Arab Emirates	82.38	4	20.59	7.29
35	Argentina	67.02	2	33.51	34.82
36	Malaysia	55.69	5	11.14	8.70
37	Saudi Arabia	44.18	2	22.09	24.48
38	The Philippines	30.00	2	15.00	8.09
39	Jordan	29.17	3	9.72	9.67
40	Costa Rica	26.99	2	13.49	9.47
41	Mexico	24.75	1	24.75	
42	Iceland	21.26	1	21.26	
43	Macau	20.34	1	20.34	
44	South Africa	17.47	1	17.47	
45	Kuwait	15.64	1	15.64	
46	Lebanon	15.21	1	15.21	
47	Lithuania	14.67	1	14.67	
48	Morocco	13.92	1	13.92	
49	Indonesia	13.11	1	13.11	
50	Virgin Islands	10.49	1	10.49	
51	Kenya	8.74	1	8.74	
52	Poland	8.51	1	8.51	
53	Egypt	7.77	1	7.77	
54	Croatia	7.60	1	7.60	
55	Puerto Rico	6.03	1	6.03	
56	Tunisia	5.07	1	5.07	
57	Bangladesh	4.18	1	4.18	
58	Oman	3.88	1	3.88	
59	Bahrain	3.71	1	3.71	

This table provides the ranking in aggregate finance literature productivity by countries. Also reported are the number of academic institutions in each country contributed to the literature, the mean productivity of each institution, and the standard deviations of JF-pages

countries by their respective mean productivity per institution because such a measure could be misleading. Consider a hypothetical country that has 20 universities. Among these 20 universities, only one contributes five weighted articles to the finance literature, while the contribution from the other 19 institutions is nil, hence they are not ranked at all. If we use the mean productivity to rank countries, this hypothetical country would have been ranked high, but this is misleading because the five weighted articles is the mean productivity of a single institution, not the average of all 20 institutions.

In total, 59 countries contributed to the production of finance literature in these 21 journals from 1990 to 2004. Column 3 reports the total JF-pages, and column 1 presents the ordinal rank of each country's research output based upon JF-pages. The U.S. dominates the finance literature production with a lion's share of 73% (133,667.6/183,360.3 JF-pages) of

the total finance research published in these 21 journals, followed by U.K. (12,687.49 JF-pages or 6.9% of the total JF-pages), Canada (6,809.9 JF-pages or 3.7% of the total), Hong Kong (4,436.13 JF-pages, or 2.4% of the total), and Australia (3,720.93 JF-pages, or 2.0% of the total). The top-5 countries, therefore, account for 88% of the total JF-pages.

What might have contributed to the variations in finance research across countries? Although we use aggregate productivity to rank countries, the size of the population probably is not relevant. For example, the two most populous countries such as China and India produce only 155.32 and 104.46 JF-pages, respectively in these 21 journals. Indonesia, another country with large populations, produces a minuscule 13.11 JF-pages. On the contrary, Singapore, a country of only 3 million is ranked 10th. A country's wealth, measured by her per capita GNP, on the other hand, might offer some explanations. After all, wealthy nations have more established institutions of higher education, which, *ceteris paribus*, should produce more finance research. The wealth of a nation, however, may not tell the whole story. Examining the statistics reported in Table 2 find that wealthy nations such as Japan are outranked by less wealthy nations such as Hong Kong, Singapore, Netherlands, Korea, and Taiwan, to name a few.

Another factor that may be related to finance literature production is language. Since finance literature is dominated by English-language literature, English-speaking countries naturally would have an edge in producing clearer English text. Hence, we conjecture that English-speaking countries, other factors the same, produce more finance literature.

Finally, seemingly unrelated, finance literature output may also be associated with the extent in which a country offers legal protection to her investors. When a country has a legal system that offers little protection to her investors, accounting standards are lax, the rule of laws are weak, and little incentive for the intellectual exchange in the arena of finance research would exist. Of course, it is also equally arguable that the lack of intellectual exchange in finance research leads to little regard for the investors' protection laws. Therefore, our interest in not in the direction of causality; rather, we are interested in the relationship between finance literature output and the legal protection a country offer to her investors.

To examine this hypothesis, we include in the model per capital GNP and a binary variable which classifies countries on the basis of English-speaking. We also include several interesting variables in La Porta et al. (1998) including rule of laws, judicial system efficiency, index of accounting standard, and concentration of share ownership in the largest public companies. La Porta et al. find ownership concentration negatively related to investors' protection. We construct our model of the finance literature production by countries as the following:

$$Ln(JF\text{-}pages)_i = \alpha + \beta_1(English) + \beta_2 Ln(per\ capita\ GNP)_i + \beta_3(Judicial)_i + \beta_4(Law)_i + \beta_5(ACCstd)_i + \beta_6(OWN)_i + \beta_7(Origin)_i + u_i \quad (1)$$

The dependent variable in the model is the natural logarithm of the aggregate JF-pages produced by ith country (Ln (JF-pages)). We use the log transformation for the JF-pages because this variable is highly skewed. Certain exogenous variables in the model are based on La Porta et al. (1998) and are defined as:

Ln(per capital GNP) = natural logarithm of a country's per capita GNP.
English = A binary variable such that English = 1 if a country is English-speaking; otherwise, English = 0.
Judicial = Efficiency of judicial system. Scale from zero to 10; zero being the least efficient.
Law = Rule of laws. Scale from zero to 10; zero being the least.

ACCstd = Index of the quality of accounting standards. Higher index value means higher quality.
OWN = Average percentage of common shares owned by the three largest shareholders in the 10 largest non-financial, privately owned domestic firms in a given country.
Origin ∈ (French, Germany, Scan) = A binary variable so that French = 1 if a country's origin of commerce law is French civil law; Germany = 1 if Germany civil law; and Scan = 1 if Scandinavian law.

Our sample size for this analysis ranges from 39 to 51 depending on the variables used in the model. Although, La Porta et al., has relevant data for 49 countries and we have data for 59 countries, the sample size is reduced in our study after matching their data with our data. Since there are six countries in La Porta et al., that published no finance articles, the matched sample is left censored at 0. Therefore, the appropriate method to estimate our model is the TOBIT analysis.

Table 3 reports the results for this empirical model. Several interesting results emerge. First, model (a) through model (f) reports regression results when each exogenous variable enters the analysis individually. Chi-square statistics, reported in the parentheses, indicate that Judicial, Law, ACCstd, OWN, and GNP are all statistically significant at the one percent level and carry the expected signs. English is also significant albeit at lower level, suggesting English-speaking countries do have advantage over non-English speaking countries.

Second, in model (g) where all investors' protection variables, equity ownership concentration, and GNP are included in the same equation, only two variables are significant—Law and English. The rule of laws (Law) carries the expected positive sign and is significant at the one percent level, while English is significant at the ten percent level. Since the only investors' protection variable that is significant in the multivariate setting is Law, in model (h) we include Law, English, and GNP in the same equation. In this model, GNP is significant at the one percent level, while both English and Law are significant at the five percent level.

Finally, in model (i) we include Law, GNP, English and three binary variables measuring the origin of the commerce law. According to La Porta et al, English-Common-Law countries offer investors better protection. Law, GNP, and Scan are all significant at the one percent level. All three measures of law origin carry negative sign although only Scan is statistically significant. Surprisingly, English is reduced to insignificant although it still carries the expected positive sign.[7] Overall, our TOBIT models suggest that a nation's wealth, language, and rule of laws (and legal protection) are associated with a country's finance literature output.[8]

[7] The impact of English language on research output differs over disciplines. For example, for economics, a discipline that is very close to finance yet is much broader in scope, empirical evidence suggests that the impact of English language on research output is less important than finance. Among the top-100 research programs ranked based upon 30 top economics journals, all of which are English language journals, Netherland takes four spots, Germany two, France four, and Spain also four. This stands a sharp contrast to finance research (see Kalaitzidakis et al. (2003).

[8] One would question if these regression results are unique to the finance research, or similar results will also obtain for other academic disciplines. Although we could not replicate the same analyses for other academic disciplines, other ranking studies suggest that it is highly unlikely. For example, Shanghai Jiao Tong University ranks top-500 world universities in science areas using criteria such as articles published in Nature and Science, the number of Nobel-prized faculty, and articles in *Science Citation Index* as well as *Social Science Citation Index*. The ranking picture is quite different from our raking in finance. Although US institutions still dominates the top-100 in Jiao Tong ranking, 48 out of 100 are non-US institutions. And unlike finance, Tokyo University ranks 14th in the world, while Kyoto University 21st. See http://ed.sjtu.edu.cn/rank/2004/top500list.htm.

Table 3 TOBIT results of finance literature productivity by countries

Variable	Model (a)	Model (b)	Model (c)	Model (d)	Model (e)	Model (f)	Model (g)	Model (h)	Model (i)
Judicial	0.7629 (19.1)***						−0.1257 (0.54)		
Law		0.8982 (81.7)***					0.7142 (27.5)***	0.4031 (5.22)**	0.4986 (8.58)***
ACCstd			0.1187 (16.3)***				0.0197 (0.54)		
OWN				−10.8352 (12.8)***			−2.9834 (1.84)		
LN(GNP)					1.5935 (84.3)***			0.9318 (8.9)***	0.9571 (10.32)***
English						1.8009 (3.5)*	1.1235 (2.9)*	1.1601 (4.64)**	0.4139 (0.35)
French									−0.4891 (0.64)
Germany									−0.7856 (0.89)
Scan									−2.4116 (6.39)***
Log-likelihood value	−99.04	−82.27	−83.65	−96.64	−82.51	−117.89	−68.67	−77.10	−73.96
Censored/Total Observations	5/45	5/45	5/39	5/43	5/45	5/51	3/39	5/45	5/45

This table reports regression results of Eq. (1) where the dependent variable is the natural logarithm of the aggregate JF-pages by countries. Because not every country has JF-pages, we use a TOBIT estimation to account for the censored observations. Independent variables are classified into various groups. Judicial, Law, and ACCstd measure the investors' protection; Ln (GNP) controls for the wealth of a nation on a per capita basis, OWN measures equity ownership concentration, and English is a dummy variable that measures if English is the country's principal language. French, Germany, and Scan are binary variables measuring the origin of the laws. χ^2 statistics are reported in the parentheses. *, **, and *** denote significant at the 10%, 5%, and 1% level, respectively

5 Ranking by academic institutions

In this section, we first rank institutional research productivity using JF-pages published in 21 finance journals. We also include the weighted and unweighted number of articles for reference. Table 4 presents the 100 institutions with the highest JF-pages appeared in 21 finance journals.[9] New York University, the University of Pennsylvania, Harvard University, the University of Chicago, and UCLA take the top 5 spots. The top-100 universities are overwhelmingly represented by the U.S. institutions and the top-18 are exclusively U.S. institutions. Out of these 100 institutions, U.S. universities account for 78 places, followed by U.K. (6), Canada (5), Hong Kong (4), Netherlands (2), Singapore (2), France (2), and Australia (1).[10] Table 4 also reveals the skewness of the JF-pages distribution. For a school to move from 100th to 75th, it needs to advance 175.62 JF-pages (from 504.63 to 680.25 JF-pages). For a similar ranking advance from 50th to 25th, a school would need 408.15 JF-pages (from 866.63 to 1,274.78 JF-pages).

Although we include 21 journals that are ranked high in the finance literature, variations in journal quality still exist and this journal quality bias might penalize certain institutions that stress quality, while favor others that take a broader view of journal quality. Ideally, one would make explicit adjustment in journal quality to minimize this bias. However, a commonly acceptable measurement of journal quality, Social Science Citation Index (SSCI) is not available for most of the finance journals in all years. Furthermore, some would argue that SSCI impact factor does not necessary measure quality *per se*. Hence, the use of impact factor introduces a different type of bias. To provide an alternative view of institutional ranking, therefore, we report rankings based upon the top-5 finance journals in Table 5. The qualities of these top-5 finance journals are the least controversial.

Using the top-5 finance journals only, the top five institutions are New York University, the University of Pennsylvania, the University of Chicago, Harvard University, and the University of Michigan. Comparing with the results reported in Table 4 where all 21 journals are employed, the top-8 schools are the same with minor changes in relative ranking. Again, U.S. institutions overwhelmingly dominate the top-100 list in Table 5. Non-U.S. institutions only claim 19 places.

Why do some institutions have higher research productivity than others? In this section, we try to find factors that are associated with the cross-institutional research output variations. These factors include financial resource of the institution, faculty size, and research catalyst effect among the faculty members. It is expected that these factors are positively correlated with our research output measures. The research catalyst effect measures how well the faculty members within each institution work together among themselves. Other things being the same, we expect an institution with faculty members working together more likely to produce more research. The catalyst effect enhances research productivity through two factors: the incentive it provides and the avoidance of dilution through article weighting scheme. Obviously, the weighting scheme will split the credit among coauthors if they are not from the same institution.

Faculty size is expected to be positively correlated with JF-pages since the aggregate JF-pages, not the mean JF-pages per institution is the dependent variable. Finally, institutions

[9] The remaining universities are presented in the authors' website.

[10] There are only nine institutions from non-English speaking nations. However, English language advantage alone clearly cannot explain why other disciplines, including natural science and economics, are not so dominated by English-speaking nations.

Table 4 The 100 academic institutions with most JF-pages appeared in 21 finance journals (1990–2004)

Rank	Colleges	Country	JF-pages	Wt number of articles	Unweighted number of articles
1	New York U	US	4,971.91	245.51	526
2	U Penn	US	4,069.85	174.40	355
3	Harvard U	US	3,513.04	131.92	242
4	U Chicago	US	3,367.61	136.83	244
5	UCLA	US	2,879.08	133.58	252
6	U Michigan	US	2,574.40	115.83	218
7	Duke U	US	2,479.59	96.67	190
8	Columbia U	US	2,471.62	114.25	202
9	Cornell U	US	2,081.27	101.29	205
10	Northwestern U	US	2,057.76	80.25	157
11	Ohio State U	US	2,019.95	90.67	178
12	U Illinois	US	2,001.23	96.36	213
13	Stanford U	US	1,907.62	78.50	145
14	MIT	US	1,890.27	76.50	135
15	Rutgers U	US	1,656.19	94.74	186
16	Indiana U	US	1,564.98	78.33	152
17	U Rochester	US	1,524.39	64.53	122
18	UC-Berkeley	US	1,477.33	68.50	116
19	London Business School	UK	1,473.32	64.58	134
20	U Southern California	US	1,440.63	61.58	123
21	U Texas-Austin	US	1,400.07	68.92	147
22	Boston College	US	1,339.96	68.58	131
23	Hong Kong U Science Technology	Hong Kong	1,314.63	61.04	137
24	Purdue U	US	1,308.98	61.50	126
25	U North Carolina	US	1,274.78	55.63	118
26	Yale U	US	1,259.80	57.70	115
27	U Florida	US	1,254.66	66.83	137
28	Virginia Tech	US	1,243.49	70.50	144
29	U Washington	US	1,210.11	58.08	112
30	U Maryland	US	1,193.10	50.17	109
31	U Notre Dame	US	1,161.15	52.98	111
32	Baruch College	US	1,152.33	61.12	121
33	U British Columbia	Canada	1,135.41	53.69	104
34	U Georgia	US	1,112.60	55.58	120
35	Vanderbilt U	US	1,108.62	51.87	102
36	Penn State U	US	1,066.84	52.17	110
37	U Wisconsin-Madison	US	1,045.93	50.67	95
38	Arizona State U	US	1,043.60	54.67	112
39	Washington U	US	1,002.87	47.83	84
40	Southern Methodist U	US	974.63	52.17	104
41	Emory U	US	958.03	42.67	80
42	Georgetown U	US	946.94	47.75	90

Table 4 continued

Rank	Colleges	Country	JF-pages	Wt number of articles	Unweighted number of articles
43	Carnegie Mellon U	US	938.59	37.92	74
44	Georgia State U	US	928.87	45.58	104
45	U Houston	US	923.85	49.71	98
46	Michigan State U	US	922.77	48.50	97
47	Hong Kong Polytechnic U	Hong Kong	909.45	46.08	104
48	U South Carolina	US	887.76	50.75	109
49	Cass Business School	UK	869.47	46.08	77
50	U Virginia	US	866.63	43.63	89
51	U Minnesota	US	854.25	40.92	80
52	U Iowa	US	834.88	38.83	74
53	Chinese U Hong Kong	Hong Kong	814.27	42.75	94
54	U Utah	US	797.73	36.25	78
55	U Toronto	Canada	786.77	36.33	70
56	Nanyang Tech U	Singapore	777.04	43.46	104
57	Dartmouth College	US	772.55	33.67	65
58	U New South Wales	Australia	763.04	41.53	74
59	Florida Atlantic U	US	759.08	49.75	109
60	Lancaster U	UK	751.37	36.20	71
61	U Oklahoma	US	749.84	39.25	79
62	Texas A&M U	US	748.20	49.00	100
63	U Miami	US	746.17	50.83	100
64	National U Singapore	Singapore	742.13	42.38	83
65	U Manchester	UK	739.80	33.42	71
66	U Strathclyde	UK	735.67	40.58	86
67	Louisiana State U	US	720.81	48.08	114
68	Princeton U	US	718.58	30.00	50
69	Southern Illinois U	US	715.76	43.33	110
70	Fordham U	US	711.62	43.08	83
71	U Missouri	US	704.74	43.00	88
72	Santa Clara U	US	703.66	46.17	86
73	Erasmus U	Netherlands	690.31	38.08	88
74	INSEAD	France	687.98	28.92	53
75	London School Economics	UK	680.25	33.08	65
76	Boston U	US	668.65	36.67	64
77	City U Hong Kong	Hong Kong	668.52	39.42	86
78	U Kansas	US	651.33	47.58	88
79	Rice U	US	638.89	26.46	55
80	Florida State U	US	620.55	37.50	78
81	Iowa State U	US	614.97	41.42	88
82	U Arizona	US	613.37	29.78	67
83	SUNY-Buffalo	US	611.65	36.67	67
84	U Memphis	US	606.86	40.96	98

Table 4 continued

Rank	Colleges	Country	JF-pages	Wt number of articles	Unweighted number of articles
85	Tulane U	US	599.17	28.25	60
86	U Pittsburgh	US	598.28	29.75	64
87	McGill U	Canada	595.17	30.42	64
88	Tilburg U	Netherlands	588.70	28.17	67
89	Syracuse U	US	568.38	34.08	63
90	U Alberta	Canada	548.92	27.33	53
91	UC-Irvine	US	539.05	27.17	50
92	U Alabama	US	536.25	36.58	75
93	Temple U	US	535.13	32.17	73
94	Washington State U	US	525.04	27.83	56
95	Brigham Young U	US	522.36	27.67	61
96	Bentley College	US	515.00	31.08	66
97	U New Orleans	US	513.02	29.58	58
98	Wilfrid Laurier U	Canada	511.06	33.67	56
99	HEC	France	510.18	26.83	56
100	North Carolina State U	US	504.63	30.42	63

This table presents the 100 institutions with most JF-pages appeared in 21 core finance journals. We also reported weighted number of articles and unweighted number of articles for comparison

with richer finance resources are able to better support their faculty research with, for example, appropriate database, reduced teaching load, and research grants; hence more research output.

The empirical model is specified as:

$$JF - pages_i = \alpha + \beta_1 (Size)_i + \beta_2 (Peer)_i + \beta_3 (Per\ Capita\ Budget)_i + u_i$$

where

JF-pages = research productivity measured by JF-pages;
Size = the number of finance faculty members in the ith institution[11];
Peer = the number of peer-coauthored articles from the ith institution. This is a proxy of research catalyst effect;
Per Capita Budget = per capita business school budget as of January 2005;[12] this is a proxy of institutional financial resources.

In Table 6, we report the cross-institutional variations of research productivity.[13] We have the complete data for only 341 US AACSB-accredited schools. Catalyst effect proxy, financial resources, and faculty size are all statistically significant at the one-percent level

[11] Data obtained from the Finance Faculty Directory 2002–2003, by James Hasselback, Prentice Hall.

[12] The data is available at http://www.aacsb.edu/General/InstLists.asp?lid = 2.

[13] JF-pages is used as the dependent variable. Linear model is employed for two reasons. First, the degree of skewness in JF-pages based upon these 341 AACSB accredited and more research-intensive universities is substantially less than that of cross-country analysis based on the whole sample. Second, linear model fits this specific data set significantly better than the log-linear transformation. Nevertheless, log-linear model draws the same conclusions.

Table 5 The 100 institutions with most JF-pages appeared in top-5 finance journals

Rank	Colleges	Country	JF-pages	Wt number of articles	Unweighted number of articles
1	New York U	US	3,113.86	130.44	287
2	U Penn	US	2,910.14	108.46	214
3	U Chicago	US	2,893.91	102.33	187
4	Harvard U	US	2,735.46	94.17	180
5	U Michigan	US	2,107.13	86.58	165
6	UCLA	US	2,065.15	85.83	172
7	Duke U	US	1,743.42	59.17	118
8	Columbia U	US	1,595.71	65.00	122
9	MIT	US	1,587.32	57.83	106
10	Northwestern U	US	1,586.18	56.83	116
11	Stanford U	US	1,489.53	53.83	101
12	Ohio State U	US	1,351.49	56.75	117
13	Cornell U	US	1,272.54	51.04	119
14	U Rochester	US	1,224.16	48.20	87
15	U Illinois	US	1,133.43	45.33	99
16	U Southern California	US	1,118.07	45.67	85
17	U British Columbia	Canada	923.70	40.25	77
18	London Business School	UK	922.30	35.67	74
19	U North Carolina	US	882.10	33.29	77
20	U Maryland	US	879.91	31.50	66
21	Yale U	US	860.72	34.78	71
22	Carnegie Mellon U	US	857.59	32.58	63
23	U Texas-Austin	US	830.78	34.58	74
24	UC-Berkeley	US	829.30	32.67	54
25	Purdue U	US	814.08	34.50	74
26	Indiana U	US	777.41	31.92	63
27	U Washington	US	767.73	34.17	65
28	U Florida	US	762.21	31.67	67
29	Arizona State U	US	720.40	33.58	68
30	Boston College	US	698.55	29.33	60
31	Washington U	US	630.91	25.17	45
32	Vanderbilt U	US	628.66	24.78	50
33	U Notre Dame	US	611.93	24.90	49
34	Penn State U	US	608.73	23.75	51
35	U Wisconsin-Madison	US	601.10	25.58	49
36	Emory U	US	585.18	22.25	43
37	Virginia Tech	US	578.16	27.50	55
38	Princeton U	US	562.81	19.00	34
39	U Utah	US	550.31	21.92	48
40	Southern Methodist U	US	543.50	23.25	49
41	U Georgia	US	529.59	22.50	54
42	Dartmouth College	US	526.36	19.25	37

Table 5 continued

Rank	Colleges	Country	JF-pages	Wt number of articles	Unweighted number of articles
43	U Minnesota	US	524.58	22.50	43
44	Michigan State U	US	523.74	21.42	41
45	Hong Kong U Science and Technology	Hong Kong	510.97	19.96	55
46	U Iowa	US	488.47	20.67	36
47	Georgetown U	US	455.11	17.83	36
48	INSEAD	France	434.63	16.58	29
49	Tulane U	US	422.77	18.17	39
50	Rutgers U	US	420.34	21.33	40
51	U Arizona	US	402.25	17.50	41
52	U Toronto	Canada	384.42	14.33	30
53	Rice U	US	368.66	13.96	32
54	U Virginia	US	366.11	14.21	31
55	UC-Irvine	US	359.89	15.50	30
56	U Oregon	US	359.74	13.67	28
57	Baruch College	US	345.34	15.67	29
58	Georgia State U	US	339.22	12.75	33
59	UC-Davis	US	324.99	12.83	24
60	U Pittsburgh	US	298.60	13.25	29
61	McGill U	Canada	290.33	11.17	20
62	Louisiana State U	US	278.25	15.75	38
63	U Oklahoma	US	267.63	12.33	27
64	U Houston	US	263.69	11.71	23
65	U South Carolina	US	257.03	12.25	26
66	Tel-Aviv U	Israel	256.47	12.21	47
67	U Colorado	US	251.76	9.92	19
68	U Missouri	US	246.91	12.50	26
69	Brigham Young U	US	245.03	10.58	21
70	U Alberta	Canada	228.46	9.58	24
71	U Miami	US	228.29	9.50	16
72	London School Economics	UK	222.97	8.67	17
73	Santa Clara U	US	219.32	9.83	21
74	Case Western Reserve U	US	200.64	9.50	21
75	Boston U	US	200.20	9.08	15
76	U Cincinnati	US	199.79	7.58	18
77	UC-Riverside	US	194.54	11.00	22
78	Clemson U	US	193.58	10.00	25
79	SUNY-Buffalo	US	178.21	8.50	14
80	U Texas-Dallas	US	174.19	6.00	14
81	Georgia Tech	US	169.11	7.17	13
82	College William and Mary	US	168.42	7.50	12
83	Hebrew U	Israel	168.19	7.03	15
84	Oxford U	UK	167.80	6.29	14

Table 5 continued

Rank	Colleges	Country	JF-pages	Wt number of articles	Unweighted number of articles
85	Texas A&M U	US	163.54	8.58	15
86	UC-San Diego	US	163.13	6.25	15
87	HEC	France	162.33	7.33	18
88	Fordham U	US	154.86	6.42	18
89	U Wisconsin-Milwaukee	US	150.48	7.17	13
90	Iowa State U	US	147.94	8.83	21
91	U Western Ontario	Canada	144.49	5.92	12
92	Washington State U	US	144.28	5.33	11
93	Chinese U Hong Kong	Hong Kong	142.52	6.13	18
94	Korea U	Korea	140.52	5.08	14
95	Syracuse U	US	139.99	6.67	11
96	U Amsterdam	Netherlands	134.88	4.58	11
97	U Toulouse	France	121.54	4.33	8
98	Texas Christian U	US	120.82	5.08	12
99	National U Singapore	Singapore	120.67	5.58	13
100	Queen's U	Canada	120.35	5.58	12

This table reports ranking based upon the top-5 finance journals. The top-5 finance journals are *Journal of Finance, Journal of Financial Economics, Journal of Financial and Quantitative Analysis, Review of Financial Studies*, and *Journal of Business*

Table 6 Cross-institutional variations of research output

Variables	Dependent = total JF-pages (in log)	
	Coefficients	*t*-statistics
Intercept	−193.57	−8.78***
Finance department size	12.9862	4.64***
No. of peer coauthored articles (proxy research catalyst)	40.1177	24.74***
Per capita business school budget	0.9688	11.62***
Adjusted *R*-square	0.867	
F	745.0	
N	341	

This table reports the cross-institutional variations of research productivity. We have only the complete data for 341 AACSB-accredited schools in the US. Dependent variable is the adjusted JF-pages. Explanatory variables include per capital business school budget in US dollars as of 2004 (to proxy financial resources), the number of peer-authored articles published (to proxy research catalyst effect), and the finance program faculty size

with the expected signs. Larger faculty size, more generous budget, and more peer-coauthored articles all contribute to research output, hence higher institutional ranking. The adjusted R^2 value of 0.867 is quite high for a cross-sectional regression analysis.[14] Comparing the parameter magnitudes, some interesting results emerge. The parameter of

[14] The results in Table 6 are conditioned on schools having at least one publication.

the faculty size coefficient is 12.9862 meaning, other things being held constant, each additional faculty contributes to approximately 13 more JF-pages for the institution. This number is statistically significant, but less so economically. For example, for a school to move from 75 percentile to 50 percentile, 33.6 additional faculty is needed if all other factors are held constant.[15] On the other hand, the magnitude of the parameter for the catalyst effect is both statistically significant and economically large. One additional peer-coauthored article contributes to 40 additional JF-pages. Therefore, for a school to move from 75 percentile to 50 percentile, 10.9 ((887–450)/40 = 10.9) additional peer-coauthored articles are needed, other things held constant. Finally, the parameter size of 0.9688 for the per capital budget means a one thousand dollar increase in per capita budget results in one additional JF-pages. Obviously, it is not cheap to enhance finance research.

6 Conclusions

We study the ranking of finance programs globally using a set of 21 finance journals from 1990 to 2004. A total of 6,767 academic authors from 1,126 academic institutions published at least one unweighted article in this set of journals. An average institution published only 162.84 JF-pages over the 15-year period. As the distribution is highly skewed, the median JF-pages is only 28.00. Similar skewed distributions can be found for the numbers of publications by author. More than three-quarter of the 6,767 academic authors published three or fewer articles during the entire 15 years period. Therefore, publishing five or more unweighted articles would put an individual in the top fifteen percentile of the research output distribution. Publishing 15 articles, or one per year, would rank this individual in the top two percentile.

When ranked by countries, the U.S. dominates the finance research arena with a share of 73%, followed by U.K., Canada, Hong Kong, and Australia. We study factors that are associated with the finance literature production and find that countries with English-language speaking, better rule of laws (or, investors' protection), and higher national wealth produce more finance literature.

We also rank finance programs based upon a full sample of 21 journals and a subset of top-5 journals. In both cases, the U.S. institutions dominate the top-100 list. When all 21 journals are employed, 78 U.S. universities are ranked in the top-100. When only the top-5 journals are employed as the base of ranking, 81 U.S. universities are ranked in the top-100, followed by Canada, and U.K.

Finally, we also provide explanations to the cross-institutional variations of research productivity among a subset of schools. We find that faculty size, financial resource, and research catalyst effect explain the variations.

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[15] It is calculated as follows: (887–450)/13 = 33.6. A 50 percentile institution produces a total of 887 JF-pages, while a 75 percentile institution has 450 JF-pages. Note the cumulative frequency distribution illustrated in this section is based upon this subsample of 341 institutions. Interpretations cannot be extrapolated to the whole sample.

Appendix: Gini coefficients of finance publishing (1990–2004)

We compute the Gini coefficient according to Damgaard (2003). Gini coefficient measures the inequality in a population. We calculate the coefficient, G, as:

$$G = \frac{\sum_{i=1}^{n} \sum_{J=1}^{n} |x_i - x_j|}{2n^2 \mu}$$

where μ = arithmetic mean,
n = size of population,
x_i = JF-pages of ith institution.

Region	N	Gini coefficient
North America (US and Canada)	586	0.7587
Asia-Pacific	170	0.7306
Europe	318	0.6924
All institutions	1,126	0.7725

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