

# Are Business Historians Quantitatively Illiterate?

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## Abstract:

In this article we want to evaluate how often quantitative tools and methods were utilized in the two premier journals in the field of business history in the 1990s. Thus we tap into an important methodological discussion among the post-Chandlerian business historians. We found that the use of even simple quantitative tools increased the citation counts in the *Business History Review*, with the more quantitatively sophisticated articles receiving more citations. The same result did not hold for *Business History*. There were also differences in the subject matter between the two journals that might be linked to the divergence of European and American research interests. In particular, it seems that while both journals became more theoretically-oriented, *Business History Review* concentrated more and more on the emerging IT revolution. Overall, the interdisciplinary appeal of articles using quantitative methods increased, expanding the discourse between disciplines. Business historians are not necessarily quantitatively illiterate, yet they have not embraced quantitative methods enough either to facilitate further fruitful interdisciplinary exchanges.

## INTRODUCTION

Business history is by nature an interdisciplinary analytical endeavor. In this article we want to deconstruct the main research trends in business history in Europe and in the United States (and the world, since the material covered comes from business historians all over the globe) by evaluating the importance and abundance of quantitative methods the scholars have used. Our purpose is to focus on studying all the articles in the two flagship journals in the field of business history in a ten-year period, 1990-2000: *Business History Review*, published in the United States; and *Business History*, published in Great Britain. This research taps into an important discussion in this field, namely the importance and role of quantitative methods utilized in business history today. 20th century business historians by and large avoided using complicated quantitative methods in their analyses of firms and other business actors, at least until the 1960s and 1970s. Since then, the importance of interdisciplinary theories and analytical frameworks has grown tremendously. Subsequently, the influence of economics and economic history has been felt more keenly, and quantitative analysis has become more common. Nonetheless, many business historians still feel at odds or ill-equipped to utilize such methods in modern scholarship.

This article attempts to answer the following questions: 1) How often have quantitative methods been used in recent business history scholarships? 2) What kinds of methods were used? What was the level of sophistication in these analyses? 3) Were there differences between European and American business historians in this respect, or at least between the contributions of the two main journals? 4) If such differences existed, why? We analyze the contributions in these two journals by employing citation and content analysis, as well as historiographical reviews of the recent trends in economic and business history.

It could be argued that there are various different ways to make the scholarship more appealing across the interdisciplinary spectrum: 1) Choosing *topics* with broad appeal (e.g., topics with both current and historical relevance, comparative studies); 2) Use of *theoretical frameworks* with wide appeal and application; 3) Use of *quantitative and qualitative tools and methods*, thereby increasing the comparability of the research. The use of quantitative analysis is something that is common to economic history, economics, and other fields among social sciences. To follow up, we

want to know whether: 1) employing some type of quantification in analysis and in displaying the results increased the article's appeal; and 2) the appeal increased the more sophisticated the analysis became. In the following, we will first review the evolution of the differences between economic and business history in the 20<sup>th</sup> century. Then we will display the results of the content analyses pertaining to the two journals. We conclude the article with a discussion of the main results and the remaining challenges. In fact, we want to ask whether business history's uneasy acceptance, or in some cases resistance to, of quantitative methods has decreased the interdisciplinary appeal of the subject matter and made business historians quantitatively illiterate in the process.

## **ECONOMIC AND BUSINESS HISTORY – QUANTITATIVELY ESTRANGED COUSINS?**

Business history as a discipline has its roots mostly in 20th century history, although many prominent historians and economists, like the famous institutionalist Thorstein Veblen, already dabbled in similar themes in the 19th century, especially during the Gilded Age. As such, initially business history focused on the study of the firm as a historical actor, although modern business history has evolved into a multifaceted and interdisciplinary field that analyzes the development of prominent firms (of different sizes) and businessmen, industries, technological innovations, managerial practices, marketing and banking, labor organizations and disputes, networks and social capital, and so on. While the more traditional business history tended to be more atheoretical (=not grounded on a particular theory), during the last couple of decades business history has become more and more geared towards theories originating from management and other social sciences. In this context, and given the passing of a business history icon Alfred Chandler Jr., it is vital for business historians to take stock of their methodological challenges.

As Arthur Cole has pointed out, early on in the 20th century economic and business historians were connected disciplines, although eventually they drifted apart in the United States. The early practitioners of both attended some of the same conferences. There were also fewer publication outlets before the 1920s. Eventually such unifying publications as *Journal of Economic and Business History* failed, a journal that later turned into the *Journal of Economic History*. Subsequently a separate *Business History Review* provided an outlet for business historians. Economic history was still dominated by historians in the 1930s and 1940s, as opposed to the more theoretically driven quantitative economic history of the 1950s and 1960s.<sup>1</sup> According to Louis Galambos, business history evolved as an isolated American sub-discipline, given its separation from “mainstream” history and its ideological base in the business schools. The wedge between economic and business history in fact has its roots already in the pre-World War II period, during which some key personalities clashed. This division only deepened with the arrival of economists interested in history, the so-called cliometricians, in the 1950s and 1960s. The pre-Chandlerian business history, in fact, was also quite atheoretical by nature, and especially mainstream economic theories, arising from neoclassical modeling, were shunned.<sup>2</sup>

As such, business history become entangled with the broader disciplinary battles and challenges brought to fore in the 1960s and 1970s. The arrival of New Histories, like New Social

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<sup>1</sup> Cole, A. H. (1974). "THE BIRTH OF A NEW SOCIAL SCIENCE DISCIPLINE: Achievements of the First Generation of American Economic and Business Historians – 1893-1974." Retrieved 1.1.2007, 2007, from <http://eh.net/items/birth-of-a-new-social-science-discipline>. See also Cole, A. H. (1962). "What is Business History?" *The Business History Review* 36(1): 98-106.

<sup>2</sup> Galambos, L. (2003). *Identity and the Boundaries of Business History: An Essay on Consensus and Creativity. Business History around the World*. F. Amatori and G. Jones. Cambridge, UK, Cambridge University Press: 11-30., pp. 11-14. Some the definitional divisions can be seen e.g. in Gras, N. S. B. (1938). "Why Study Business History?" 4 3(August): 320-340. The 1960s debates were similar, see e.g. Redlich, F., J. D. Glover, et al. (1962). "Approaches to Business History." *The Business History Review* 36(1 (Business History Conference Issue Dedicated to Henrietta M. Larson)): 61-86, Walton, C. C., R. W. Hidy, et al. (1962). "Business History: Some Major Challenges." *The Business History Review* 36(1 (Business History Issued Dedicated to Henrietta M. Larson)): 21-43.

History and New Military History, was part of the intellectual upheavals of this period. Likewise, this period is associated with a profound change in the field of economic history, when traditional economic history, with its narrative focus, was challenged by this new crop of economic historians, trained as economists. The “new economic historians”, or cliometricians, asked new kinds of questions and challenged long-held assumptions about historical events, such as the economic effects of slavery and the economic importance of railroads. They brought modeling and quantification into the forefront of economic history analysis. In particular, cliometrics made a breakthrough in the United States, saturating economic history journals in the 1970s and 1980s. Conversely, in Europe cliometrics has enjoyed less success, although in the 1990s and early 2000 new journals have been introduced to boost the adoption of these methods by a new crop of European economic historians.<sup>3</sup> This slight turn, certainly not embraced by historians as a whole, toward theoretical and quantitative sophistication in historical research also strongly shadows the mathematical and theoretical complexity that economics as discipline has assumed in the latter half of the 20th century. All in all, the adoption of often fairly complicated econometric tools by economic historians has been viewed with some skepticism by many business historians, with some notable exceptions.

Almost simultaneously with the cliometric revolution, it was the arrival of Alfred Chandler Jr. and his studies of the US economy and multinational corporations in the 1960s and 1970s that made the field of business history more appealing and important for other fields of economic analysis, such as economics and management, especially given Chandler’s preoccupation with providing massive amounts of numerical evidence to prove his points.<sup>4</sup> In fact, maybe it is Chandler, as the most cited and influential business historian of all time, who was best suited to contemplate the challenges faced by business historians in the 21st century. As he noted in 2003, business history before the 1950s was not quantitative in its analytical orientation, at least in terms of the sophistication of the analysis. Furthermore, most of the business historians before this period preferred to analyze individual firms rather than clusters of firms or entire industrial sectors.<sup>5</sup> While Chandler himself transformed the field of business history with his analysis of the *Modern Business Enterprise*, he did not utilize very complicated quantitative methods in his work. Nonetheless, his studies offered broad comparisons of firms over time and geographical location, with precise descriptive numbers of their size and performance, which made his work so appealing across

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<sup>3</sup> See especially Whaples, R. (1991). "A Quantitative History of the Journal of Economic History and the Cliometric Revolution." *The Journal of Economic History* 51(2): 289-301, Whaples, R. (1995). "Where Is There Consensus Among American Economic Historians? The Results of a Survey on Forty Propositions." *The Journal of Economic History* 55(1): 139-154, Whaples, R. (2002). "The Supply and Demand of Economic History: Recent Trends in the Journal of Economic History." *The Journal of Economic History* 62(2): 524-532. Broader reviews of the cliometric revolution can be found in Cole, A. H. (1968). "Economic History in the United States: Formative Years of a Discipline." *The Journal of Economic History* 28: 556-589, Fogel, R. W. (1972). "Current Directions in Economic History." *The Journal of Economic History* 32(1): 1-2, McCloskey, D. N. (1978). "The Achievements of the Cliometric School." *The Journal of Economic History* 38(1): 13-28, McCloskey, D. N. (1987). *Econometric History*. London, MacMillan Education Ltd, Kindleberger, C. P. (1990). *Historical Economics. Art or Science?* Berkeley and Los Angeles, University of California Press, Cipolla, C. M. (1991). *Between History and Economics. An introduction to Economic History*. Oxford, Blackwell, North, D. C. (1997). "Cliometrics - 40 Years Later." *The American Economic Review* 87(2): 412-414. On the Nordic trends, see especially Ojala, J. (2001). "Uutta oppiainetta viriteltiin Lammilla." *Historiallinen Aikakauskirja* 99: 220-224, Eloranta, J. (2003). Kriisien ja konfliktien tutkiminen kvantitatiivisena ilmiönä: Poikkiteollisuuden haaste suomalaiselle sotahistorian tutkimukselle. *Toivon historia - Toivo Nygårdille omistettu juhla*. K. Ahonen, P. Karonen, I. Nummela, J. Ojala and K. H. J. Vilks. Jyväskylä, Gummerus Kirjapaino Oy: 379-396.

<sup>4</sup> See e.g. Chandler, A. D. (1977). *The visible hand: the managerial revolution in American business*. Cambridge, Mass., Belknap Press, Chandler, A. D. and T. Hikino (1994). *Scale and scope: the dynamics of industrial capitalism*. Cambridge, Mass., Belknap Press, Chandler, A. D., F. Amatori, et al. (1997). *Big business and the wealth of nations*. Cambridge ; New York, Cambridge University Press.

<sup>5</sup> Chandler, A. D. j. (2003). *The Opportunities for Business History at the Beginning of the Twenty-First Century. Business History around the World*. F. Amatori and G. Jones. Cambridge, UK, Cambridge University Press: 394-405.

disciplines. His theoretical contributions on the evolution of large firms and industrial sectors during 19<sup>th</sup> and 20<sup>th</sup> centuries provided the necessary theoretical framework to enhance this appeal even further.

According to Richard John, Chandler's influence has always been enhanced by his interdisciplinary terminology and broad comparisons, and he may in fact have had a bigger impact outside the historical profession than within it. Given the rise of post-modern cultural history in the 1980s, this is not particularly surprising. Chandler's ideas and findings have also been frequently discussed by economic historians.<sup>6</sup> Chandler's focus on macroeconomic changes, in the context of major sectors of the economy, has made him particularly attractive for those scholars intent on studying the industrial revolutions.<sup>7</sup> Chandler's towering influence over business history for several decades also tended to stifle debate, at least until several scholars started to challenge his big business model in the 1990s.<sup>8</sup>

Has there been any overlap between economic and business history in recent decades or has the Chandlerian interdisciplinary influence been an isolated phenomenon? In particular, has European economic history, in which cliometrics has had only a partial influence, remained closer to business history? Based on our analysis of the *Scandinavian Economic History Review*, which is a good empirical test of the influence of both cliometrics and business history given the closeness of these two fields in many Nordic universities, the most prominent recent (1990-2002) areas of research have been: 1) economic growth, cycles, industrialization, urbanization; 2) institutions (laws, state, political activity, imperialism); 3) business activities (organizations, industries, energy etc.). This is circa three times as much as in the preceding period (1953-1989), during which the top three were: 1) trade and transport; 2) theory, methods, and literature; 3) demography. Compared with the most prominent economic history journal, the *Journal of Economic History* (JEH) before the 1990s (1941-1990), there are some notable differences in the areas of focus. The top areas of research were: 1) finance; 2) economic growth, cycles, industrialization, urbanization; 3) business activities (organizations, industries, energy etc.). In the more recent issues of JEH (1990-2002) the focus areas have shifted again: 1) institutions (laws, state, political activity, imperialism); 2) Employees, servants, handicrafts, slaves; 3) economic growth, cycles, industrialization, urbanization. The results are compiled in Table 1 below.

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<sup>6</sup> John, R. R. (1997). "Elaborations, Revisions, Dissents: Alfred D. Chandler Jr.'s *The Visible Hand* after Twenty Years." *Business History Review* 71(2 (Summer)): 151-200.. See also Klein, A. (2002). "Professor Chandler's Revolution." *Strategy + Business* **Second Quarter**: 1-8..

<sup>7</sup> Galambos, L. (2003). *Identity and the Boundaries of Business History: An Essay on Consensus and Creativity. Business History around the World*. F. Amatori and G. Jones. Cambridge, UK, Cambridge University Press: 11-30.. See e.g. Mokyr, J. (1990). *The lever of riches: technological creativity and economic progress*. New York, Oxford University Press, Mokyr, J. (1993). *The British industrial revolution: an economic perspective*. Boulder, Westview Press, Mokyr, J. (2002). *The gifts of Athena: historical origins of the knowledge economy*. Princeton, [N.J.], Princeton University Press. on the study of the industrial revolutions and technological change.

<sup>8</sup> See e.g. Coleman, D. (1987). "The Uses and Abuses of Business History." *Business History* 29: 141 - 156, John, R. R. (1997). "Elaborations, Revisions, Dissents: Alfred D. Chandler Jr.'s *The Visible Hand* after Twenty Years." *Business History Review* 71(2 (Summer)): 151-200, Amatori, F. and G. Jones (2003). Introduction. *Business History around the World*. F. Amatori and G. Jones. Cambridge, UK, Cambridge University Press: 1-10.. On the British context, see especially Hannah, L. (1981). "American Business History: A British Perspective." *The Public Historian* 3(3 (Business and History)): 106-119, Jones, G. and K. E. Sluyterman (2003). *British and Dutch Business History. Business History around the World*. F. Amatori and G. Jones. Cambridge, UK, Cambridge University Press: 111-145.. On European big business, as well as diversions from the Chandler model, see Cassis, Y. (1997). *Big business: the European experience in the twentieth century*. Oxford ; New York, Oxford University Press..

Table 1. Shares of Various Categories in the *Journal of Economic History* (JEH, 1941–2002) and the *Scandinavian Economic History Review* (SEHR, 1953–2002) Articles, Percentage of the Total Number of Pages

	JEH 1941-90	JEH 1990-2002 (N=8593 pages)	SEHR 1953 - 1989	SEHR 1990-2002 (N=3058 pages)
<b>Theory, methods, literature</b>	7.4	1.4	13.0	10.3
<b>Growth cycles, industrialization, urbanization</b>	11.9	10.2	6.0	21.8
<b>Crises (wars, recessions)</b>	1.9	6.8	2.7	0.4
<b>Finance (banks, financial sector etc.)</b>	13.1	9.9	6.0	6.4
<b>Formal institutions (law, state, politics, imperialism)</b>	7.1	16.4	10.6	13.9
<b>Trade and transport</b>	8.2	4.4	19.9	7
<b>Business activities (organizations, industries, energy etc.)</b>	11.5	6.6	4.5	13.9
<b>Technology and investments</b>	4.2	3	1.5	1.6
<b>Agriculture, use of land</b>	11.0	7.0	4.5	3.8
<b>Labor</b>	8.9	16.1	2.1	9.2
<b>Population (demography, immigration, inhabitation)</b>	4.7	8.1	11.8	2.1
<b>Welfare (standard of living, inequality, minorities, education)</b>	3.8	8.5	6.3	9
<b>Informal institutions</b>	6.3	1.5	10.9	0.6
<b>Total</b>	96.5	100	100	100

Sources: Whaples (1991), 290; Whaples (2002), 525; The *Journal of Economic History* 1991-2002; *Scandinavian Economic History Review* 1953-2002.

The scholars' interest in business activities declined in the *Journal of Economic History*, most likely because new outlets emerged for business history scholarship, along with the existing top journals like *Business History Review*. In the Nordic countries, *Scandinavian Economic History Review* remained the only feasible output for geographically specific research. The strong emergence of business history in the 1990s seems evident in the data. The data also seem to point to a great degree of specialization in both economic as well as business history. Yet many scholars have indicated that interdisciplinary appeal will be important in future business history scholarship. Jonathan Zeitlin has illustrated how to approach business history in a novel fashion by focusing on history-specific models of analysis.<sup>9</sup> According to John Dunning, most of the research on international business is conducted within disciplines, with little or no interaction. Given the massive increase in the interest on international business, extending even to the history of business, and the growth of business schools in general, it seems business history is well poised

<sup>9</sup> Zeitlin, J. (2003). *Productive Alternatives: Flexibility, Governance, and Strategic Choice in Industrial History. Business History around the World*. F. Amatori and G. Jones. Cambridge, UK, Cambridge University Press: 62-80.

institutionally (with new organizations and journals) and in terms of subject matter to bridge some of these interdisciplinary gaps.<sup>10</sup>

Thus, our research taps into an important discussion in this field, namely the importance and role of quantitative methods in business history. Most business historians avoided using complicated quantitative methods in their analyses of firms and other business actors until the 1960s and 1970s. Since then, the importance of interdisciplinary theories and approaches has grown tremendously. Moreover, the influence of economics and economic history has been felt more keenly, and quantitative analysis has become more common. Nonetheless, many business historians still feel at odds or ill-equipped to utilize such methods in modern scholarship. Therefore, we want to uncover the impact of these changes on the field of business history, especially how much they have changed the practice of business history and the appeal of business history scholarship.

### **QUANTITATIVE METHODS USED IN *BUSINESS HISTORY REVIEW* AND *BUSINESS HISTORY*, 1990-2000**

Our analysis here focuses on finding out how often quantitative methods have been used in recent business history scholarships and what the level of sophistication in these analyses was, as well as whether there were differences between European and American business history scholarship in this respect, in addition to whether the use of quantitative tools enhanced the appeal of a journal article. We analyze the contributions in two journals, *Business History Review* (USA) and *Business History* (UK), in the period 1990-2000 by employing citation and content analysis.

In terms of methodology, we will employ both quantitative and qualitative analysis of the citation patterns and contents. In essence, quantitatively, we will utilize certain bibliometric methods, such as compile data on the citation totals from such key databases as ISI Web and Google Scholar, collect key characteristics of the article contents (e.g. whether theories are explicitly mentioned, the level of quantitative sophistication, focus on a “hot” topic like information technology etc.), and, finally, analyze the determinants of citation patterns using multiple regression analysis. As such, one of the authors here has previously done similar research pertaining to collective political action scholarship in management journals, although in this research we will not undertake such complicated bibliometric methods as quantitative network analysis.<sup>11</sup> Instead, our second focus will be to try to understand the results arising from the quantitative citation and content analysis by linking them to a comprehensive review of the research trends in business history field itself as well as several adjoining disciplines. Ultimately, we will then have a fuller understanding of the role, and changes in it, of quantitatively oriented research in business history.

The citation data comes from both ISI Web (of Knowledge) as well as Google Scholar, which utilize slightly different sources of data – for example, Google Scholar takes into account many Web-based publications that do not show up in ISI Web. In general, bibliometric and citation analyses are fairly well established as a way to gauge the trends in academic discourse quantitatively.<sup>12</sup> In our data sample the ISI and Google Scholar citations were highly correlated with one another for the *Business History Review*, but merited only a 0.51 Pearson correlation coefficient for *Business History*. The use of both, either separately or by combining them, will ensure that our results will be as reliable as possible. The scale we used for the analysis of quantitative sophistication was rather straightforward: 1) NA (=no quantification used); 2) charts

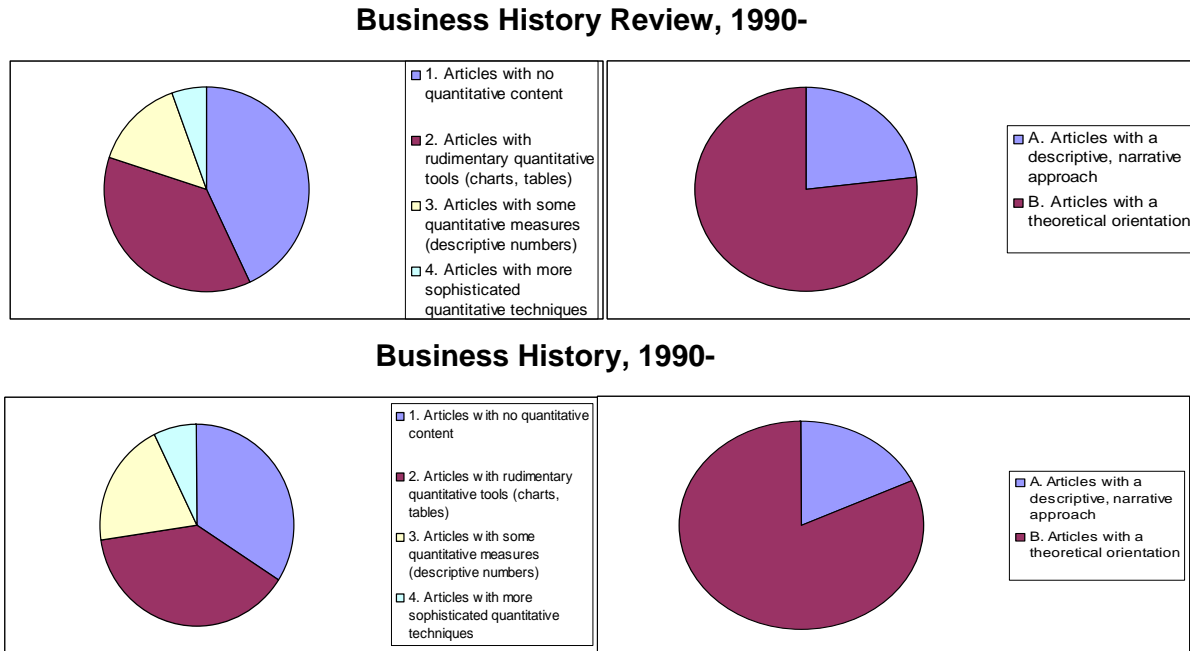
<sup>10</sup> Dunning, J. H. (1989). "The Study of International Business: A Plea for a More Interdisciplinary Approach." *Journal of International Business Studies* 20(3): 411-436.

<sup>11</sup> Skippiari, M., J. Eloranta, et al. (2005). "Conceptual and empirical underpinnings in the research of corporate political activity: A bibliometric analysis." *Finnish Journal of Business Economics* 2(1): 185-208.

<sup>12</sup> See e.g. Cronin, B. (2001). "Bibliometrics and beyond: some thoughts on web-based citation analysis." *Journal of Information Science* 27(1): 1-7, Moed, H. F. (2005). *Citation Analysis in Research Evaluation*. Heidelberg, Springer Verlag, Skippiari, M., J. Eloranta, et al. (2005). "Conceptual and empirical underpinnings in the research of corporate political activity: A bibliometric analysis." *Finnish Journal of Business Economics* 2(1): 185-208.

and/or tables used, including percentages; 3) descriptive statistics (frequency distributions, figures for central tendency and dispersion); 4) more sophisticated methods (ranging from correlations to regressions and simulation techniques).<sup>13</sup>

Figure 1. Distribution of Quantitative Sophistication and Theoretical Depth in the Business History Review and Business History, 1990-2000



Sources: Business History Review and Business History, 1990-2000.

Table 2. Summary Statistics on the Business History Review and Business History, 1990-2000

	<i>Business History Review</i>	<i>Business History</i>
<b>Total number of articles</b>	144	232
<b>1. Articles with no quantitative content</b>	62	79
<b>2. Articles with rudimentary quantitative tools (charts, tables)</b>	53	89
<b>3. Articles with some quantitative measures (descriptive numbers)</b>	21	47
<b>4. Articles with more sophisticated quantitative techniques (correlations, cohorts, regressions)</b>	8	17
<b>A. Articles with a descriptive, narrative approach</b>	33	42
<b>B. Articles with a theoretical orientation (explicitly mentioned)</b>	111	190
<b>Total number of citations</b>	1714	1324
<b>Citations per article (arithmetic mean)</b>	11.9	5.7

Sources: Business History Review and Business History, 1990-2000.

The distribution of articles in these broad categories, as well as whether a particular theory (or theories) was explicitly used in the article, can be seen in Figure 1. The breakdown in terms of articles in different categories and the total as well as average citation counts for both journals can

<sup>13</sup> As point of clarification, only research and review articles were featured here, not book reviews etc.

be found in Table 2. These two journals have similar profiles in terms of the number of articles in the different quantification categories as well as the importance of an explicit theoretical orientation. There are a couple of differences though. First of all, the overall number of articles was larger in Business History. Second, the Business History Review as a whole garnered more citations, perhaps due to the fact that it is an older, more established journal. Moreover, the average citation count per article was about double that of Business History.

*Table 3. Top 10 Cited (Combined Count of Citations from ISI and Google Scholar) in the Business History Review, 1990-2000*

<p><b>1. <i>Strategic Maneuvering and Mass-Market Dynamics: The Triumph of VHS over Beta</i>, by Michael A. Cusumano, Yiorgos Mylonadis, Richard S. Rosenbloom, Vol. 66, No. 1, High-Technology Industries (Spring, 1992), pp. 51-94. <b>Citation count: 222. Quantitative methods index: 3.</b></b></p>
<p><b>2. <i>External Economies and Economic Progress: The Case of the Microcomputer Industry</i>, by Richard N. Langlois, Vol. 66, No. 1, High-Technology Industries (Spring, 1992), pp. 1-50. <b>Citation count: 162. Quantitative methods index: 2.</b></b></p>
<p><b>3. <i>Strategy and Irreversibility in Supplier Relations: The Case of the U.S. Automobile Industry</i>, by Susan Helper, Vol. 65, No. 4, The Automobile Industry (Winter, 1991), pp. 781-824. <b>Citation count: 161. Quantitative methods index: 1.</b></b></p>
<p><b>4. <i>The Rigid Disk Drive Industry: A History of Commercial and Technological Turbulence</i>, by Clayton M. Christensen, Vol. 67, No. 4 (Winter, 1993), pp. 531-588. <b>Citation count: 134. Quantitative methods index: 4.</b></b></p>
<p><b>5. <i>Pharmaceutical Firms and the Transition to Biotechnology: A Study in Strategic Innovation</i>, by Louis Galambos, Jeffrey L. Sturchio, Vol. 72, No. 2, Gender and Business (Summer, 1998), pp. 250-278. <b>Citation count: 59. Quantitative methods index: 2.</b></b></p>
<p><b>6. <i>American Management Consulting Companies in Western Europe, 1920 to 1990: Products, Reputation, and Relationships</i>, by Matthias Kipping, Vol. 73, No. 2 (Summer, 1999), pp. 190-220. <b>Citation count: 53. Quantitative methods index: 2.</b></b></p>
<p><b>7. <i>Co-Evolution of Information-Processing Technology and Use: Interaction between the Life Insurance and Tabulating Industries</i>, by JoAnne Yates, Vol. 67, No. 1 (Spring, 1993), pp. 1-51. <b>Citation count: 47. Quantitative methods index: 1.</b></b></p>
<p><b>8. <i>Capital-Budgeting Systems and Capabilities Investments in U.S. Companies after the Second World War</i>, by Carliss Y. Baldwin, Kim B. Clark, Vol. 68, No. 1, Competitiveness and Capital Investment: The Restructuring of U.S. Industry, 1960-1990 (Spring, 1994), pp. 73-109. <b>Citation count: 37. Quantitative methods index: 2.</b></b></p>
<p><b>9. <i>The Competitive Performance of U.S. Industrial Enterprises since the Second World War</i>, by Alfred D. Chandler, Jr., Vol. 68, No. 1, Competitiveness and Capital Investment: The Restructuring of U.S. Industry, 1960-1990 (Spring, 1994), pp. 1-72. <b>Citation count: 34. Quantitative methods index: 2.</b></b></p>
<p><b>10. <i>The Dynamics of Standing Still: Firestone Tire &amp; Rubber and the Radial Revolution</i>, by Donald N. Sull, Vol. 73, No. 3 (Autumn, 1999), pp. 430-464. <b>Citation count: 34. Quantitative methods index: 2.</b></b></p>

*Sources:* Business History Review and Business History, 1990-2000.

What about the most cited articles – who produced them and why were they so successful? What aspect of their research increased their interdisciplinary appeal? After all, gathering interest outside the field of business history would surely increase an article's citation count. The top performers in both journals are listed in Tables 3 and 4, respectively.



Table 4. Top 10 Cited (Combined Count of Citations from ISI and Google Scholar) in Business History, 1990-2000

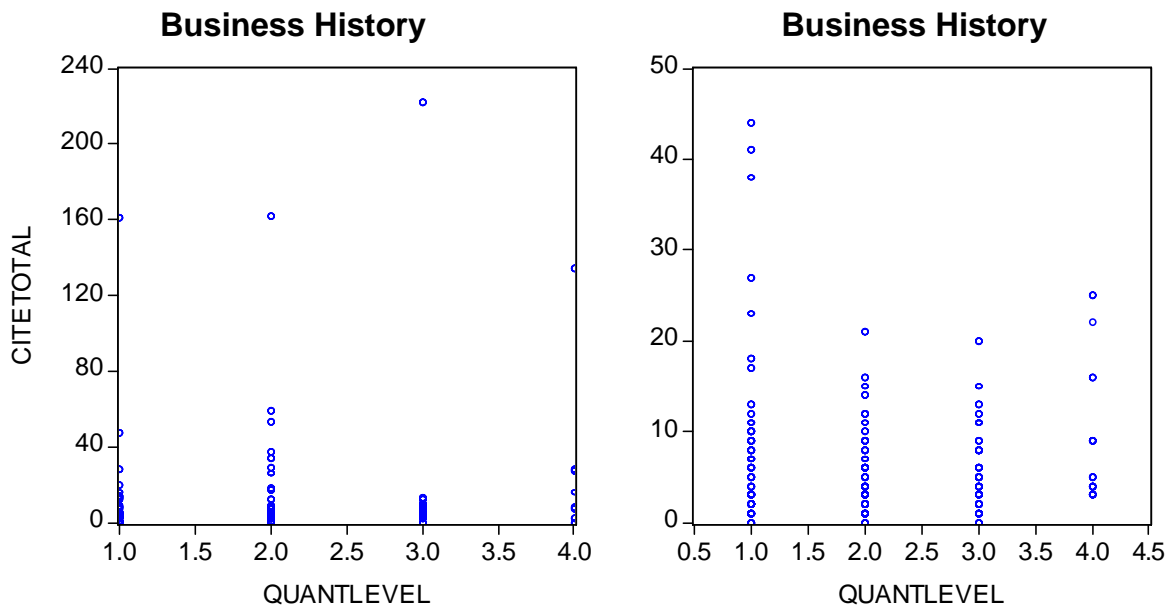
<p>1. <i>The British Cotton Industry and International Competitive Advantage: The State of the Debates</i>, by Mass, William; Lazonick, William, Vol. 32, No. 4 (October, 1990), pp. 9-65. <b>Citation count: 44. Quantitative methods index: 1.</b></p>
<p>2. <i>The family firm in industrial capitalism: International perspectives on hypotheses and history</i>, by Church, Roy, Vol. 35, No. 4 (October, 1993), pp. 17-43. <b>Citation count: 41. Quantitative methods index: 1.</b></p>
<p>3. <i>The Neglected Intangible Asset: The Influence of the Trade Mark on the Rise of the Modern Corporation</i>, by Mira Wilkins, Vol. 634, No. 1 (January, 1992), pp. 66-95. <b>Citation count: 38. Quantitative methods index: 1.</b></p>
<p>4. <i>The Development of Industrial Cost and Management Accounting Before 1850: A Survey of the Evidence</i>, by John Richards Edwards, Edmund Newell, Vol. 33, No. 2 (January, 1990), pp. 35-57. <b>Citation count: 25. Quantitative methods index: 1.</b></p>
<p>5. <i>British Economic Policy and Industrial Performance in the Early Post-War Period</i>, by S.N. Broadberry, N.F.R. Crafts, Vol. 38, No. 4, (October, 1996), pp. 65-91. <b>Citation count: 25. Quantitative methods index: 4.</b></p>
<p>6. <i>Transaction Costs and the Theory of the Firm: The Scope and Limitations of the New Institutional Approach</i>, S.R.H. Jones, Vol. 39, No. 4 (October, 1997), pp. 9-25. <b>Citation count: 23. Quantitative methods index: 1.</b></p>
<p>7. <i>The Development of an Organisational Innovation: Management Buy-Outs in the UK, 1980-97</i>, by Mike Wright, Ken Robbie, Brian Chiplin, Mark Albrighton, Vol. 42, No. 4 (October, 2000), pp. 137-184. <b>Citation count: 22. Quantitative methods index: 4.</b></p>
<p>8. <i>Industrial Lending by English Commercial Banks, 1860s-1914: Why Did Banks Refuse Loans?</i>, by Forrest Capie; Michael Collins, Vol. 38, No. 1, (January, 1996), pp. 26-44. <b>Citation count: 21. Quantitative methods index: 2.</b></p>
<p>9. <i>Foreign Multinationals in British Manufacturing, 1850-1962</i>, by Frances Bostock, Geoffrey Jones, Vol. 36, No. 1 (January, 1994), pp. 89-126. <b>Citation count: 20. Quantitative methods index: 3.</b></p>
<p>10. <i>Consultancies, Institutions and the Diffusion of Taylorism in Britain, Germany and France, 1920s to 1950s</i>, by Matthias Kipping, Vol. 39, No. 4 (October, 1997), pp. 67-83. <b>Citation count: 18. Quantitative methods index: 1.</b></p>

Sources: Business History Review and Business History, 1990-2000.

We can make some preliminary observations from the article titles and citation counts. First, many of these articles used some type of quantitative methods, albeit at a fairly rudimentary level in many cases, perhaps less so in Business History. Usually theoretically groundbreaking articles received the most citations. In the Business History Review, articles focusing on new industries and technologies were the most cited. Second, the citation count for the top 10 in the Business History Review was substantially higher than, respectively, for the top 10 in Business History. Third, well-established scholars, the “rock stars” of business history, such as Chandler, Galambos, Mira Wilkins, and Geoffrey Jones were well represented here, along with some new rising talent in the field, such as Matthias Kipping.

The next follow-up question pertains to whether increasing the quantitative sophistication of the analysis also augmented its citation count? Following good cliometric practice, the first step involves utilizing graphs to eyeball the data in order to determine possible patterns.

Figure 2. Citation Counts versus Level of Quantitative Sophistication in the Business History Review and Business History, 1990-2000



Sources: Business History Review and Business History, 1990-2000.

There seems to be a higher degree of correlation with citation counts and the level of quantitative sophistication in the case of the Business History Review than for Business History. In fact, for the latter, maybe even a reverse correlation or a U-shaped pattern is possible, actually due to the popularity of the purely theoretical articles. These conclusions are reinforced in Table 5, by specifically observing the correlation coefficients between citation counts and the level of quantitative analysis. Thus, it initially seems that there is no link?

Table 5. Correlations between Citations and the Level of Quantitative Analysis

<i>Correlations (measured by Pearson correlation coefficient)</i>	Between ISI citations and level of quantitative analysis	Between Google Scholar citations and level of quantitative analysis	Between combined citations and level of quantitative analysis	Between combined citations and level of quantitative analysis (measured by a dummy = 1 if at least some quantitative tools used)
<b>Business History Review</b>	0.14.	0.17	0.16	0.12
Business History	0.09	-0.12	-0.03	-0.12

Sources: Business History Review and Business History, 1990-2000.

However, it is simply not enough to observe the data and utilize straightforward correlations to determine such relationships, given that correlations can be influenced by numerous factors, including omitted variable bias etc. Therefore, more sophisticated methods are needed to get to the

bottom of this issue, including multiple regression analysis, to isolate the impact of the various variables.<sup>14</sup> The results are displayed in Tables 6, 7, and 8.

*Table 6. Determinants of Citation Totals in the Business History Review*

Dependent Variable: **CITETOTAL**

Method: Least Squares

Date: 04/23/07 Time: 14:41

Sample: 1 144

Included observations: 144

Newey-West HAC Standard Errors & Covariance (lag truncation=4)

<b>Variable</b>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-Statistic</i>	<i>Prob.</i>
<b>C</b>	-6.582038	4.699689	-1.400526	0.1636
<b>QUANTLEVEL</b>	3.956584	2.161320	1.830633	0.0693
<b>GENDERDUMMY</b>	3.563033	5.052898	0.705146	0.4819
<b>ITDUMMY</b>	58.08468	23.00501	2.524871	0.0127
<b>THEORYDUMMY</b>	8.409858	3.563407	2.360061	0.0197
R-squared	0.301318	Mean dependent var		11.90278
Adjusted R-squared	0.281212	S.D. dependent var		29.11163
S.E. of regression	24.68123	Akaike info criterion		9.284068
Sum squared resid	84673.68	Schwarz criterion		9.387187
Log likelihood	-663.4529	F-statistic		14.98653
Durbin-Watson stat	1.990121	Prob(F-statistic)		0.000000

*Sources:* Business History Review and Business History, 1990-2000.

For both journals, autocorrelation was not a problem in the regression analysis (as evidenced by the Durbin-Watson statistic). For Business History Review, the best iteration explains quite a bit of the variation, yet we are most likely still missing some key explanatory variables here. The results do not seem to be corrupted by this, however. The omitted variable bias is likely a factor in the case of Business History. In both cases having a theoretical focus increased the citation count for an article. Having a focus on IT (Information Technologies) industries increased the citation count in the Business History Review, yet it seemed to decrease the count in Business History. In the Business History Review, a higher quantitative sophistication led to more citations in all specifications, whereas it did not seem to be statistically significant for Business History. Gender (measured with a dummy variable) did not determine citation counts for either journal. On the other hand, introducing an institutional dummy variable (see Table 8) came up statistically significant in the case of Business History – thus, having an institutional focus increased the article's citation count. These results are, by and large, in line with the earlier eyeballing of the data.

To illustrate the points made here, we wanted to conclude this analysis by looking at two highest cited articles with quantification level 4 (as defined in this article) as examples. In the Business History Review, the highest cited article with this level of quantification was Clayton Christensen's 1993 article on the rigid disk drive industry.<sup>15</sup> On the one hand, Christensen's article

<sup>14</sup> For further discussion, see e.g. McCloskey, D. N. (1987). *Econometric History*. London, MacMillan Education Ltd, Feinstein, C. H. and M. Thomas (2002). *Making history count: a primer in quantitative methods for historians*. Cambridge; New York, Cambridge University Press..

<sup>15</sup> Clayton, M. C. (1993). "The Rigid Disk Drive Industry: A History of Commercial and Technological Turbulence." *The Business History Review* 67(4): 531-588.

dealt with large-scale, integrated firms (such as IBM), thus linking his contribution to the work of Chandler; on the other, it was a contribution on the rise of information technologies. These characteristics were vital in making it such a widely cited article. Moreover, in terms of quantitative tools, he used both shares and percentages to describe market shares, cumulative figures on learning, means, trends, as well as capacity absorption rates. These kinds of methods would certainly make this article more appealing and accessible especially to economists and management scholars.

*Table 7. Determinants of Citation Totals in Business History, 1990-2000 (Specification 1)*

Dependent Variable: CITETOTAL

Method: Least Squares

Date: 06/23/07 Time: 14:38

Sample: 1 232

Included observations: 232

Newey-West HAC Standard Errors & Covariance (lag truncation=4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
<b>C</b>	3.461798	1.049503	3.298513	0.0011
<b>QUANTLEVEL</b>	-0.323268	0.504731	-0.640476	0.5225
<b>GENDERDUMMY</b>	-0.495469	0.917231	-0.540179	0.5896
<b>ITDUMMY</b>	-3.185472	1.177987	-2.704164	0.0074
<b>THEORYDUMMY</b>	3.740419	0.583561	6.409648	0.0000
R-squared	0.060524	Mean dependent var		5.706897
Adjusted R-squared	0.043970	S.D. dependent var		6.214795
S.E. of regression	6.076628	Akaike info criterion		6.468093
Sum squared resid	8382.067	Schwarz criterion		6.542376
Log likelihood	-745.2988	F-statistic		3.656034
Durbin-Watson stat	2.018723	Prob(F-statistic)		0.006584

*Sources:* Business History Review and Business History, 1990-2000.

In Business History, the highest ranked article with quantification level 4 was a 1996 article by Stephen Broadberry and Nicholas Crafts on British economic policy and industrial performance in the early post-war period.<sup>16</sup> They concentrated on analyzing the post-war British economic performance through the lens of macroeconomic changes and policies, by comparing the period to the 1930s. Obviously, given the expertise of the authors, they utilized historical national accounting data to complement their analysis and engaged in broad productivity comparisons. As far as quantitative methods are concerned, the authors utilized shares and percentages, as well as more complicated multiple regression analyses to test a bargaining model of productivity growth. These quantitative tools would definitely appeal to both economic historians and economists, and possibly to those interested in the debate about British post-war “decline”.

<sup>16</sup> Broadberry, S. and N. F. R. Crafts (1996). "British Economic Policy and Industrial Performance in the Early Post-War Period." *Business History* 38(4): 65-91.

Table 8. *Determinants of Citation Totals in Business History, 1990-2000 (Specification 2)*

Dependent Variable: CITETOTAL

Method: Least Squares

Date: 06/23/07 Time: 14:43

Sample: 1 232

Included observations: 232

Newey-West HAC Standard Errors & Covariance (lag truncation=4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
<b>C</b>	2.810782	0.362521	7.753430	0.0000
<b>ITDUMMY</b>	-3.026415	1.078455	-2.806250	0.0054
<b>THEORYDUMMY</b>	3.431267	0.544661	6.299816	0.0000
<b>INSTDUMMY</b>	4.007951	2.332106	1.718597	0.0870
R-squared	0.071142	Mean dependent var		5.706897
Adjusted R-squared	0.058920	S.D. dependent var		6.214795
S.E. of regression	6.028927	Akaike info criterion		6.448106
Sum squared resid	8287.336	Schwarz criterion		6.507533
Log likelihood	-743.9803	F-statistic		5.820893
Durbin-Watson stat	2.014576	Prob(F-statistic)		0.000754

Sources: Business History Review and Business History, 1990-2000.

## CONCLUSIONS AND FURTHER CHALLENGES

The goal of this article was to evaluate whether quantitative methods have been and are still relevant for business history scholarship, and to analyze whether they should be employed more often, to increase the interdisciplinary appeal of the article. We did this by first discussing the divergence of economic and business history, especially due to the adoption of quantitative methods and economic theories in the analysis. Then we specifically addressed the following questions: 1) How extensively were quantitative methods used in recent business history scholarship? 2) Did employing some quantitative results and analysis increase an article's (interdisciplinary) appeal? 3) Did more quantitatively sophisticated article receive more citations? In particular, we analyzed the articles in two key journals in the field, *The Business History Review* and *Business History*, in the period 1990-2000 by evaluating their citation counts.

On the basis of our quantitative (and qualitative) analyses, we found that: 1) simpler quantitative tools were employed quite often, but not necessarily going much beyond that; 2) yes, quantitative methods and presentation increased the appeal of the scholarship in the case of the *Business History Review* (which is a more established journal, cited more overall), but not in the case of *Business History* (in which theoretical focus mattered more); 3) the more sophisticated the methods used and the theoretical depth were, on average, the more cited the article became. There may be some differences in the topics and approaches covered in the European journal compared to the American one, possibly some paradigmatic difference. In particular, a focus on the emergence of IT industries and technologies was crucial in the *Business History Review*. In *Business History*, theoretical articles proved quite popular, especially when they addressed institutional theories and analysis.

There are a couple of implications arising from this research for current business history scholarship. First of all, the use of any method with broad applicability in different fields of science increases its appeal across the board. Second, quantitative methods are well suited for

business history analysis, and should probably be applied more widely, even if it were done at a rudimentary level like Chandler did in his studies. Third, the application of quantitative methods in business history scholarship could provide a bridge between the two estranged cousins, economic and business history, in the long run, leading to fruitful discourse on several key areas (for example, the industrial revolutions and other topics bridging the gap between macro and micro economic applications).

Obviously, there are several challenges that remain. We have not yet engaged in broad analysis of the individual contributions in business history, or the qualitative trends. We have simply scratched the surface on many of those issues. Moreover, we are simply reporting our findings concerning the contributions in these two journals, thus excluding a lot of business history scholarship published in other journals and monographs. Nonetheless, we argue that the results are clear and persuasive. Finally, business historians are not illiterate per se, as we ask provocatively in our title, but use quantitative methods still quite sparingly. Contributions that utilized such methods at a deeper level were clearly welcomed by the academic community as a whole, and business historians should move more in this direction in the future.

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