Abstract

Using the structural topic model, we present a landscape of academic finance. We analyze more than 40,000 titles and abstracts published in 32 finance journals over a period ranging from 1992 to 2020. We identify the research topics and explore their relation and prevalence over time and across journals. Our analyses reveal that most journals have covered more topics over time, thus becoming more generalist.

Keywords: Finance literature, Structural Topic Model (STM), topic modeling, text analysis, scientometrics

1. Introduction

Academic finance is an active research field that spans a myriad of subjects. Finance topics can be related, covered by different outlets (i.e., specialized or generalist journals), and their prevalence can evolve over time. Identifying these topics and understanding their relations and their trends allow scholars to better position their research in the field.

Comparing topics across different journals over time is a challenging task. Indeed, the outlet that publishes the article and the year of publication are both variables that can affect topic prevalences. We address that challenge by using the Structural Topic Model (STM) of Roberts et al. (2013). STM is an extension of the commonly used latent Dirichlet allocation (LDA) model of Blei, Ng, and Jordan (2003) and the correlated topic model (CTM) of Blei and Lafferty (2006). Compared to LDA, the STM allow researchers to discover topics and estimate their relationship to document metadata, such as time and journal. Moreover, STM also accounts for the potential correlation between topics, likely in the finance domain, as subjects are often related. Note that while STM is commonly used in political science (e.g., Mishler et al., 2015; Sachdeva, McCaffrey, and Locke, 2017; Curry and Fix, 2019; Bohr and Dunlap, 2018), examples from finance are much rarer; see Ardia, Bluteau, and Boudt (202x) for a recent application in the financial context.
We apply the STM to more than 40,000 research articles’ titles and abstracts published by 32 academic finance journals over a period ranging from 1992 to 2020. For the covariates that can influence the topic prevalence, we use (i) the year of publication, (ii) the journal, (iii) a dummy indicating whether at least one of the authors is affiliated with a high-ranked university, and (iv) a dummy indicating whether the research got funded. Our estimations lead to the identification of 47 topics in our corpus, from which we can draw several observations.

First, two of the top-three highest-prevalent topics are related to econometrics and statistics (i.e., *Time-Series Models* and *Statistical Tests/Estimators*). This finding highlights the important aspects of these two technical fields in financial research.

Second, we see that the highest- and lowest-prevalent topics change over time. For instance, *Statistical Tests/Estimators* is predominant in 1990–2000 while *Time-Series Models* is the most prevalent topic in 2004–2016. *Systemic Risk* and *Correlation/Spillover* are the most prevalent topics in recent years. On the other hand, *Liquidity* is the least covered topic in 1990–2000, while it is *Debt Covenant* and *Market (Micro)Structure* in recent years. Moreover, a trend analysis reveals that low-prevalent topics in the 1990s have experienced an increase in prevalence (e.g., *Correlation/Spillover* and *Systemic Risk*), while high-prevalent topics have experienced a decrease (e.g., *Statistical Tests/Estimators*).

Third, we identify highly specialized and more generalist outlets in our corpus. For instance, more than 30% of the papers published in the Journal of Derivatives are related to *Option Pricing*. Our analyses reveal that most journals have covered more topics over time, thus becoming more generalist. An exception is the Financial Analysts Journal, which is more specialized nowadays.

Finally, we analyze if top-university authors and funded research target particular topics. We find that authors from top business schools concentrate more on corporate investment research and asset pricing than other scholars. We also find a significant difference in subjects covered by funded research. For instance, *Time-Series Models* is more covered by funded studies.

Our paper contributes to the emerging literature on scientometrics in economics and finance. Ambrosino et al. (2018) investigate topics in economic journals using multiple LDA models spanning several decades. Corbet et al. (2019) also use LDA to study the literature in financial economics of precious metals. Alexakis et al. (2021) analyze the major topics published in *Computational Economics* and find the 18 relevant topics covered by the journal over the 1993–2019 period. Still, with LDA, Berninger et al. (2021) find that the prevalence of topics remains relatively constant over time. Our use of STM is more efficient as it is estimated over the whole corpus and accounts for changes in prevalence conditional on the date by construction. Accounting for temporal effects using STM, our results contrast with Berninger et al. (2021) as we observe that most topics have gained or lost prevalence.

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1. Also, applying LDA on a rolling window can lead to different topic-word distribution resulting in the topics themselves being different.
The rest of this paper is structured as follows. In Section 2, we describe our data collection process, variables, and text cleaning procedures. In Section 3, we introduce the STM. The results are discussed in Section 4.

2. Data collection, text processing, and covariates

2.1. Data collection

We retrieve data for 32 financial journals from the Web of Science Core Collection (WOC-CC) and Scopus\(^2\). The selection is based on the list compiled in Bajo, Barbi, and Hillier (2020). We collect articles’ titles, abstracts, and metadata for each journal from January 1992 to December 2020. In total, this yields a corpus of 41,716 articles. In Table 1, we report the name of the journals, the number of articles collected, and the year of the first and last article available in our sample.

With 4,669 articles, the Journal of Banking & Finance is the most represented outlet in our sample. It is followed by the Journal of Financial Economics (2,471 articles), the Journal of Finance (2,358 articles), and the Journal of International Money and Finance (2,147 articles). The least represented outlet is the Journal of Business (457 articles), followed by the Journal of Derivatives (508 articles), and the Journal of Financial Markets (519 articles). The most active outlets in terms of yearly publications are the Journal of Banking & Finance (161 articles/year), Finance Research Letters (87 articles/year), and the Journal of Financial Economics (85 articles/year). The least active outlets are the Journal of Financial Intermediation, the Journal of Financial Services Research, and the Journal of Derivatives (all with 20 articles/year).

\[\text{Insert Table 1 about here.}\]

In Figure 1, we display the yearly number of publications per journal in our sample. We note the significant increase in publications over time, from 569 articles in 1992 to 2,967 in 2020. This boost is explained by: (i) an increased number of outlets in our sample, from 17 in 1992 to 31 in 2020, and (ii) an increased number of publications per outlet, from a yearly average of 33 publications in 1992 to 96 in 2020.\(^4\)

\[\text{Insert Figure 1 about here.}\]

\(^2\)See https://clarivate.com/webofsciencegroup/solutions/web-of-science-core-collection and https://www.scopus.com.

\(^3\)Despite our corpus consisting of titles and abstracts, we refer to “articles” in what follows for convenience.

\(^4\)All journals but the Journal of Business were in activity in December 2020. The Journal of Business stopped in 2006.
2.2. Text processing

We build our text corpus from the WOC-CC and Scopus data by concatenating each article’s title and abstract. They represent summaries of the article content and provide our topic model with enough data to obtain reliable results. Before applying the STM, we process the texts as follows:

1. We remove any non-informative components: numbers and punctuations, one-letter words, and any extra spaces.
2. To reduce the complexity of the number of individual features (i.e., the dictionary of tokens), we lemmatize each word into its root form. Stemming each word is an alternative, but Schofield and Mimno (2016) show it is not helpful in the context of topic modeling.
3. Parts of speech (POS) tagging identifies and selects parts of speech like nouns, verbs, or adjectives from a given text. We tag all the words in the text using the R package udpipe (Wijffels 2021). We then use the POS annotated text to generate collocations (combinations of words with a specific meaning when observed together). For instance, the compound words “stock market” or “exchange rate” give us more information about the content of an article than if these words were not considered as a combination. We use two methods to detect collocations in our document: RAKE (Rose et al. 2010) and the process described in Hansen, McMahon, and Prat (2018). RAKE uses a machine learning model to score candidate collocation and then combine them, giving a candidate list. The second method, outlined in Hansen, McMahon, and Prat (2018), looks at part of speech patterns within the text. We tabulate the number of times each candidate collocation appears within the overall corpus. Then, for both methods, we keep the collocations that appear at least 100 (50) times for the sequence of two words (three words). Finally, we concatenate the individual words of the collocation in each text of our corpus (e.g., stock market becomes stock_market). In the appendix, Section E, we report the complete list of keywords obtained using these two methodologies.
4. Martin and Johnson (2015) find that removing all words except nouns improves the topics’ semantic coherence. Furthermore, we find that adding the collocations is also beneficial. As such, we follow Martin and Johnson (2015) and keep only nouns, but also the collocations, as the final features for topic modeling.
5. Removing words that are too rare or too common in the text corpus effectively narrows down pertinent words inside the corpus. Grimmer and Stewart (2013, p. 273) suggest removing words that appear in less than 1% or more than 99% of the texts. As our textual data can be technical, we remove words occurring in less than 0.1% of the texts or more than 99% of the time.

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5 The inclusion of author-defined keywords did not improve the topics’ interpretability.
6 Following Justeson and Katz (1995), these patterns are adjective-noun; noun-noun; adjective-adjective-noun; adjective-noun-noun; noun-adjective-noun; noun-noun-noun; and noun-preposition-noun.
7 The most used word is “result”, which appears in about 33% of the texts.
6. Finally, we transform the processed texts into a document-term matrix (DTM). A DTM is a matrix where each column is a term (a noun or a collocation in our case), and each row is a document. Each element corresponds to the number of times a term (words or collocation/keywords) is observed for a given text. This matrix serves as the input for the STM. The matrix contains 41,716 rows (corpus size) and 3,595 columns (vocabulary size).

2.3. Covariates

In addition to the title and the abstract of an article, the WOC-CC and Scopus databases contain several additional metadata used in our modeling.

Journal. The academic outlet in which an article is published is the most relevant conditioning variable to investigate diversity in subjects’ coverage across journals.

Year. The year of publication is a critical covariate for the trend analysis of topics. It makes comparing the relative popularity of different research areas across time possible.

Top University. The top-university covariate is a dummy variable used to identify the difference in topicality of articles published by scholars affiliated to universities of different rank. We obtain a list of 25 top-ranked universities from QS University rankings in the financial area. From the authors’ affiliations of each article, we determine if at least one of the authors belongs to the list.

Funding. The funding covariate is a dummy variable indicating the presence of funding in an article. It is obtained by checking if an article mentions any funding acknowledgments. This covariate can be used to see the differences between the focus of researchers publishing funded and non-funded research.

3. Structural topic model

This section introduces the structural topic model of Roberts et al. (2013). We also discuss our approach for selecting the number of topics.
3.1. The model

STM is an extension of the latent Dirichlet allocation (LDA) model of [Blei, Ng, and Jordan (2003)] and the correlated topic model (CTM) of [Blei and Lafferty (2006)]. It incorporates in both models conditioning metadata (e.g., time of publication, outlet) that can affect the topic prevalence and the words prevalence per topic.

Following the presentation in [Roberts, Stewart, and Tingley (2019)], the generation of each document (indexed by \( d \)) with a vocabulary of size \( V \) and \( K \) topics can be summarized as follows:

1. Draw the document-level prevalence of each topic, \( \theta_d \), from a logistic-normal generalized linear model based on a vector of document covariates \( X_d \):

   \[
   \theta_d | X_d, \gamma, \Sigma \sim \text{LogisticNormal}(X_d \gamma, \Sigma),
   \]  

   where \( X_d \) is a \( 1 \times p \) vector of covariates, \( \gamma \) is a \( p \times (K - 1) \) matrix of coefficients and \( \Sigma \) is a \( (K - 1) \times (K - 1) \) covariance matrix.

2. Given a document-level content covariate \( y_d \), form the document-specific distribution over words representing each topic \( k \), \( \beta_{d,k} \), using (i) the baseline word distribution \( m \), (ii) the topic specific deviation \( \kappa_{k}^{(t)} \), (iii) the covariate group deviation \( \kappa_{y_d}^{(c)} \), and (iv) the interaction between the two \( \kappa_{y_d,k}^{(i)} \):

   \[
   \beta_{d,k} \propto \exp(m + \kappa_{k}^{(t)} + \kappa_{y_d}^{(c)} + \kappa_{y_d,k}^{(i)}).
   \]  

   Here, we simplify the model and assume that \( \beta_{d,k} \) does not depend on covariates (i.e., is homogeneous among documents). The equation reduces to:

   \[
   \beta_k \propto \exp(m + \kappa_{k}^{(t)}).
   \]

3. For each word \( n \in \{1, ..., N_d\} \) in the document \( d \):
   - Draw word’s topic assignment based on the document-specific distribution over topics:

     \[
     z_{d,n} | \theta_d \sim \text{Multinomial}(\theta_d).
     \]
   - Conditional on the topic chosen, draw an observed word from that topic:

     \[
     w_{d,n} | z_{d,n}, \beta_{k=z_{d,n}} \sim \text{Multinomial}(\beta_{k=z_{d,n}}).
     \]

For the covariates in \( X_d \), we consider:

- B-spline basis functions to transform the year of the publication into ten continuous features representing time.
- A set of journal dummy variables.
• A dummy variable indicating whether at least one author is affiliated to a top-25 university.

• A dummy variable indicating whether the research received funding.

Overall, we have 43 variables in $X_d$ (i.e., $10 + (32 - 1) + 1 + 1$).

The model is estimated by variational expectation-maximization using the R package stm ([Roberts, Stewart, and Tingley 2019]). From the estimation, we obtain two quantities that will be used in our next analyses. First, a topic prevalence matrix, $Θ$, of size $D \times K$, where $D$ is the total number of articles (i.e., 41,716) and $K$ is the number of topics. Each row of that matrix is represented by $θ_d$ with elements $θ_{d,k} \geq 0$ and $θ_{d,K} = 1 - \sum_{k=1}^{K-1} θ_{d,k}$. Second, a matrix of words distributions for each topic, $B$, of size $K \times V$, where $V$ is the size of the vocabulary (i.e., 3,595). Each row of that matrix is represented by $β_k$ with elements $β_{v,k} \geq 0$ and $β_{V,k} = 1 - \sum_{v=1}^{V-1} β_{v,k}$. The number of topics $K$ must be chosen before the estimation.

3.2. Number of topics

We use two common metrics to determine the optimal number of topics $K$ in our corpus: (i) the semantic coherence and (ii) the exclusivity. Semantic coherence is maximized when the most probable words in a given topic frequently co-occur together, and it is a metric that correlates well with the human judgment of topic quality ([Mimno et al. 2011]). However, having high semantic coherence is relatively easy if you only have a few topics dominated by very common words. [Roberts et al. 2014] propose a complementary metric called exclusivity. It measures the exclusiveness of the words that make up a topic. The objective is to find the number of topics that balances semantic coherence and exclusivity. To do so, we calibrate the STM with $K \in \{20, 30, 40, \ldots, 140, 150\}$.

In Figure 2, we report the semantic coherence and exclusivity for each of those models. We can observe that a very high (low) number of topics leads to a high exclusivity but low (high) semantic coherence. It seems that 50 and 60 topics appear to be around the point where lowering (increasing) the number of topics would significantly reduce exclusivity (semantic coherence). As such, we choose $K = 50$ as the optimal number of topics for the STM estimation.

4. Results

In this section, we report several analyses based on the calibrated STM. In Section 4.1, we define names for the topics and analyze their unconditional prevalence. In Section 4.2, we measure the dependence between the topics. In Section 4.3, we investigate how topics’ diversity has evolved in the field. In Section 4.4, we look at topics per journal and thematic correlations across journals. Finally, in Section 4.5, we investigate if top-university scholars among the authors or funded research are associated with specific subjects.
4.1. Topic naming and topic prevalence

To start our analyses, we first manually label the 50 topics in our corpus. We proceed by (i) looking at the ten most probable words for each topic (ten largest $\beta_{k,v}$ for topic $k$) and (ii) looking at the content of the articles with the largest topic prevalence (highest $\theta_{d,k}$ for topic $k$). Let us illustrate these two steps for a topic that we name Option Pricing. In this case, the ten largest $\beta_{v,k}$ (expressed in percentage) are:

| term                  | probability |
|-----------------------|-------------|
| option                | 12.45       |
| pricing               | 2.24        |
| model                 | 2.13        |
| method                | 1.95        |
| option price          | 1.53        |
| formula               | 1.45        |
| valuation             | 1.34        |
| process               | 1.32        |
| time                  | 1.26        |
| exercise              | 1.23        |

From these words, it is reasonable to assume the topic is about option pricing. It is confirmed when looking at the content of the top-ten journal articles with the largest prevalence. For instance, the article with the highest topic prevalence is “Just-In-Time Monte Carlo for Path-Dependent American Options” by Dutt and Welke (2008). We proceed the same way to label the other topics. Among the 50 topics, we find that 47 can be easily associated with a particular strand of research.

In Table 2, we report the list of topics and their unconditional prevalence across the 32 financial research journals. We find that the five most prevalent topics are Time-Series Models (3.64%), Monetary Policy (3.18%), Statistical Tests/Estimators (3.13%), Market Reaction (3.12%), and Portfolio Strategies/Factor Models (3.09%). Regarding the five least covered topics, we have Debt Covenant (0.88%), Bank Regulation (1.11%), Real Estate (1.15%), Liquidity (1.18%), and Dividends (1.19%). In the appendix, Section A, we report the ten highest-probability words for each topic in our list.

4.2. Topic dependence

An appealing feature of the STM is that it explicitly captures the correlation among topics. The level of correlation between each topic can be interpreted as the level of synergy across the subjects (i.e., it measures the relation between topic $X$ and topic $Y$). This is achieved by estimating the Spearman’s correlations between the $K$ columns of matrix $\Theta$.

In Figure 3, we display the correlation network estimated between the topics. Gray to blue edges connect the topics with strong correlations, where the edges are thicker (thinner) and bluer (grayer) when the correlation is higher (lower). We find several interesting relations between the topics in our sample.

Starting from the top right, we see a set of topics related to firms, such as IPO, Firm Valuation, Compensation, Shareholders, Mergers, Governance, Earnings, and Reporting. In particular, we note the strong correlation between Governance, Compensation, and Shareholders.

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9 The other three consist of words commonly found in abstracts (paper, finance, research, author, purpose, study, finding, literature, design methodology approach, originality value) and common words outlining research (model, approach, problem, method, framework, analysis, paper, technique, methods, application) and results (evidence, result, measure, magnitude, paper, drift, period, market, explanation, change).
In the bottom right, highly correlated with this group, we see subjects related to banks and financing, such as Bank, Bank Regulation, Systemic Risk, Credit, and Retail Payment Systems. In the bottom left, the more technical topics Option Pricing, Volatility, Time-Series Models, Statistical Tests/Estimators are tied together. In the top left, several topics related to trading are clustered together, such as Trading, Arbitrage, Market (Micro)structure, Liquidity, and Orders/Transactions. When looking at the group of topics related to firms and banks/financing, it is interesting to see that Mutual Funds are close to firms, Pension Plans in between, while Real Estate and Households are more related to banks/financing. Finally, we note that Asset Pricing is related to Portfolio Strategies/Factor Models and Volatility.

4.3. Topic evolution and topic concentration

In this section, we analyze the highest- and lowest-prevalent topics over time. We are also interested in analyzing whether financial research has concentrated or has become broader over time. To do so, we introduce the concept of topic concentration. Topic concentration measures how much an article, or a group of articles, is concentrated in a few topics. To measure topic concentration, we use the normalized Herfindahl index. Given a vector of topic prevalence \( \theta = (\theta_1, \ldots, \theta_K) \), we define topic concentration as:

\[
TC(\theta) = \frac{\sum_{k=1}^{K} \theta_k^2 - 1/K}{1 - 1/K}.
\]

(6)

TC has a value between zero and one, with one indicating concentration into a single topic and a value of zero meaning that all \( K \) topics have a prevalence of \( 1/K \) in the set of documents. The yearly highest- and lowest-prevalent topics and topic concentrations are computed from the average of the topic prevalences of the articles published within a year.

Results are reported in Table 3. First, we see that Statistical Tests/Estimators and Time-Series Models are persistent highest-prevalent topics. The former is dominating in 1992–2001 and the latter in 2004–2012 and 2014–2016. In the last four years of the sample, Systemic Risk and Correlation/Spillover are the most dominant topics. We also observe persistence in the least discussed subjects. In 1992–1997 and 1999–2003, Liquidity is the lowest-prevalent topic, while it is Debt Covenant from 2005. Market (Micro)Structure is the least discussed topic in the last two years of the sample.

When looking at the yearly topic concentration (multiplied by 100 for readability) in the last column of Table 3, we note a decrease over time in our sample (from 0.63 in 1992 to 0.41 in 2020). The average TC is 0.42 in 1992–2006 and 0.35 in 2007–2020. A linear regression analysis indicates a significant decrease of -0.006 each year (at the 1% significance level).

10Note that this approach is different than calculating the average of the highest- and lowest-prevalent topics of the articles and the average of the topic concentrations of the articles published within a year.
We complete the analysis above by a trend analysis to determine how topics have increased or declined in “popularity” over time. From the calibrated STM model, we estimate the following $K$ beta regressions (Ferrari and Cribari-Neto 2004):

\[
\theta_{d,k} \sim \text{Beta}(\mu_{d,k}, \phi_k)
\]

\[
\mu_{d,k} = g (a_k + b_k (\text{YEAR}_d - 1992)),
\]

(7)

where $k = 1, \ldots, K$, $g(\cdot)$ is the logit link function, $\phi_k$ is a precision parameter, $\text{YEAR}_d$ is the year of publication of the articles $d$, and $a_k$ and $b_k$ are coefficients.\footnote{We use the function \textit{estimateEffect} from the R package \textit{stm} (Roberts, Stewart, and Tingley 2019) in conjunction with the function \textit{betareg} from the R package \textit{betareg} (Cribari-Neto and Zeileis 2010). The approach relies on the method of composition to incorporate the STM estimation uncertainty in the dependent variable. Mechanically, this means drawing a set of topic proportions from the variational posterior.}

The estimate of \(\frac{\exp(a_k)}{\exp(a_k)+1}\) measures the prevalence of topic $k$ in 1992, while the estimate of $b_k$ assesses the sensitivity of prevalence of topic $k$ with respect to time.

We report the results in Table 4. We see that most topics have either decreased or increased significantly over time. We note that the topics that decreased (increased) in prevalence have a relatively large (low) value of prevalence in 1992. Thus, this results in a more evenly distribution of prevalences across topics over time, in line with the results above on topic concentration. The topics for which the prevalence has increased most over time are Correlation/Spillover and Compensation. On the other hand, the topics whose prevalence has decreased the most are Arbitrage and Market (Micro)structure.

As a complementary analysis, we evaluate whether topic prevalence’s evolution has been non-linear in time, for instance, growing and then slowing down afterward. We estimate the following $K$ beta regressions from the calibrated STM:

\[
\theta_{d,k} \sim \text{Beta}(\mu_{d,k}, \phi_k)
\]

\[
\mu_{d,k} = g \left( a_k + \sum_{y=1993}^{2020} b_{y,k} I(\text{YEAR}_d = y) \right),
\]

(8)

where $k = 1, \ldots, K$, $I(\text{YEAR}_d = y)$ is an indicator variable that is equal to one when the condition holds. The estimator of $b_{y,k}$ measures the sensitivity of increase in prevalence of topic $k$ in year $y$ relative to 1992. XXX

In Figure 4, we display a heatmap of the estimates of $b_{1993,k}$ to $b_{2020,k}$ for each topic (vertical axis) over time (horizontal axis). We clearly see the sharp increase in prevalence for Correlation/Spillover at the end of our sample. A sharp decrease is observed for topic Statistical Tests/Estimators. It is interesting to note the cyclicity in prevalence for some topics, such as Market (Micro)structure.
4.4. Topics per journal

We now turn to topic analyses conditional on journals. In Table 5, we report for each journal in our sample, the highest- and lowest-prevalent topic together with the topic concentration. The quantities are obtained from the average topic prevalences of the articles published by each journal.

First, we see that several journals are heavily specialized (i.e., high TC), some with a highest-prevalent topic above 20%. The most specialized journals are the Journal of Derivatives (TC at 12.44, Option Pricings at 31.50%), the Journal of Money Credit and Banking (TC at 8.65, Monetary Policy at 28.31%), and the Journal of Risk and Insurance (TC at 8.40, Insurance at 25.52%). On the other hand, the most generalist journals are European Financial Management (TC at 0.41), the Journal of Financial Economics (TC at 0.45), and the Journal of Financial and Quantitative Analysis (TC at 0.48). It is interesting to see that the Journal of Finance, the Review of Finance, and the Review of Financial Studies are also close to these generalist outlets. Thus, commonly recognized top-five journals in finance cover a broad set of topics.

In Figure 5, we display the correlation network of the journal-specific topic prevalences. It is obtained by computing the correlation of the journals’ average topic prevalences. From the network, we note the close relation between the Journal of Financial Economics, the Journal of Finance, and the Journal of Financial and Quantitative Analysis. The Review of Financial Studies is close as well but rather connected to the Review of Finance. The Journal of Financial Research is connected to the Financial Review, and the Journal of Corporate Finance to Financial Management. We also see a strong connection between Finance Research Letters, the International Review of Financial Analysis, the European Journal of Finance, and the Journal of Empirical Finance. Quantitative Finance is connected to the Journal of Futures Markets and the Journal of Derivatives. The two practitioner-oriented outlets, the Journal of Portfolio Management and the Financial Analysts Journal, are strongly connected.

To investigate how journals’ coverages have evolved over time, we look at the sensitivity of the topic concentrations with respect to time for each outlet. We estimate the following $J$ beta regressions from the calibrated STM:

$$TC_{y,j} \sim Beta(\mu_{y,j}, \phi_j)$$

$$\mu_{y,j} = g \left( a_j + b_j \Delta YEAR_{y,j} \right),$$

where $j = 1, \ldots, J$, $TC_{y,j} = TC(\theta_{y,j})$ is the topic concentration of journal $j$ in year $y$ (computed as the average topic prevalences), $\Delta YEAR_{y,j}$ is the difference between year $y$ and
the first year of publication of outlet $j$, and $a_j$ and $b_j$ are journal-specific level and trend in topic concentrations. We are specifically interested in the estimates of $b_j$. Results are reported in the last column of Table 5.

We find that 27 journals have experienced a decrease in their topic concentration over time. Among them, 16 exhibit a significant negative coefficient $\beta_j$ at the 1% level (and 21 journals a negative coefficient at the 10% level). On the contrary, five journals show an increase in concentration, but only the Financial Analysts Journal exhibits a significant coefficient exposure to time at the 5% significance level. Overall, our results suggest that the field of academic finance has become broader over time.

Finally, we complete this trend analysis by looking at the topics the prevalence of which has most increased or decreased over time per journal. We estimate the following $K$ beta regressions from the calibrated STM:

$$\theta_{d,k} \sim Beta(\mu_{d,k}, \phi_k)$$

$$\mu_{d,k} = g \left( \sum_{j=1}^{32} I(JRNL_d = j) (a_{j,k} + b_{j,k} \Delta YEAR_d) \right),$$

where $k = 1, \ldots, K$, $I(JRNL_d = j)$ is an indicator function whose value is one when article $d$ is published in journal $j$ and $\Delta YEAR_d$ is the difference between the year of the article’s publication and the first year in our database of the journal in which the article appeared.

In Table 6, we report, for each journal, the two highest and lowest estimates of $b_{j,k}$. While we see heterogeneity among the outlets regarding increasing or decreasing topic prevalences, we see commonalities. The most often seen growing topics are Liquidity (13 occurrences) and Compensation (11 occurrences), while the most often seen decreasing topics is Statistical Tests/Estimators (13 occurrences).

4.5. Top-25 university affiliation and research funding

So far, we have investigated time and journal dimensions in topics’ prevalences. We complete our analyzes by investigating if topic prevalences are related to (i) scholars belonging to a top-25 university and (ii) research being funded or not. We estimate the following $K$ beta regressions from the calibrated STM:

$$\theta_{d,k} \sim Beta(\mu_{d,k}, \phi_k)$$

$$\mu_{d,k} = g (a_k + b_k \Delta YEAR_d + c_k I(TOP_d = 1) + d_k I(FUND_d = 1)), $$

where $k = 1, \ldots, K$, $I(TOP_d = 1)$ is a dummy variable whose value is one if at least one author of article $d$ is affiliated to a top-25 school in finance and $I(FUND_d = 1)$ is a dummy variable whose is one when article $d$ is associated with a research grant. Estimation results are reported in Table 6.
First, when controlling for top-25 and funding variables, we find that the time trends of the topics are globally consistent with our previous analyses. The top-two topics positively exposed to time are Compensation and Systemic Risk, while the top-two topics negatively exposed are Option Pricing and Arbitrage. Second, we see that authors from a top-25 university are associated with a higher prevalence of topics such as Corporate Investment and Market Efficiency and a lower prevalence of Correlation/Spillover and Statistical Tests/Estimators. Finally, articles mentioning funding support are focusing more on Time-Series Models and Option Pricing and less on Firm Valuation and Earnings.

[Insert Table 6 about here.]
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Table 1: List of academic journals

The table reports the name, the abbreviation, the total number of articles published, the yearly average of published articles, and the starting and ending date in our sample of each 32 journals in our study.

| Journal                                      | Abbr. | #    | Av. | Start | End  |
|----------------------------------------------|-------|------|-----|-------|------|
| European Financial Management                 | EFM   | 740  | 28  | 1995  | 2020 |
| European Journal of Finance                  | EJF   | 988  | 40  | 1995  | 2020 |
| Financial Analysts Journal                   | FAJ   | 756  | 30  | 1996  | 2020 |
| Financial Management                         | FM    | 811  | 29  | 1992  | 2020 |
| Financial Review                             | FR    | 861  | 30  | 1992  | 2020 |
| Finance Research Letters                     | FRL   | 1,487| 87  | 2004  | 2020 |
| International Review of Financial Analysis   | IRFA  | 1,529| 53  | 1992  | 2020 |
| Journal of Business                          | JB    | 457  | 30  | 1992  | 2006 |
| Journal of Banking & Finance                 | JBF   | 4,669| 161 | 1992  | 2020 |
| Journal of Corporate Finance                 | JCF   | 1,654| 61  | 1994  | 2020 |
| Journal of Derivatives                       | JD    | 508  | 20  | 1996  | 2020 |
| Journal of Empirical Finance                 | JEF   | 1,151| 41  | 1993  | 2020 |
| Journal of Finance                           | JF    | 2,358| 81  | 1992  | 2020 |
| Journal of Financial Economics               | JFE   | 2,471| 85  | 1992  | 2020 |
| Journal of Financial Intermediation          | JFI   | 581  | 20  | 1992  | 2020 |
| Journal of Futures Markets                   | JFM   | 1,192| 50  | 1997  | 2020 |
| Journal of Financial Markets                 | JFMKT | 519  | 23  | 1998  | 2020 |
| Journal of Financial and Quantitative Analysis | JFQA | 1,376| 47  | 1992  | 2020 |
| Journal of Financial Research                | JFR   | 747  | 26  | 1992  | 2020 |
| Journal of Financial Services Research       | JFSR  | 571  | 20  | 1992  | 2020 |
| Journal of International Financial Markets Institutions & Money | JIFMIM | 1,175| 49  | 1997  | 2020 |
| Journal of International Money and Finance   | JIMF  | 2,147| 74  | 1992  | 2020 |
| Journal of Money, Credit and Banking         | JMCB  | 1,335| 64  | 1997  | 2020 |
| Journal of Portfolio Management              | JPM   | 1,090| 38  | 1992  | 2020 |
| Journal of Real Estate Finance and Economics | JREFE | 1,154| 40  | 1992  | 2020 |
| Journal of Risk and Insurance                | JRI   | 905  | 31  | 1992  | 2020 |
| Managerial Finance                           | MANF  | 1,620| 65  | 1996  | 2020 |
| Pacific-Basin Finance Journal                | PBFJ  | 1,305| 47  | 1993  | 2020 |
| Quantitative Finance                         | QF    | 1,636| 82  | 2001  | 2020 |
| Review of Finance                            | RF    | 610  | 32  | 2001  | 2020 |
| Review of Financial Studies                  | RFS   | 1,795| 62  | 1992  | 2020 |
| Review of Quantitative Finance and Accounting | RQFA | 1,318| 45  | 1992  | 2020 |

Minimum: 457 20
Maximum: 4,669 161
Median: 1,154 41
Average: 1,304 50
Total: 41,716
Table 2: List of topics and topics’ unconditional prevalence

This table reports the 47 topics identified in our corpus along with their unconditional prevalence.

| Topic                                           | %    |
|-------------------------------------------------|------|
| Time-Series Models                              | 3.64 |
| Monetary Policy                                 | 3.18 |
| Statistical Tests/Estimators                    | 3.13 |
| Market Reaction                                 | 3.12 |
| Portfolio Strategies/Factor Models              | 3.09 |
| Investor Preferences                            | 3.05 |
| Option Pricing                                  | 2.99 |
| Asset Pricing                                   | 2.90 |
| Systemic Risk                                   | 2.85 |
| Correlation/Spillover                           | 2.69 |
| Financial Development                           | 2.68 |
| Shareholders                                    | 2.64 |
| Market Efficiency                               | 2.29 |
| Arbitrage                                       | 2.29 |
| Mutual Funds                                    | 2.21 |
| Trading                                         | 2.16 |
| Capital Structure                               | 2.16 |
| Volatility                                      | 2.14 |
| Interest Rates                                  | 2.05 |
| Reporting                                       | 2.03 |
| Governance                                      | 1.94 |
| Firm Valuation                                  | 1.91 |
| Orders/Transactions                             | 1.84 |
| Corporate Investment                            | 1.82 |
| Competition                                     | 1.82 |
| Earnings                                        | 1.81 |
| Risk Management/Hedging                         | 1.77 |
| Insurance                                       | 1.73 |
| Banks                                           | 1.72 |
| Foreign Exchange                                | 1.65 |
| IPO                                             | 1.62 |
| Market (Micro)structure                         | 1.58 |
| Households                                      | 1.57 |
| Mergers                                         | 1.56 |
| Firm Managers                                   | 1.49 |
| Compensation                                    | 1.41 |
| Bank Productivity                               | 1.36 |
| Bond/Yields                                     | 1.35 |
| Analysts                                        | 1.28 |
| Retail Payment Systems                          | 1.25 |
| Pension Plans                                   | 1.25 |
| Credit                                          | 1.24 |
| Dividends                                       | 1.19 |
| Liquidity                                       | 1.18 |
| Real Estate                                     | 1.15 |
| Bank Regulation                                 | 1.11 |
| Debt Covenant                                   | 0.88 |
Table 3: Highest- and lowest-prevalent topics and topic concentration over time

The table reports for each year the highest- and lowest-prevalent topics. The last column reports the topic concentration (×100) of all articles published that year.

| Year | Highest prevalence | Lowest prevalence | TC |
|------|--------------------|-------------------|----|
| 1992 | Statistical Tests/Estimators | 5.28 | Liquidity | 0.39 | 0.63 |
| 1993 | Statistical Tests/Estimators | 5.20 | Liquidity | 0.50 | 0.56 |
| 1994 | Statistical Tests/Estimators | 5.11 | Liquidity | 0.35 | 0.59 |
| 1995 | Statistical Tests/Estimators | 4.08 | Liquidity | 0.50 | 0.42 |
| 1996 | Statistical Tests/Estimators | 4.70 | Liquidity | 0.43 | 0.41 |
| 1997 | Statistical Tests/Estimators | 4.55 | Liquidity | 0.43 | 0.38 |
| 1998 | Statistical Tests/Estimators | 4.52 | Compensation | 0.65 | 0.38 |
| 1999 | Statistical Tests/Estimators | 4.35 | Liquidity | 0.50 | 0.37 |
| 2000 | Statistical Tests/Estimators | 4.00 | Liquidity | 0.58 | 0.31 |
| 2001 | Statistical Tests/Estimators | 3.94 | Liquidity | 0.65 | 0.40 |
| 2002 | Option Pricing | 4.44 | Liquidity | 0.60 | 0.44 |
| 2003 | Option Pricing | 3.92 | Liquidity | 0.73 | 0.36 |
| 2004 | Time-Series Models | 4.81 | Compensation | 0.83 | 0.42 |
| 2005 | Time-Series Models | 4.59 | Debt Covenant | 0.82 | 0.36 |
| 2006 | Time-Series Models | 3.82 | Debt Covenant | 0.69 | 0.37 |
| 2007 | Time-Series Models | 4.35 | Debt Covenant | 0.70 | 0.35 |
| 2008 | Time-Series Models | 4.66 | Debt Covenant | 0.64 | 0.42 |
| 2009 | Time-Series Models | 3.89 | Debt Covenant | 0.82 | 0.31 |
| 2010 | Time-Series Models | 4.14 | Bank Regulation | 0.93 | 0.34 |
| 2011 | Time-Series Models | 3.85 | Debt Covenant | 0.64 | 0.29 |
| 2012 | Time-Series Models | 3.82 | Debt Covenant | 0.72 | 0.30 |
| 2013 | Systemic Risk | 4.00 | Debt Covenant | 0.69 | 0.34 |
| 2014 | Time-Series Models | 3.87 | Dividends | 0.85 | 0.34 |
| 2015 | Time-Series Models | 3.75 | Debt Covenant | 0.75 | 0.35 |
| 2016 | Time-Series Models | 3.84 | Bank Regulation | 0.81 | 0.35 |
| 2017 | Systemic Risk | 3.57 | Debt Covenant | 0.87 | 0.29 |
| 2018 | Systemic Risk | 3.83 | Debt Covenant | 0.85 | 0.33 |
| 2019 | Correlation/Spillover | 4.34 | Market (Micro)Structure | 0.73 | 0.39 |
| 2020 | Correlation/Spillover | 4.50 | Market (Micro)Structure | 0.84 | 0.41 |
Table 4: Time-trends in topic prevalence

This table reports the unconditional prevalence in 1992 and time-trend prevalence for the 47 topics covered in our study. Constant is the estimate of $\exp(a_k)$ and time-trend is the estimate of $b_k$ in model (8). Coefficients are multiplied by 100 and results are sorted from the highest to the lowest time-trend value for readability. Signs ***, **, and * indicate that the coefficients are significantly different from zero at the 1%, 5%, and 10% level, respectively.

| Topic                          | Constant  | Time-Trend |
|-------------------------------|-----------|------------|
| Correlation/Spillover          | 2.66***   | 1.28***    |
| Compensation                  | 1.77***   | 1.02***    |
| Systemic Risk                 | 2.71***   | 1.00***    |
| Liquidity                     | 1.35***   | 0.99***    |
| Shareholders                  | 2.61***   | 0.82**     |
| Households                    | 1.72**    | 0.79***    |
| Financial Development         | 2.57***   | 0.72***    |
| Banks                         | 1.90***   | 0.70***    |
| Competition                   | 1.93***   | 0.59**     |
| Reporting                     | 2.21***   | 0.55***    |
| Monetary Policy               | 3.39***   | 0.53***    |
| Governance                    | 2.35***   | 0.53***    |
| Credit                        | 1.64***   | 0.40***    |
| Corporate Investment          | 1.80***   | 0.34***    |
| Pension Plans                 | 1.57***   | 0.31***    |
| Mutual Funds                  | 2.53***   | 0.28***    |
| Investor Preferences          | 2.88***   | 0.26***    |
| Bond/Yields                   | 1.62**    | 0.22***    |
| Risk Management/Hedging       | 1.80**    | 0.17***    |
| Portfolio Strategies/Factor Models | 3.03**  | 0.17***    |
| Volatility                    | 2.48**    | 0.06       |
| Bank Regulation               | 1.89**    | 0.02       |
| Firm Managers                 | 1.88**    | 0.01       |
| Analysts                      | 1.93**    | -0.01      |
| Orders/Transactions           | 2.15**    | -0.02      |
| Capital Structure             | 2.76***   | -0.06      |
| Real Estate                   | 1.74***   | -0.11*     |
| Mergers                       | 2.16**    | -0.21***   |
| Retail Payment Systems        | 1.73***   | -0.23***   |
| Debt Covenant                 | 1.59***   | -0.28***   |
| Asset Pricing                 | 3.30***   | -0.29***   |
| Time-Series Models            | 4.30***   | -0.29***   |
| Bank Productivity             | 2.10**    | -0.30***   |
| Foreign Exchange              | 2.21**    | -0.34***   |
| Market Reaction               | 3.64***   | -0.46***   |
| Firm Valuation                | 2.69***   | -0.47***   |
| Insurance                     | 2.27**    | -0.52***   |
| Market Efficiency             | 3.25***   | -0.57***   |
| Dividends                     | 1.92**    | -0.64***   |
| IPO                           | 2.54***   | -0.69***   |
| Trading                       | 2.89***   | -0.71***   |
| Option Pricing                | 4.26***   | -0.74***   |
| Interest Rates                | 2.78***   | -0.82***   |
| Earnings                      | 2.54***   | -0.84***   |
| Statistical Tests/Estimators  | 3.98***   | -0.93***   |
| Market (Micro)structure       | 2.55**    | -1.08***   |
| Arbitrage                     | 2.68**    | -1.09***   |
Table 5: Highest- and lowest-prevalent topics and topic concentration per journal

The table reports, for each journal, the highest- and lowest-prevalent topics. TC reports the topic concentration (×100) of the journal. $b_j$ is the journal-specific time-trend sensitivity in model 9 (×100). Signs ***, **, and * indicate that the coefficients are significantly different from zero at the 1%, 5%, and 10% level, respectively.

| Journal   | Topic                        | Highest prevalence | %  | Lowest prevalence | Topic                        | %  | TC   | $b_j$ |
|-----------|------------------------------|--------------------|----|-------------------|------------------------------|----|------|-------|
| EFM       | Asset Pricing                | 4.22               |    | Real Estate       | 0.68                         | 0.41| -3.54*** |
| EJF       | Time-Series Models           | 8.02               |    | Real Estate       | 0.50                         | 0.93| -9.70*** |
| FAJ       | Portfolio Strategies/Factor Models | 12.72         |    | Banks             | 0.27                         | 2.47| 2.07**  |
| FM        | Capital Structure            | 5.54               |    | Monetary Policy   | 0.36                         | 1.03| -1.39** |
| FR        | Earnings                     | 5.74               |    | Real Estate       | 0.47                         | 0.85| -0.44   |
| FRL       | Correlation/Spillover        | 9.87               |    | Debt Covenant     | 0.40                         | 1.51| -5.99***|
| IRFA      | Correlation/Spillover        | 8.60               |    | Real Estate       | 0.44                         | 1.24| -4.22***|
| JB        | Market Efficiency            | 4.55               |    | Liquidity         | 0.67                         | 0.48| -5.24** |
| JBF       | Systemic Risk                | 7.09               |    | Real Estate       | 0.53                         | 0.57| -3.53***|
| JCF       | Shareholders                 | 10.19              |    | Volatility        | 0.27                         | 2.34| -3.51***|
| JD        | Option Pricing               | 31.50              |    | Shareholders      | 0.12                         | 12.44| 1.08   |
| JEF       | Time-Series Models           | 11.99              |    | Debt Covenant     | 0.28                         | 2.48| -5.79***|
| JF        | Asset Pricing                | 5.24               |    | Real Estate       | 0.64                         | 0.52| -1.03*  |
| JFE       | Investor Preferences         | 4.91               |    | Real Estate       | 0.57                         | 0.45| -4.22** |
| JFI       | Systemic Risk                | 12.88              |    | Volatility        | 0.38                         | 2.19| -0.98   |
| JFM       | Volatility                   | 15.27              |    | Bank Regulation   | 0.14                         | 5.85| -3.33*  |
| JFMKT     | Orders/Transactions          | 9.13               |    | Bank Regulation   | 0.24                         | 2.61| -5.25***|
| JFQA      | Investor Preferences         | 5.24               |    | Real Estate       | 0.46                         | 0.48| -3.74***|
| JFR       | Market Reaction              | 4.88               |    | Credit            | 0.43                         | 0.61| -0.90   |
| JFSR      | Systemic Risk                | 14.77              |    | Volatility        | 0.41                         | 2.74| 0.42    |
| JFMIM     | Correlation/Spillover        | 9.01               |    | Real Estate       | 0.29                         | 1.85| -4.28***|
| JMF       | Monetary Policy              | 17.10              |    | IPO               | 0.23                         | 4.74| -0.74   |
| JMCB      | Monetary Policy              | 28.31              |    | Compensation      | 0.29                         | 8.65| 0.48    |
| JPM       | Portfolio Strategies/Factor Models | 23.16          |    | Systemic Risk     | 0.19                         | 6.95| 1.75    |
| JREFE     | Real Estate                  | 20.23              |    | Foreign Exchange  | 0.22                         | 5.39| -0.35   |
| JRI       | Insurance                    | 25.52              |    | Foreign Exchange  | 0.21                         | 8.40| -1.06   |
| MANF      | Market Reaction              | 4.36               |    | Market (Micro)Structure | 0.37                      | 0.72| -0.51   |
| PBFJ      | Shareholders                 | 8.17               |    | Credit            | 0.51                         | 1.26| -2.73***|
| QF        | Option Pricing               | 17.51              |    | IPO               | 0.15                         | 6.76| -3.29***|
| RF        | Systemic Risk                | 4.75               |    | Bank Productivity | 0.60                         | 0.48| -11.64***|
| RFS       | Asset Pricing                | 5.43               |    | Bank Productivity | 0.69                         | 0.51| -4.32***|
| RQFA      | Reporting                    | 9.35               |    | Liquidity         | 0.60                         | 1.17| -2.77***|
Table 6: Highest- and lowest-time-trend topics per journal
The table reports for each journal the two highest and two lowest time-trend topics together with their estimated $\beta_k$ in model (10) in parentheses ($\times 100$).

| Journal | Highest time-trend topics | Lowest time-trend topics |
|---------|----------------------------|--------------------------|
| EFM     | Compensation (1.55), Reporting (1.18) | Market (Micro)Structure (-1.00), Interest Rates (-1.32) |
| EJF     | Systemic Risk (1.80), Banks (1.59) | Time-Series Models (-2.72), Statistical Tests/Estimators (-2.46) |
| FAJ     | Correlation/Spillover (1.05), Shareholders (1.74) | Option Pricing (-3.45), Time-Series Models (-2.93) |
| FM      | Portfolio Strategies/Factor Models (2.09), Liquidity (1.27) | Market (Micro)Structure (-1.03), Market Reaction (-0.97) |
| FR      | Liquidity (1.46), Investor Preferences (1.29) | Capital Structure (-1.03), Earnings (-1.02) |
| FRL     | Liquidity (1.84), Compensation (1.41) | Earnings (-1.67), Statistical Tests/Estimators (-1.64) |
| IRFA    | Correlation/Spillover (1.80), Systemic Risk (1.23) | Statistical Tests/Estimators (-1.49), Option Pricing (-1.47) |
| JB      | Liquidity (1.19), Compensation (1.06) | Bank Productivity (-1.13), Interest Rates (-1.04) |
| JHF     | Competition (1.57), Liquidity (1.39) | Arbitrage (-1.74), Interest Rates (-1.47) |
| JCF     | Banks (1.33), Systemic Risk (1.16) | Earnings (-1.11), Ipo (-1.00) |
| JD      | Liquidity (1.15), Correlation/Spillover (1.11) | Interest Rates (-1.04), Arbitrage (-0.94) |
| JEF     | Liquidity (1.45), Compensation (1.28) | Statistical Tests/Estimators (-2.67), Time-Series Models (-2.11) |
| JF      | Compensation (1.36), Households (1.15) | Statistical Tests/Estimators (-1.29), Trading (-1.25) |
| JFE     | Compensation (1.33), Competition (1.43) | Option Pricing (-1.38), Statistical Tests/Estimators (-1.32) |
| JFI     | Liquidity (1.26), Households (1.27) | Ipo (-1.27), Earnings (-1.24) |
| JFM     | Systemic Risk (2.83), Banks (1.87) | Market Efficiency (-2.11), Market (Micro)Structure (-1.95) |
| JFMKT   | Liquidity (1.72), Correlation/Spillover (1.67) | Market (Micro)Structure (-4.21), Trading (-1.97) |
| JFQA    | Compensation (1.45), Governance (1.38) | Market (Micro)Structure (-2.67), Statistical Tests/Estimators (-1.64) |
| JFR     | Systemic Risk (1.18), Banks (0.94) | Insurance (-1.43), Bank Productivity (-1.41) |
| JFSA    | Correlation/Spillover (1.52), Liquidity (1.47) | Statistical Tests/Estimators (-1.24), Arbitrage (-0.98) |
| JFMM    | Systemic Risk (1.69), Compensation (1.43) | Foreign Exchange (-2.79), Trading (-2.11) |
| JIFM    | Systemic Risk (1.58), Financial Development (1.56) | Foreign Exchange (-2.20), Statistical Tests/Estimators (-2.16) |
| JMCB    | Banks (1.21), Households (1.18) | Statistical Tests/Estimators (-1.42), Bank Productivity (-0.92) |
| JFMB    | Correlation/Spillover (1.10), Portfolio Strategies/Factor Models (1.00) | Statistical Tests/Estimators (-1.33), Interest Rates (-1.04) |
| JFRE    | Liquidity (1.10), Correlation/Spillover (1.09) | Statistical Tests/Estimators (-1.33), Interest Rates (-1.04) |
| JRI     | Risk Management/Hedging (1.20), Households (1.04) | Insurance (-1.52), Statistical Tests/Estimators (-1.08) |
| MANF    | Liquidity (0.60), Correlation/Spillover (0.50) | Insurance (-1.45), Interest Rates (-1.30) |
| PBFJ    | Shareholders (1.59), Compensation (1.47) | Trading (-1.99), Market Reaction (-1.87) |
| QF      | Liquidity (1.38), Systemic Risk (1.15) | Option Pricing (-2.24), Arbitrage (-0.99) |
| RF      | Systemic Risk (2.48), Banks (1.92) | Arbitrage (-2.27), Market Efficiency (2.07) |
| RFS     | Banks (1.50), Compensation (1.48) | Option Pricing (-1.60), Arbitrage (1.52) |
| RJPA    | Compensation (1.55), Shareholders (1.50) | Statistical Tests/Estimators (-2.60), Option Pricing (-1.27) |
Table 7: Topic prevalence sensitivity to time, top-25 university affiliation, and funding

The table reports, for each topic, the estimated coefficients of the regression (11). Constant is the estimate of \( \exp(\alpha_k) \). Time-trend of \( b_k \), Top-25 of \( c_k \), and Funding of \( d_k \). Results are sorted from the highest to the lowest Top-25 coefficients. Coefficients are multiplied by 100 for readability. Signs \(*\), \(*\), and \(*\) indicate that the coefficients are significantly different from zero at the 1%, 5%, and 10% level, respectively.

| Topic                        | Constant | Time-Trend | Top-25 | Funding |
|------------------------------|----------|------------|--------|---------|
| Corporate Investment         | 1.7***    | 0.67***    | 12.39*** | -4.08*** |
| Market Efficiency            | 3.25***   | -0.79***   | 11.94*** | 3.51**  |
| Firm Managers                | 1.76***   | 0.39***    | 11.93*** | -3.95*** |
| Asset Pricing                | 3.26***   | -0.32***   | 11.34*** | -2.52*  |
| Capital Structure            | 2.57***   | 0.36***    | 10.53*** | -5.49*** |
| Investor Preferences         | 2.83***   | 0.32***    | 9.45***  | -1.12   |
| Banks                        | 1.82***   | 1.03***    | 7.42***  | -1.23   |
| Credit                       | 1.63***   | 0.41***    | 7.26***  | 0.41    |
| Liquidity                    | 1.36***   | 0.97***    | 7.16***  | 1.79    |
| Mutual Funds                 | 2.42***   | 0.57***    | 6.74***  | -2.83** |
| Arbitrage                    | 2.62***   | -1.11***   | 6.2***   | -3.07** |
| Pension Plans                | 1.51***   | 0.53***    | 5.82***  | -1.01   |
| Firm Valuation               | 2.47***   | 0.07       | 5.49***  | -10***  |
| Debt Covenant                | 1.52***   | -0.02      | 5.36***  | -2.39*  |
| Orders/Transactions          | 2.16***   | -0.16***   | 5.34***  | 4.75*** |
| Shareholders                 | 2.51***   | 1.07***    | 5.13***  | 5.91*** |
| Insurance                    | 2.19***   | -0.39***   | 4.93***  | -0.88   |
| Households                   | 1.7***    | 0.9***     | 4.67***  | 0.18    |
| Compensation                 | 1.76***   | 1.14***    | 4.54***  | 0.29    |
| Bond/Yields                  | 1.61***   | 0.26***    | 4.36***  | -2.73** |
| Option Pricing               | 4.5***    | -1.35***   | 4.35***  | 8.45*** |
| Risk Management/Hedging      | 1.81***   | 0.13*      | 3.93***  | -0.66   |
| Real Estate                  | 1.71***   | -0.05      | 3.83***  | -0.26   |
| Portfolio Strategies/Factor Models | 3.12*** | -0.05      | 3.56***  | 0.70    |
| Retail Payment Systems       | 1.65***   | 0.08       | 3.51***  | -5.21*** |
| Dividends                    | 1.82***   | -0.35***   | 3.41***  | -3.62** |
| Mergers                      | 2.05***   | 0.13*      | 3.02***  | -5.34*** |
| Competition                  | 1.86***   | 0.91***    | 2.68     | -3.77*** |
| Governance                   | 2.26***   | 0.86***    | 2.53     | -3.43** |
| IPO                          | 2.37***   | -0.29***   | 2.12     | -5.1*** |
| Market (Micro)structure      | 2.48***   | -1.02***   | 1.78     | -0.57   |
| Monetary Policy              | 3.43***   | 0.57**     | -0.21    | -3.92** |
| Analysts                     | 1.9***    | 0.14**     | -0.50    | -4.65*** |
| Earnings                     | 2.36***   | -0.39***   | -0.81    | -6.64*** |
| Trading                      | 2.94***   | -0.97***   | -1.04    | 5.67*** |
| Bank Regulation              | 1.81***   | 0.33***    | -1.53    | -2.24*  |
| Volatility                   | 2.66***   | -0.42***   | -1.61    | 4.97*** |
| Foreign Exchange             | 2.24***   | -0.45***   | -2.72*   | 0.76    |
| Reporting                    | 2.14***   | 0.86***    | -3.94*** | -1.49   |
| Systemic Risk                | 2.74***   | 1.13***    | -4.6***  | -1.37   |
| Interest Rates               | 2.79***   | -0.91***   | -5.16*** | -1.25   |
| Time-Series Models           | 4.67***   | -0.97***   | -5.18*** | 10.44*** |
| Market Reaction              | 3.7***    | -0.62***   | -5.54*** | 2.06    |
| Bank Productivity            | 2.09***   | -0.21***   | -6.68*** | -1.96   |
| Financial Development        | 2.56***   | 0.92***    | -8.19*** | -0.95   |
| Statistical Tests/Estimators | 4.04***   | -1.1***    | -8.27*** | 1.11    |
| Correlation/Spillover        | 2.96***   | 0.77***    | -9.96*** | 6.68*** |
Figure 1: Number of articles published over time
This figure displays the number of articles published by the 32 journals in our corpus during the 1992–2020 period.
Figure 2: Semantic coherence vs. exclusivity
This figure displays the values of semantic coherence (horizontal axis) and exclusivity (vertical axis) for various numbers of topics $K$ is STM (from $K = 20$ to $K = 150$).
Figure 3: Topic correlation network

This figure displays the Spearman correlation network between the 47 topics obtained with the STM. To keep the network readable, we remove any links that are generated by a correlation below 0.45.
Figure 4: Topic prevalence over time
This figure displays the topic prevalence over time.
Figure 5: Journal correlation network

This figure displays the Spearman correlation network between the topics discussed in the journals obtained with the STM. To keep the network readable, we remove any links that are generated by a correlation below 0.45.
Landscape of Academic Finance with the Structural Topic Model

Appendix

David Ardia  Keven Bluteau  Mohammad-Abbas Meghani
### A. Topic labeling

#### Table A.1: Topic labeling

This table lists the 50 topics with the ten-largest prevalent keywords. The topics are sorted in alphabetical order.

| Topic               | Keywords                                                                 |
|---------------------|--------------------------------------------------------------------------|
| Analysts            | analyst, bia, forecast, expectation, earning, side, recommendation, revision, information, earning announcement |
| Arbitrage           | price, market, security, pricing, arbitrage, premium, restriction, share, deviation, discount |
| Asset Pricing       | factor, beta, model, consumption, time, return, asset pricing model, factor model, utility, risk premium |
| Bank Productivity   | efficiency, profitability, profit, productivity, production, revenue, cost, inefficiency, performance, scale |
| Bank Regulation     | bank, banking, act, relationship, action, regulation, client, financial institution, deregulation, reform |
| Banks               | credit, loan, borrower, lender, loans, relationship, bank, lending, collateral, access |
| Bond/Yields         | bond, equity, yield, duration, bond market, corporate bond, ed, credit spread, yield spread, credit default swap |
| Capital Structure   | firm, debt, leverage, financing, capital structure, bankruptcy, asset, equity, financial distress, choice |
| Compensation        | ceo, compensation, network, incentive, firm, performance, turnover, executive, connection, executive compensation |
| Competition         | industry, firm, competition, innovation, sector, product, customer, industries, technology, concentration |
| Corporate Investment| investment, capital, cash flow, project, sensitivity, venture capital, investment decision, private equity, vc, investor |
| Correlation/Spillover| market, correlation, crisis, equity market, time, contagion, spillover, period, stock market, paper |
| Credit              | default, mortgage, credit risk, model, default risk, rate, credit, recovery, securitization, survival |
| Debt Covenant       | call, debt, provision, maturity, issuance, covenant, convertible bond, bondholder, conversion, conflict |
| Dividends           | tax, dividend, firm, dividend policy, payout, dividend payout, capital gain, earning, taxation, tax rate |
| Earnings            | company, announcement, firm, abnormal return, event, employee, stock price, reaction, share, change |
| Financial Development| country, institution, world, integration, economie, determinant, development, region, paper, growth |
| Firm Managers       | manager, management, incentive, institutional investor, decision, hedge fund, investor, effort, ability, concern |
| Firm Valuation      | value, firm, valuation, growth, diversification, change, firm value, market value, business, discount |
| Foreign Exchange    | currency, exchange rate, news, dollar, intervention, exposure, foreign exchange, euro, paper, foreign exchange market |
| Governance          | board, corporate governance, shareholder, governance, firm, director, directors, result, firm performance, monitoring |
| Households          | uncertainty, demand, household, effect, housing, supply, home, participation, program, house price |
| Insurance           | loss, insurance, system, state, law, rule, claim, insurer, liability, article |
| Interest Rates      | interest rate, rate, short term, long term, term structure, long run, change, swap, cointegration, paper |
| Investor Preferences| stock, return, stock return, investor, momentum, relation, dispersion, evidence, cross section, size |
| IPO                 | ipo, issue, issuer, reputation, firm, underwriter, investor, share, underpricing, offer |
| Liquidity           | liquidity, illiquidity, liquidity risk, market, short sell, market liquidity, short sale, impact, commonality, increase |
| Market (Micro)Structure | spread, bid ask spread, market, quote, dealer, stock exchange, market maker, nyse, order flow, inventory |
| Market Efficiency   | model, information, market, equilibrium, agent, financial market, investor, belief, signal, behaviour |
| Market Reaction     | effect, stock market, period, stock return, index, stock price, return, change, year, day |
| Mergers             | target, acquisition, merger, takeover, gain, acquirer, auction, deal, bidder, bid |

*Continued on next page*
| Topic                                | Keywords                                                                 |
|-------------------------------------|--------------------------------------------------------------------------|
| Monetary Policy                     | inflation, shocks, monetary policy, policy, economy, response, model, effect, money, paper |
| Mutual Funds                        | fund, performance, mutual fund, rating, fee, investor, style, credit rating, skill, evidence |
| Option Pricing                      | option, pricing, model, method, option price, formula, valuation, process, time, exercise |
| Orders/Transactions                 | trade, order, trading, transaction, trader, investor, insider, individual investor, purchase, price impact |
| Pension Plans                       | income, benefit, plan, wealth, pension, contribution, age, individual, retirement, employment |
| Portfolio Strategies/Factor Models  | portfolio, strategy, investor, return, asset, index, performance, benchmark, transaction cost, mean variance |
| Real Estate                         | property, real estate, sale, reit, buyer, trust, seller, rent, land, building |
| Reporting                           | information, quality, accounting, disclosure, earning, firm, information asymmetry, report, investor, transparency |
| Retail Payment Systems              | cost, cash, payment, consumer, service, reserve, retail, account, settlement, balance |
| Risk Management/Hedging             | risk, risk management, derivative, contract, hedging, hedge, position, life, exposure, capacity |
| Shareholders                        | firm, control, ownership, government, share, family, china, state, evidence, result |
| Systemic Risk                       | bank, crisis, banks, banking, capital, financial crisis, deposit, asset, paper, systemic risk |
| Testing                             | test, data, estimate, regression, result, sample, hypothesis, power, variable, time series |
| Time-Series Models                  | model, distribution, regime, parameter, estimation, process, paper, out of sample, time, performance |
| Trading                             | trading, volume, exchange, information, market, trading volume, intraday, day, price discovery, future market |
| Volatility                          | volatility, variance, future, commodity, implied volatility, component, jump, index, future price, vix |
| Words In Abstracts                  | paper, finance, research, author, purpose, study, finding, literature, design methodology approach, originality value |
| Words In Research                   | model, approach, problem, method, framework, analysis, paper, technique, methods, application |
| Words In Results                    | evidence, result, measure, magnitude, paper, drift, period, market, explanation, change |
## Table B.2: List of keywords

| Keyword | # | Freq | Keyword | # | Freq |
|---------|---|------|---------|---|------|
| abnormal return | 2 | 1,749 | libor market model | 3 | 69 |
| abnormal return | 3 | 196 | life cycle | 2 | 262 |
| abnormal stock return | 2 | 3 | 126 | life insurance | 2 | 404 |
| academic publisher | 2 | 472 | life insurance industry | 3 | 52 |
| access to finance | 3 | 54 | limit order | 2 | 811 |
| accounting standard | 2 | 116 | limit order book | 3 | 255 |
| active management | 2 | 140 | limit order market | 3 | 82 |
| adverse effect | 2 | 124 | limitation implication | 2 | 228 |
| adverse selection | 2 | 684 | line of business | 3 | 54 |
| adverse selection component | 3 | 58 | line of credit | 3 | 77 |
| adverse selection cost | 2 | 70 | linear model | 2 | 105 |
| adverse selection problem | 3 | 51 | liquid asset | 2 | 142 |
| agency conflict | 2 | 206 | liquidity constraint | 2 | 101 |
| agency cost | 2 | 593 | liquidity creation | 2 | 129 |
| agency theory | 2 | 479 | liquidity measure | 2 | 113 |
| aggregate | 2 | 148 | liquidity premium | 2 | 116 |
| aggregate stock market | 3 | 66 | liquidity provision | 2 | 261 |
| allocation decision | 2 | 134 | liquidity shocks | 2 | 176 |
| alternative explanation | 2 | 137 | liquidity shocks | 2 | 176 |
| alternative model | 2 | 126 | little evidence | 2 | 288 |
| american finance | 3 | 311 | loan contract | 2 | 138 |
| american finance association | 3 | 311 | loan loss | 2 | 189 |
| american option | 2 | 315 | loan loss provision | 3 | 114 |
| analysis reveal | 2 | 203 | loan market | 2 | 171 |
| analysis show | 2 | 203 | loan portfolio | 2 | 139 |
| analyst coverage | 2 | 281 | loan rate | 2 | 142 |
| analyst earnings | 2 | 167 | loan spread | 2 | 125 |
| analyst earnings forecast | 3 | 66 | loan to value | 3 | 61 |
| analyst forecast | 2 | 162 | local market | 1 | 177 |
| analyst recommendation | 2 | 155 | local volatility | 2 | 105 |
| announcement date | 2 | 118 | logit model | 2 | 101 |
| announcement day | 2 | 133 | london stock | 2 | 158 |
| announcement delay | 2 | 103 | london stock exchange | 1 | 142 |
| announcement effect | 2 | 178 | long horizon | 2 | 272 |
| announcement period | 3 | 54 | long run | 2 | 2,088 |
| announcement return | 2 | 276 | long run equilibrium | 3 | 198 |
| arbitrage opportunity | 2 | 298 | long run performance | 3 | 163 |
| arbitrage pricing theory | 3 | 52 | long run relationship | 3 | 111 |
| asian country | 2 | 123 | long run risk | 3 | 61 |
| asian crisis | 2 | 128 | long run stock | 3 | 81 |
| asian financial crisis | 3 | 123 | long term | 2 | 2,643 |
| asian option | 2 | 150 | long term bond | 3 | 51 |
| asian stock market | 3 | 67 | long term care | 3 | 57 |
| ask spread | 2 | 452 | long term debt | 2 | 146 |
| asset allocation | 2 | 772 | long term interest | 3 | 93 |
| asset allocation decision | 2 | 78 | long term investment | 3 | 82 |
| asset class | 2 | 487 | long term investor | 2 | 86 |
| asset growth | 2 | 137 | long term performance | 3 | 145 |
| asset in place | 3 | 59 | long term return | 3 | 57 |
| asset management | 2 | 112 | loss aversion | 2 | 101 |
| asset market | 2 | 237 | loss distribution | 2 | 111 |
| asset price | 2 | 1,019 | loss function | 2 | 115 |
| asset pricing | 2 | 1,697 | loss provision | 2 | 124 |
| asset pricing model | 3 | 980 | low cost | 2 | 102 |
| asset pricing theory | 3 | 73 | low frequency | 2 | 117 |
| asset return | 2 | 534 | low interest rate | 3 | 72 |
| asset risk | 2 | 110 | low level | 2 | 149 |
| asset sale | 2 | 155 | low risk | 2 | 212 |
| asset value | 2 | 244 | low volatility | 2 | 175 |
| asymmetric effect | 2 | 129 | lower bound | 2 | 104 |
| asymmetric information | 2 | 688 | lower cost | 2 | 159 |
| asymmetric volatility | 2 | 105 | lower interest rate | 3 | 55 |
| atheon stock exchange | 3 | 67 | lower level | 2 | 197 |
| audit committee | 2 | 140 | lower return | 2 | 103 |
| australian stock exchange | 3 | 55 | lower risk | 2 | 123 |
| autoregressive conditional heteroskedasticity | 3 | 86 | macroeconomic announcement | 3 | 153 |
| autoregressive model | 2 | 123 | macroeconomic condition | 2 | 138 |
| average return | 2 | 288 | macroeconomic factor | 2 | 122 |
| average stock | 2 | 110 | macroeconomic news | 2 | 208 |
| average investor | 2 | 121 | macroeconomic news announcement | 3 | 63 |
| bad news | 2 | 278 | macroeconomic variable | 2 | 278 |
| balance sheet | 2 | 547 | macroprudential policy | 2 | 118 |
| bank balance sheet | 3 | 60 | main finding | 2 | 242 |
| bank capital | 2 | 375 | main result | 2 | 194 |
| bank capital ratio | 2 | 159 | managerial entrenchment | 3 | 219 |
| bank credit | 2 | 257 | managerial incentive | 2 | 138 |
| bank debt | 2 | 186 | managerial ownership | 2 | 259 |
| bank efficiency | 2 | 175 | margin requirement | 2 | 108 |
| bank equity | 2 | 105 | marginal tax rate | 3 | 59 |
| bank failure | 2 | 172 | market activity | 2 | 111 |
| bank loan | 2 | 144 | market capitalization | 2 | 230 |
| bank loan to value | 2 | 46 | market competition | 2 | 277 |
| bank holding company | 3 | 86 | market development | 2 | 206 |
| bank holding company | 3 | 86 | market development | 2 | 206 |
| bank holding company | 3 | 86 | market discipline | 2 | 260 |
| bank loan | 2 | 517 | market effect | 2 | 109 |
| bank market | 2 | 108 | market efficiency | 2 | 615 |
| bank merger | 2 | 132 | market equilibrium | 2 | 128 |
| bank modification | 2 | 101 | market expectation | 2 | 244 |
| bank performance | 2 | 239 | market expectation | 2 | 128 |
| bank regulation | 2 | 124 | market factor | 2 | 145 |
| bank relationship | 2 | 126 | market friction | 2 | 166 |
| bank risk | 2 | 45 | market impact | 2 | 157 |
| bank size | 2 | 134 | market imperfection | 2 | 107 |
| bank stock | 2 | 185 | market index | 2 | 425 |
| banking crisis | 2 | 178 | market information | 2 | 426 |
| banking industry | 2 | 365 | market integration | 2 | 306 |
| banking market | 2 | 171 | market interest rate | 3 | 75 |
| banking sector | 2 | 453 | market investor | 2 | 189 |
| banking system | 2 | 453 | market level | 2 | 107 |
| barrier option | 2 | 237 | market liquidity | 3 | 603 |
| base iii | 2 | 111 | market maker | 2 | 563 |
| basis point | 2 | 393 | market microstructure | 2 | 276 |
| bear market | 2 | 154 | market model | 2 | 247 |
| benefit of control | 3 | 75 | market movement | 2 | 111 |
| bid ask | 2 | 490 | market order | 2 | 196 |
| bid ask spread | 3 | 386 | market participant | 2 | 240 |
| black schole | 2 | 472 | market participation | 2 | 241 |
| Keyword                           | ngramFreq | Keyword                           | ngramFreq |
|----------------------------------|-----------|-----------------------------------|-----------|
| blackwell publisher              | 2         | market performance                | 136       |
| blackwell publisher ltd          | 3         | market portfolio                  | 112       |
| board composition                 | 2         | market price                      | 118       |
| board independence                | 3         | market quality                    | 154       |
| board of director                 | 3         | market rate                       | 284       |
| board size                        | 3         | market reaction                   | 111       |
| board structure                   | 2         | market response                   | 145       |
| bond fund                         | 2         | market return                     | 119       |
| bond future                       | 2         | market risk                       | 112       |
| bond market                       | 2         | market risk premium               | 885       |
| bond offer                        | 3         | market sentiment                  | 272       |
| bond price                        | 2         | market share                      | 101       |
| bond rating                       | 2         | market size                       | 315       |
| bond yield                        | 3         | market structure                  | 126       |
| bond yield spread                 | 3         | market timing                     | 363       |
| book to market                    | 3         | market uncertainty                | 595       |
| book value                        | 2         | market valuation                  | 155       |
| brownian motion                   | 2         | market value                      | 225       |
| business cycle                    | 2         | market volatility                 | 821       |
| business group                    | 2         | markov chain                      | 168       |
| business media                    | 3         | maximum likelihood                | 643       |
| business model                    | 3         | maximum likelihood estimation     | 71        |
| business media ltd                | 3         | mean reversion                    | 459       |
| call option                       | 2         | mean variance                     | 296       |
| cap stock                         | 2         | measure of liquidity              | 140       |
| capital account                   | 2         | measure of market                 | 112       |
| capital adequacy                  | 2         | measure of risk                   | 144       |
| capital allocation                | 3         | measurement error                 | 165       |
| capital asset                     | 3         | media coverage                    | 363       |
| capital asset pricing             | 3         | media lic                         | 318       |
| capital budgeting                 | 2         | media new york                    | 101       |
| capital control                   | 2         | medium term                       | 139       |
| capital expenditure               | 2         | method of moment                  | 254       |
| capital gain tax                  | 3         | method of payment                 | 303       |
| capital gain tax                  | 3         | methodology approach             | 67        |
| capital inflow                    | 2         | minimum variance                  | 125       |
| capital investment                | 2         | minimum variance portfolio        | 189       |
| capital market                    | 2         | minority shareholder              | 1,314     |
| capital ratio                     | 2         | model cap                         | 223       |
| capital regulation                | 2         | model parameter                   | 165       |
| capital requirement               | 2         | model predict                     | 587       |
| capital structure                 | 2         | model predictions                | 1,468     |
| capital structure choice          | 3         | model specification              | 54        |
| capital structure decision        | 3         | model uncertainty                 | 118       |
| carlo simulation                  | 2         | model with time                   | 299       |
| case study                        | 2         | momentum effect                   | 175       |
| cash dividend                     | 2         | momentum profit                   | 139       |
| cash flow                         | 2         | 1,733 momentum strategy           | 309       |
| cash flow news                    | 3         | monetary policy                   | 52        |
| cash flow rights                  | 3         | monetary policy announcement      | 52        |
| cash flow sensitivity             | 3         | monetary policy                   | 57        |
| cash flow volatility              | 3         | monetary policy shocks            | 69        |
| cash holding                      | 2         | monetary policy transmission      | 650       |
| causal effect                     | 2         | monetary union                    | 122       |
| causality test                    | 2         | money demand                      | 153       |
| cd market                         | 2         | money market                      | 149       |
| cd spread                         | 2         | money supply                      | 265       |
| central bank                      | 2         | monte carlo                       | 987       |
| central bank intervention        | 3         | monte carlo method                | 58        |
| ceo compensation                  | 2         | monte carlo simulation            | 332       |
| ceo turnover                      | 2         | monthly data                      | 239       |
| change in bank                    | 3         | monthly return                    | 65        |
| change in market                  | 3         | moral hazard                      | 97        |
| change over time                  | 3         | moral hazard problem              | 64        |
| chief executive officer           | 2         | more information                  | 282       |
| china stock market                | 3         | more risk                         | 70        |
| chinese firm                       | 2         | mortgage default                  | 136       |
| chinese stock                     | 2         | mortgage market                   | 279       |
| chinese stock market              | 3         | multivariate garch                | 217       |
| class of model                    | 3         | multivariate garch model          | 52        |
| close end                         | 2         | municipal bond                    | 180       |
| close end fund                    | 3         | mutual fund                       | 129       |
| close form                        | 2         | mutual fund industry              | 273       |
| close form solutions              | 3         | mutual fund investor              | 62        |
| commercial bank                   | 2         | mutual fund manager               | 56        |
| commercial banks                  | 2         | mutual fund performance           | 144       |
| commercial real estate            | 3         | nasdaq stock                      | 352       |
| commodity future market           | 3         | natural experiment                | 424       |
| commodity market                  | 2         | natural gas                       | 101       |
| commodity price                   | 2         | negative abnormal return          | 196       |
| common factor                     | 3         | negative correlation              | 280       |
| common risk factor                | 3         | negative impact                   | 158       |
| commonality in liquidity          | 3         | negative relationship             | 89        |
| compensation contract            | 2         | negative return                   | 144       |
| component analysis                | 2         | net asset                         | 116       |
| component cash                    | 2         | net present value                 | 53        |
| conditional correlation           | 2         | net present value                 | 240       |
| conditional heteroskedasticity    | 2         | neural network                    | 136       |
| conditional variance              | 2         | neutral density                   | 226       |
| conditional volatility            | 2         | new approach                      | 243       |
| conflict of interest              | 3         | new data                          | 286       |
| consumption growth                | 3         | new evidence                      | 173       |
| contagion effect                  | 2         | new information                   | 184       |
| contingent claim                  | 2         | new insight                       | 275       |
| continuous time model             | 3         | new issue                         | 360       |
| control rights                    | 2         | new keysmann model                | 80        |
| control shareholder               | 3         | new measure                       | 157       |
| control variable                  | 2         | new method                        | 131       |
| convenience yield                 | 2         | new model                         | 104       |
| conventional wisdom               | 2         | new stock                         | 110       |
| convertible bond                  | 2         | new zealand                       | 352       |
| convertible debt                  | 2         | news announcement                 | 172       |
| copyright institutional investor  | 2         | noise trader                      | 78        |
| corporate board                   | 2         | nominal exchange                  | 107       |
| corporate bond                    | 2         | nominal exchange rate             | 822       |
| corporate bond market             | 3         | nominal interest                  | 119       |
| corporate capital structure       | 2         | nominal interest rate             | 53        |
| corporate cash                    | 2         | normal distribution               | 172       |
| corporate cash holding            | 3         | number of asset                   | 122       |
| corporate control                 | 2         | number of factor                  | 296       |
| corporate debt                    | 2         | number of firm                    | 255       |
| corporate finance                 | 2         | number of share                   | 247       |
| corporate financing               | 2         | number of stock                   | 105       |
| corporate governance              | 2         | number of trade                   | 1,825     |
| corporate governance mechanism    | 3         | numerical example                 | 113       |
| corporate innovation              | 3         | numerical result                  | 145       |
| Continued on next page
Table B.2 – Continued from previous page

| Keyword                        | ngramFreq | Keyword                        | ngramFreq |
|-------------------------------|-----------|-------------------------------|-----------|
| corporate investment          | 2         | 331                           | 2         |
| corporate performance         | 2         | 126                           | 2         |
| corporate risk                | 2         | 159                           | 2         |
| corporate social responsibility| 3         | 229                           | 2         |
| corporate tax                 | 2         | 170                           | 2         |
| correction model              | 2         | 200                           | 2         |
| cost efficiency               | 2         | 204                           | 2         |
| cost of book                  | 3         | 64                            | 3         |
| cost of capital               | 3         | 468                           | 2         |
| cost of debt                  | 3         | 318                           | 2         |
| cost of equity                | 3         | 285                           | 2         |
| country level                 | 2         | 267                           | 2         |
| covariance matrix             | 2         | 200                           | 2         |
| crash risk                    | 3         | 313                           | 2         |
| credit default                | 2         | 195                           | 2         |
| credit default swap           | 3         | 415                           | 2         |
| credit derivative             | 2         | 160                           | 2         |
| credit growth                 | 2         | 197                           | 2         |
| credit line                   | 2         | 157                           | 2         |
| credit market                 | 2         | 411                           | 2         |
| credit quality                | 2         | 235                           | 2         |
| credit rating                 | 2         | 762                           | 2         |
| credit rating agency          | 2         | 72                            | 2         |
| credit risk                   | 2         | 139                           | 2         |
| credit risk model             | 3         | 111                           | 2         |
| credit spread                 | 2         | 661                           | 2         |
| credit supply                 | 2         | 183                           | 2         |
| credit union                  | 2         | 221                           | 3         |
| creditor rights               | 2         | 138                           | 3         |
| crisis period                 | 2         | 619                           | 2         |
| cross border acquisition      | 3         | 61                            | 2         |
| cross border bank             | 3         | 67                            | 2         |
| cross border mergers          | 3         | 60                            | 2         |
| cross country                 | 2         | 519                           | 2         |
| cross listing                 | 2         | 109                           | 2         |
| cross market                  | 2         | 137                           | 2         |
| cross section                 | 2         | 136                           | 2         |
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| investment bank                              | 307       | treasury bond                               | 172       |
| investment banking                           | 101       | type of risk                                | 54        |
| investment behavior                         | 112       | unconventional monetary policy              | 121       |
| investment cash                              | 120       | uncovered interest parity                   | 54        |
| investment cash flow                         | 109       | underlying asset                            | 393       |
| investment decision                          | 616       | underlying asset price                      | 61        |
| investment efficiency                        | 161       | underlying stock                            | 197       |
| investment grade                             | 189       | unique data                                 | 215       |
| investment horizon                           | 255       | unique data set                             | 130       |
| investment management                        | 106       | unique dataset                              | 173       |
| investment opportunity                       | 625       | unit root                                   | 419       |
| investment opportunity set                  | 57        | unit root test                              | 310       |
| investment performance                       | 156       | united kingdom                              | 151       |
| investment policy                            | 182       | university press                            | 101       |
| investment portfolio                         | 110       | us stock market                             | 37        |
| investment strategy                          | 307       | use of derivative                           | 71        |
| investment style                             | 122       | utility function                            | 259       |
| investment trust                             | 192       | valuation effect                            | 252       |
| investor attention                          | 152       | valuation model                             | 194       |
| investor preference                         | 104       | value creation                              | 167       |
| investor protection                          | 378       | value of cash                               | 109       |
| investor sentiment                           | 611       | value of equity                             | 86        |
| ipo firm                                     | 202       | value premium                               | 248       |
| ipo market                                   | 212       | value relevance                             | 133       |
| islamic bank                                 | 191       | value stock                                 | 183       |
| january effect                               | 123       | value theory                                | 109       |
| japanese firm                                | 118       | var model                                   | 204       |
| japanese yen                                | 103       | variance portfolio                          | 120       |
| joint venture                                | 143       | variance ratio                              | 120       |
| journal of banking                           | 53        | variance ratio test                         | 78        |
| journal of finance                           | 240       | variance risk                               | 152       |
| jump diffusion                               | 286       | variance risk premium                       | 64        |
| jump diffusion model                         | 104       | variation in stock                          | 52        |
| jump diffusion process                       | 67        | vector autoregression                       | 284       |
| jump risk                                    | 152       | vector autoregressive model                 | 24        |
| kalman filter                                | 104       | vector error correction                     | 74        |
| kluwer academic publisher                   | 186       | venture capital                            | 619       |
| korean stock market                          | 53        | venture capital vc                         | 69        |
| labor income                                 | 135       | venture capitalist                         | 258       |
| labor market                                 | 253       | viz future                                  | 141       |
| lag relationship                            | 108       | volatility forecast                         | 131       |
| large bank                                   | 234       | volatility index                            | 185       |
| large cap                                    | 117       | volatility model                            | 259       |
| large firm                                   | 289       | volatility of stock                         | 78        |
| large number                                 | 269       | volatility process                          | 108       |
| large sample                                 | 427       | volatility risk                             | 273       |
| large scale                                  | 113       | volatility risk premium                     | 85        |
| large shareholder                            | 182       | volatility smile                            | 107       |
| large stock                                  | 104       | volatility spillover                        | 341       |
| larger firm                                  | 113       | volatility surface                          | 131       |
| lead lag                                     | 206       | voting rights                               | 117       |
| lead lag relationship                        | 98        | wall street                                 | 111       |
| level data                                   | 351       | wealth effect                               | 427       |
| level of debt                                | 52        | wealth transfer                             | 145       |
| level of information                         | 76        | wide range                                  | 209       |
| level of market                              | 53        | world market                                | 127       |
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| Keyword                     | ngramFreq | Keyword                  | ngramFreq |
|-----------------------------|-----------|--------------------------|-----------|
| level of risk               | 3         | year period              | 2         | 292       |
| leverage effect             | 2         | yield curve              | 2         | 396       |
| leverage ratio              | 2         | yield spread             | 2         | 405       |
| levy process                | 2         | york stock               | 2         | 165       |
| liability insurance industry| 3         | york stock exchange      | 3         | 162       |
|                             |           |                          |           |           |