BUSINESS AND THE MAKING OF AMERICAN ECONOMETRICS, 1910 – 1940

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Abstract
From 1910 – 1940, the practice of business and the practice of economics came to inform one another in novel ways, a reconfiguration that included the emergence of econometrics. The core locus for this intersection came from the rise of commercial forecasting—whether analyses of future demand, price and cost fluctuations, or financial markets—based on the analysis of statistical data. Forecasting united a suite of specific interactions with the practice of economics: business support for the construction of specific economic data (making possible new forms of econometric analysis); the creation of a new social role: the economist/business expert with advanced academic training (who engaged in both practices and used each to serve the other); and the consequent development of new knowledge (especially in demand analysis and financial economics).

Introduction
Assessing the contributions of businesspersons to econometrics raises two basic questions: who counts as a businessperson, and what do we mean by econometrics? When considering businesspersons in early twentieth-century America, we might imagine bespectacled corporate managers, powerful industrial magnates, conservative New York bankers, or perhaps slick Wall Street brokers. Econometrics, on the other hand, seems the most abstruse part of economics—especially if we picture the later work of the Cowles Commission—conjuring images of dense mathematical equations or complex arguments about proper statistical analysis. If our question is “What direct contribution did bankers and corporate managers make to the major models or theories that populated Econometrica at mid-century?”, then the answer would seem to be “Not much.”

Yet that question may be misleading. First of all, the category of businessperson includes anyone engaged in business activities, especially in an entrepreneurial or leadership role. Today, we are very familiar with academic economists leading companies or acting as consultants, and similar scenarios existed in the early twentieth century (though perhaps on a lesser scale). Second, by taking

Footnote:

1 Fourcade, et. al. (2015, 90) notes that a forthcoming essay by Glen Weyl shows “that 40 percent of the income of economic authors in the fields of finance and industrial organization comes from consulting activities.”
the mid-century Cowles Commission or large-scale macroeconomic models as definitive of econometrics, we risk missing the far more diverse applications and work that appeared under that label in the interwar era. Finally, by reducing “econometrics” to models or theoretical propositions, the question shortcuts a wide range of features that in fact characterize the work of econometricians at any given time: What methods do they use? What evidence do they employ? How do they structure their arguments? In which institutional contexts do they work? What social networks, hierarchies of power, and social norms shape their communities? How does the knowledge that they generate relate to public debates, other forms of social knowledge, government policy, and of course the actions of businesspersons?2

To avoid the dangers of the “intuitive” question, this essay takes a different approach. Rather than asking how certain individuals influenced particular propositions, I will examine the interactions between two forms of social practice. What relationships existed between practices of business and those of econometrics in the United States in the decades prior to the Second World War, the time period that marked the beginning of econometrics? Because practices are enacted by people, my question about the practices of business and econometrics will take us back to our original topic: what contributions have businesspersons made to economics? But instead of examining how a few individuals affected certain propositions, we will be considering how participants in the practice of business affected the practice of economics, and vice-versa.

By adopting the term “practice,” I’m signaling my debt to an extensive literature on “practice theory” that has developed over the last four decades.3 Practices, as I’m using the concept here, contain three components: (1) collections of actions that are (2) linked by teleology (they can be understood as elements in a goal-oriented process) and (3) are subject to normative evaluation (they, or the overall process of which they are a part, can be done poorly or well). These three components have different roles. Practices are constituted by relationships of accountability that provide their normative qualities. That normativity implies teleological claims, views of what denotes relative success in the practice (though those views may be disputed by various participants). Finally, practices are enacted through embodied actions.

Practices can be of varying scales and exist on multiple levels. They may be nested within one another (as titration is a lower-level practice within the larger practice of laboratory chemistry) or they may overlap in other complex relationships. Because practices are constituted by relationships of accountability, their boundaries are inherently subjective: a blogger may castigate me for writing poor history, but I may dismiss his comments if I do not regard him as part of the community to whom I am accountable. Yet that does not mean that I can always unilaterally define the boundaries of a practice: I may disregard the blogger; I may less easily ignore the views of journal editors, referees, or publishers. Precisely because a practice is a social endeavor, subjectivity does not imply equality of power or authority. As the publishing example indicates, institutions can

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2 For a similar argument about the need to expand our conception of the history of economics, see Maas, Mata, and Davis (2011). These authors also adopt the term “practice,” albeit without the same theoretical commitments I introduce below.

3 For overviews of practice theory, see Schatzki (1996); Schatzki, Knorr-Cetina, and Savigny (2001); Rouse (2002); Nicolini (2013). I have described my own use of this approach at length in Stapleford (2016).
provide structure and support to a practice (including organizing its power relations), though they do not (of themselves) constitute the practice.

Doing economics is thus a higher level practice (i.e., one that is formed from a range of lower-level practices). It is subject to social accountability and is teleological: economists try to accomplish certain things, and what constitutes a valid accomplishment is subject to normative evaluation. Nonetheless, each economist may have a slightly different view of the goals of economics and its proper norms. Marxist economists, for example, will have different expectations for economic research than will neoclassical economists, and hence the practices and norms that comprise economics will be different for Marxists than for neoclassicists.

Individual businesses are also practices: they have goals (selling products or services, making a profit) and are comprised by networks of accountability and power relations. Participating in exchanges renders them accountable to other entities (customers, suppliers) who may render judgment on the business by taking their trade elsewhere. The modern firm is further accountable to various government agencies, and conceivably to banks, investors, or shareholders. To pursue their goal (making a profit), these firms must therefore engage in a range of practices: financial, legal, accounting, manufacturing, marketing, etc. Firms with similar product lines or services may come to regard themselves as members of a single practice (e.g., coal mining) and create strategic alliances (trade associations), attempt to establish norms, share information, and so forth. And within the twentieth century, white-collar participants often regarded themselves as members of a looser practice; they were not the tradesmen or merchants of earlier periods, but businessmen.

Higher level practices such as business or economics may become entangled in a variety of ways. They may be brought to bear upon one another, as when economists attempt to analyze the behavior of business firms. Participants may engage in common, lower level practices (such as the common use of certain statistical techniques), or they may share or exchange artifacts (such as records of trades on a stock exchange). Individuals may participate in both practices at once, or move from one to the other. And of course participation is never a binary affair: a company manager may publish a single article in an economics journal, which entails participating in the practice of economics, but that participation is by no means the same as a college professor who sees teaching and publication in economics as her primary vocation.

I argue that from 1910 – 1940, the practice of business and the practice of economics came to inform one another in novel ways, a reconfiguration that included the emergence of econometrics. Econometrics, which I will define here loosely as the mathematical (and especially statistical) analysis of economic data, offers a doubly-valuable site for exploring the intersections between business and economics. On the one hand, econometrics became a primary interface between business and economics: analyzing quantitative data seemed to give economics a real-world, empirical bite that appealed to businessmen who were simultaneously employing statisticians and adopting data analysis in other fields. On the other hand, examining the ties between business and

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4 Today, econometrics is better described as the creation and evaluation of economic models through the statistical analysis of data. However, that definition is anachronistic for the 1930s, when the Econometric Society actively recruited members such as Wesley Mitchell who did not develop models.
econometrics reveals the surrounding practices that helped to shape econometrics, indeed that made it possible in the specific ways in which it appeared.\(^5\)

The core locus for the intersection of business and econometrics came from the rise of commercial forecasting—whether predictions of future demand, price and cost fluctuations, or financial markets—based on the analysis of statistical data. That broader transformation united a suite of specific interactions with the practice of economics: business support for the construction of specific economic data (making possible new forms of econometric analysis); the creation of a new social role: the economist/business expert with advanced academic training (who engaged in both practices and used each to serve the other); and the consequent development of new knowledge (especially in demand analysis and financial economics).

**BUSINESS, ECONOMICS, AND THE RISE OF COMMERCIAL FORECASTING**

When the American Economics Association (AEA) formed in 1885, only 43 of its 181 original members listed a university affiliation (Ely 1886). Even after academics gained clear control over the leadership of the organization in the late nineteenth century, the general membership stretched well beyond university faculty or those with doctoral degrees. Indeed, through the 1910s, the latter two categories were far too small for a national society with grand ambitions and a costly journal. For financial solvency, therefore, if nothing else, the AEA needed “thoughtful businessmen, newspaper men and holders of public office,” as a recruitment campaign of 1899 put it (Coats 1960, 571).

Unfortunately, building long-term ties to the business community proved difficult. Although some businessmen supported the AEA, the membership drives repeatedly stalled up until the First World War. Many new recruits declined to renew the following year, and the AEA offices fielded regular and repeated complaints that the organization’s journal, the *American Economic Review* (AER), did not publish material of interest to business members (Coats 1964, 263–75; Bernstein 2001, 16–20). Businessmen did not need or seek the sanction of university faculty to pronounce on government policies, nor did they seem impressed with academic theorizing. Most critically, through the first two decades of the twentieth century, most businessmen did not see the expertise of academic economists as relevant to their own daily work – a disjuncture often described by faculty in business schools as well (Khurana 2010, 164–65). The shift toward a more favorable view of economics had multiple sources, but the most significant change for the future of econometrics was the rise in commercial forecasting.

Commercial forecasting emerged from two related business activities that gained prominence in the early twentieth century: efforts to forecast general business conditions and the development of market research. Both formed part of the broader expansion in what Malcolm C. Rorty would later dub the “statistical control of business activities,” that is, the use of statistical data and analysis to guide managerial decisions (Rorty 1923). That expansion was closely linked to the structural changes in American manufacturing and retailing documented by Alfred Chandler (1977): mass production, mass distribution, vertical integration, managerial hierarchy, and a multi-unit corporate organization. The scale of what Chandler called the “modern business enterprise” and the scope of its market

\(^5\) For a similar approach to thinking about business schools and economics, but using the metaphorical concept of ecologies rather than practices, see Fourcade and Khurana (2013).
activity invited quantitative data for managerial oversight (Chandler 1977, 109–20; Yates 1989). As Chandler argued, managers became “technical and professional” (1977, 9), with their self-understanding fueled in part by the new business schools that promised a scientific approach to management (Khurana 2010). Meanwhile, the size of the new corporations enabled investment in specialized expertise, or even entire units devoted to statistical research. Corporate interest in business forecasting and market research found their origins in this nexus.

Outside the corporation itself, the growth in capital markets and commodity exchanges created substantial demand for financial information and predictions. In the mid-nineteenth century, technological changes made possible the birth of major commodities exchanges and the speculation on commodities futures (Cronon 2009, 109–46). Later that century, trading volume in corporate stocks grew rapidly, with volume on the New York Stock Exchange increasing more than threefold amidst the great corporate merger movement at the turn of the century (Ott 2011, 20). Likewise, firms and entrepreneurs increasingly turned to bond markets to raise capital for new enterprises, with one prominent broker estimating that roughly $1.5 billion in bonds were issued annually by 1912 (Chamberlain 1912, 9).

Prediction has long been part of business, and certainly part of financial speculation. Nonetheless, the sale of forecasts justified by statistical analyses first began in the U.S. in the midst of these structural changes in business practices, and especially in the wake of the Panic of 1907, with pioneers such as Roger Babson, James H. Brookmire, and Thomas Gibson trading on the cognitive authority of the natural sciences and quantified knowledge (Friedman 2014, 3). Formalized market research appeared at roughly the same time, with business schools offering the first courses on marketing in the early 1900s and the first independent market research firms and company divisions appearing in the 1910s (Lockley 1950, 733–35; Wells 1999, 41–49, 258–71).

During this early period, contact between commercial forecasting and the practice of academic economics (or better, political economy) occurred primarily at second hand. None of the major business forecasters had advanced training in political economy or closely related fields, nor did the first pioneers of commercial market research such as Curtis Parlin, J. George Frederick (founder of The Business Bourse), or R. O. Eastman (founder of Eastman Business Research). Yet the groundwork existed for closer ties. Forecasters drew upon the business cycle research of academic economists, whether older scholars such as William Stanley Jevons or newer entrants such as Irving Fisher, and inserted their own work into the conversations. Thus Brookmire published a paper in the American Economic Review comparing his forecasting approach to those of Jevons, Babson, and Fisher (1913), while Babson published papers in the Annals of the American Academy of Political and Social Science, had his books reviewed in the AER, chaired the AEA’s membership committee in the 1910s (Coats 1964, 265), and made regular appearances at its conferences.

From the opposite side, work on business cycles flourished among academic economists (Fisher 1911; Pigou 1912; Hawtrey 1913; Mitchell 1913; Moore 1914), with Irving Fisher explicitly treating his “equation of exchange” (the famous MV = PT and its descendants) as a forecasting tool (Friedman 2014, 68–73). Meanwhile, numerous economists had begun using regression techniques to correlate prices and quantities for different commodities in the 1910s (Stigler 1954, 103–13), analyses that would become commonplace in market research in the 1920s and 1930s.
The most crucial intersections, though, came within business schools and schools of agriculture at land-grant institutions (such as the University of Wisconsin, Cornell University, and the University of Minnesota). Both were service organizations, aiming to help general businessmen or farmers. Both attracted academic economists seeking applied work and brought them into contact with businessmen, trade associations, editors, and policymakers who hoped to rationalize their domains through empirical, scientific study.\(^6\) Both made “doing research” and “improving business practices” fundamentally the same. Thus it is no surprise that when U.S. Rubber sought help for its market research project in 1915, it turned to the economist and professor at Wisconsin’s extension school, Paul Nystrom (Lockley 1950, 735), or that the economist Louis D. H. Weld (who had taught at Wharton and at Minnesota’s College of Agriculture) was chosen by Swift & Company to head their new Commercial Research division (Cowan 1960).

Against this backdrop, the First World War became the catalyst that pulled commercial forecasting and academic economics closely together. The war drew both businessmen and economists with academic training to Washington; it brought them into contact; confronted them with vast problems of logistics, production, distribution, management, and finance; and eventually taught them that statistics could be powerful tools for control, oversight, and planning. The intersections during that brief but intense year-and-a-half of U.S. involvement are too numerous to elucidate in full. Leonard Ayres, a statistician with doctoral training in education who led the War Department’s Statistical Branch, parlayed his experience into a position with the Cleveland Trust bank, where he dispensed analysis and economic predictions through its monthly Business Bulletin, becoming one of the most prominent interwar commercial forecasters. There was Edwin Gay, the Harvard economist turned dean of the business school, who led the civilian counterpart to Ayres’ organization (the Central Bureau of Planning and Statistics) and would help establish the National Bureau of Economic Research after the war. There were the businessmen who headed to Washington to help manage production, planning, or wartime propaganda, even including Roger Babson (Friedman 2013, 35). There were the “hundreds” of economists who entered government service during the war according to historian Robert Church (Church 1974, 599).\(^7\) Though economists had little managerial authority during the war outside their bastions in statistical agencies, they nonetheless saw the potential power of their work. As Wesley Mitchell put it, “Once secure a quantitative statement of the crucial elements in an official’s problem, draw it up in concise form, illuminate the tables with a chart or two, bind the memorandum in an attractive cover tied with a neat bow-knot, and it is an exceptional man who will reject your aid” (Mitchell 1919, 231–32). Businessmen, at least, did not seem immune: Princeton economist Frank Fetter reflected that corporate managers “who had seen the work of economists during the war paid them the sincere flattery of outbidding the universities and opening economic research departments” (Fetter 1925, 15).

\(^6\) On agricultural economics at the land-grant institutions in this period, see Banzhaf (2006b), or more exhaustively, Taylor and Taylor (1952). On economists and early business schools, see Fourcade and Khurana (2013, 128–34).

\(^7\) Church’s estimate appears to be impressionistic, and there are no firm figures, but it does not seem to be unreasonable. During the war, the Federal Civil Service Commission asked the AEA to evaluate 900 individuals who had applied to the federal government as “economic expert[s]” (Coats 1964, 274).
Fetter’s assessment should be taken with a grain of salt, but there is no question that statistical research, including commercial forecasting, became a substantial part of business practices during the New Era of the 1920s. Market research boomed, spurred in part by the unexpected recession in 1920-1921 and by a growing sense that transformations in American demography, income, spending habits, and consumer goods had altered the structure of consumer markets (Ward 1996, 244–45; Wells 1999, 232–33, 291–93). In 1923, an informal survey by Louis Weld found that at least 18 of America’s 200 largest companies had separate commercial research divisions, others relied on general statistical departments or sales departments, and many turned to advertising agencies (half of whom had independent research departments themselves; Weld 1923, 179–81). Not only was market research expanding, it was drawing more heavily on statistical tools: Weld used multiple correlation analysis to determine the key factors affecting demand for meat, while Henry Weaver at General Motors compiled massive amounts of data to forecast auto sales. By 1938, Weaver’s division would have a staff of 37 and an annual budget of $500,000 (Wells 1999, 280–81, 298–304). Though many companies continued to rely on qualitative assessments of data and (probably correctly) warned of overly mechanical methods, papers and discussions about forecasting demand and prices appeared repeatedly at the meetings of the American Statistical Association, as well as in the pages of the *Journal of the American Statistical Association*, the *Journal of Farm Economics*, and the *Harvard Business Review*, and the topic even made its way into the titles of economics dissertations.8

General business forecasting began to soar as well. By 1925, Irving Fisher could claim that there were “nearly fourscore forecasting agencies to help the business man” (Fisher 1925, 180). Probably more accurately, an early major text on business forecasting by Charles Hardy and Garfield Cox9 pointed to “more than half a dozen” agencies with a “national clientele.” Of these, the five leading agencies had a total subscription list of almost 35,000; Babson (the largest) had 12,000 subscribers in 1920, roughly 300 employees, and revenue of almost $1.3 million (Hardy and Cox 1927, 1, 41; Friedman 2014, 38). Equally significant, Hardy and Cox reported that “scores of large corporations” had divisions of commercial research that engaged in general forecasting. Henry S. Dennison (a corporate liberal and scientific management enthusiast who had served on Gay’s statistical board during the war) used statistics and charting to guide a range of decisions in his manufacturing company (Dennison 1922). Executives at the Bell System received monthly narrative forecasts and an annual chart projecting industrial fluctuations (Richter 1928, 116–17; Richter 1929), Eastman Kodak statisticians correlated their own sales figures with various economic “barometers” and indices to forecast demand (Folsom 1924, 186–87), and a special meeting on business cycles in 1923 at the American Statistical Association drew academics such as Mitchell, Fisher, or Edmund

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8 This assessment is based on a search for “forecasting” in the *Journal of the American Statistical Association* (JASA), the *Harvard Business Review* (HBS), the *Journal of Farm Economics* (JFE), and the *American Economic Review* (AER). Dissertation titles in economics or political economy featuring “forecasting” first appeared in 1924 and continued every year for the rest of the decade. The AER had far fewer journal articles featuring “forecasting”; instead, authors opted either for an audience focused on statistical tools (JASA) or applied journals such as JFE or HBS.

9 The economist and historian Charles O. Hardy worked for the business schools at Chicago and the University of Iowa before moving to the Brookings Institution in 1924. Garfield Cox taught in Chicago’s School of Commerce in 1927, received his doctorate from the university shortly thereafter, became professor of finance in 1930, dean of the school of finance in 1942, and dean of the entire business school from 1945-1952.
Day (Harvard), but also representatives from American Telephone & Telegraph and Western Electric (American Statistical Association 1923). Academic economists, commercial forecasters, and business school faculty published at least seven different books on business forecasting between 1921 and 1928 (Jordan 1921; Vance 1922; Persons, Foster, and Hettinger 1924; Vance 1925; Hardy and Cox 1927; Jordan 1927; Hickernell 1928).

Corporate enthusiasm was matched by that from the insurance companies, banks, and individual investors who flooded U.S. capital markets during and after the First World War. Trading volume on U.S. stock exchanges underwent a second boom over this period, again increasing nearly threefold from 1915 to 1930 (O'Sullivan 2007). Not only did the volume increase; so too did the number of investors, from roughly 500,000 in 1900 to nearly 10 million by 1929 (Friedman 2014, 8).

By the 1920s, therefore, the stage had been set for closer ties between business and academic economics, centered on the common use of quantitative data and statistical analysis on a range of topics. The next sections will take us through key modes of interaction.

BUSINESS AND ECONOMIC DATA

Econometrics requires data, and only rarely do economists gather original data themselves. Econometricians are therefore dependent on the work of others for their basic material, usually from two sources: businesses (or, more precisely, trade and business associations) and government.

Sometimes, firms or industries generate economic data as a side product of their normal operations. Prices for securities or commodities traded on major markets fall into this category. In a similar way, information produced through government operations can also unintentionally become a source for economic analysis. Data on imports and exports gathered for tax purposes provides one example, as do income tax data, the extensive information railroads and public utilities collected in the course of government regulation and oversight, or legal filings such as bankruptcies or building permits. By the early twentieth century, much of these data were compiled and republished by business and financial newspapers such as The Commercial and Financial Chronicle, Bradstreet's, and Dun's Review (Copeland 1915). Meanwhile, the same factors that prompted interest in commercial forecasting also drove more intentional efforts to assess economic conditions, with trade journals, for example, collecting data on prices and production as guides for rationalized planning (Copeland 1915, 535–43).

Beginning in the mid-1910s, those efforts were aided and supplemented by government agencies. The creation of the Federal Reserve in 1913 “resulted in massive improvements in financial statistics and created a strong force for the improvement of business cycle statistics in general,” with its Bulletin becoming “the most important monthly publication for financial statistics in the Nation” (J. W. Duncan and Shelton 1978, 8). In the postwar Department of Commerce, the former speculator and engineer Herbert Hoover boosted the budget of his statistical agency, the Bureau of Foreign and Domestic Commerce (BFDC), by nearly 8,000 percent and made it a clearinghouse for a wide range of business and financial data from firms, trade associations, city and state governments, and other federal agencies. By 1930, the BFDC's massive statistical output had become a vital part the American business landscape and an object of envy for European businessmen and economists (J. W. Duncan and Shelton 1978, 10–11, 14–16; Leach 1993, 358–65;
Wells 1999, 313–56). Meanwhile, in the Department of Agriculture, Henry Wallace created the Bureau of Agricultural Economics (BAE) and soon funneled both money and manpower into it in order to produce data and analysis that would aid farmers (McDean 1983).

By compiling statistics from a range of disparate sources and consolidating them into uniform data series, these agencies played an important role in making statistics more readily available to economists and businessmen alike, and it is no surprise that their publications were soon cited in economics journals and would become critical parts of business-cycle research, national income accounting, and macroeconomic modeling. Yet the government agencies were equally important as institutional sites for supporting the economic analysis of statistical data. Hoover tapped the Harvard Business School for ideas and leadership for the BFDC (including the economic historian Julius Klein, one of Edwin Gay’s students), worked closely with (and financially supported) the newly-founded National Bureau of Economic Research (NBER) in its analysis of business cycles, and consulted with economists when constructing BFDC data series (Alchon 1985; Hawley 1990, 299–307). In Agriculture, Henry Wallace had previously approached the pioneering econometrician Henry L. Moore for help in constructing demand curves for livestock, and he tapped the agricultural economist Henry C. Taylor to lead the BAE, which became a crucial site for the development of agricultural econometrics. By 1929, the BAE had a budget of $6.1 million—more than two hundred times the $28,000 budget of the Cowles Commission a decade later—and it employed “more social scientists than all the other agencies of the federal government combined,” including important figures in the development of econometrics such as Mordecai Ezekiel, Howard Tolley, Frederick Waugh, and Louis Bean (McDean 1983; Fox 1986; Hawley 1990, 299; Banzhaf 2006a, 14). The BAE pushed its economists to help farmers by forecasting prices for agricultural products using regression analysis, and it established an influential Graduate School that trained a whole generation of government social scientists in advanced statistical methods (Rutherford 2011, 425–30). In the end, the plethora of data supplied by the BAE plus the institutional support from the agency and from land-grant universities made agricultural economics the leading area for applied econometrics through the 1930s, almost all of which was focused on forecasting and demand analysis (Fox 1986; Banzhaf 2006a).

Overall, therefore, a convergence of interests during the 1920s had led to a plethora of new data on American economic activities. Though some of statistics were compiled by government agencies, the data were nonetheless supplied by businessmen (whether bankers, manufacturers, or farmers) and intended to aid them. Furthermore, both the construction and analysis of the data were increasingly linked to the practice of economics. Indeed, both Hoover and Wallace carried the respective visions of the business schools and the land-grant agricultural schools into their departments: applied economic research could serve the needs of the business community. It was

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10 For example, from 1922 – 1945, the BFDC’s Survey of Current Business was cited in thirty-two research articles in the *AER* (the bulk of these, not surprisingly, coming from the late 1930s onwards as statistical analysis became more widespread in American economics). During the same period, it was cited in thirty-three times in research articles in *The Review of Economics and Statistics*, and it appeared in eight articles in *Econometrica* from 1933 – 1945. The Federal Reserve Bulletin was cited by forty-seven *AER* research articles from 1922 – 1945, and fifty research articles in the *Review of Economics and Statistics* over a similar period. Curiously enough, articles in *Econometrica* did not follow a similar trend, with only two relying on the *Bulletin* from 1933 – 1945.
precisely that attitude that made possible new social roles at the intersection of business and economics.

**THE ECONOMIST AS BUSINESSMAN, AND VICE-VERSA**

In 1926, the *Journal of Political Economy* featured a lively discussion about “The Place of Economics in the Curriculum of a School of Business.” Though everyone agreed that economics had some role in a business education, the specifics proved harder to specify. Part of the problem, J. C. Bonright (Columbia University) observed, was that “we do not agree on our definitions,” either about economics or about the goals of a business school. Equally troublesome was a kind of professional blurring: as Roswell McCrea (Columbia School of Business) noted, “our schools of business are proliferations of departments of economics. Our teachers have been mainly young men who have started out as incipient or would-be economists, whose interests…have been directed to the teaching of business.” Yet Bonright captured the heart of the matter: a single activity could serve multiple ends. “You can study the [business] cycle simply in order to play with it; or you can study it in order to relieve unemployment and misery; or you can study it in order to make money by playing the stock market.” There were, of course, plenty of aspects of business that held no interest for the economist *per se*, and vice-versa, but there were others that brought the two together, “especially…the field or fields of economics which bear fruit in the ability to make more accurate business forecasts” (McCrea 1926, 220; Wolfe et al. 1926, 233, 238, 240).

Bonright’s insight resonates with a central theme from the strand of social practice theory discussed earlier. Recall that practices are comprised of actions for which I am accountable in light of an explicit or implicit telos. To state that actions are part of a practice means that they can be rendered intelligible, either as steps toward a goal (however faltering) or deviations (deliberate or not). Yet since some actions can conceivably be re-described or re-narrated in different ways, they are thereby potentially intelligible as a part of multiple practices. Nor must we always choose one narrative explanation over another; our actions can often serve multiple practices at once. To return to Bonright’s example, an individual could conceivably study business cycles for all three purposes he lists.

Such multivalency makes it possible for an individual to participate in multiple practices at the same time, not merely accidentally (in Aristotelian terms), as when an economist also plays basketball, but substantively, as when a long-distance runner studies sports science. The transformations in business and economics of the early twentieth century thus made possible new social roles, modes of being in which individuals could simultaneously (through the very same activities) pursue both the practice of business and the practice of economics. Thus when Irving Fisher published *The Making of Index Numbers* (1922), it could be understood as a contribution to economic theory, to a long tradition of debates about how best to measure changes in the value of money (e.g., Dimand 1998; Boumans 2001; Banzhaf 2004). Or it could be re-told as part of Fisher’s engagement with political economy: his efforts since 1911 to persuade governments to adopt a “compensated dollar” whereby gold-exchange ratios for currencies would vary alongside price indexes, with the latter now given objective form courtesy of Fisher’s new book (Stapleford 2009, 71–74). Or it could be embedded into an entrepreneurial narrative: shortly after publishing the book,
Fisher launched the Index Number Institute to sell index numbers and other economic data to newspapers, data that both used the approaches developed in *The Making of Index Numbers* and traded on its authority (Allen 1993, 173). Each of these narratives is a plausible way of rendering Fisher’s actions intelligible, though each places him within a different practice (economic theory, policy advocacy, and business).

Of course, the intersection of different practices does not make them identical. The economist Warren Persons learned that firsthand when he left Harvard in 1928 to form a consulting company. As his friend and colleague William T. Foster drily observed, “So determined was [Persons] . . . to retain his integrity as a scientist in pursuit of the truth, that he usually frightened prospective clients away” (Foster 1939, 412). The intersection of business and economics was not complete, but it opened a range of new social possibilities.

The remainder of this section will examine several examples of individuals who created space for themselves at the intersection of business and economics, contributing to both endeavors. I have not tried to be exhaustive, but only to illustrate some of the key forms connected to the emergence of econometrics.

*Engineer as Economist: Malcolm C. Rorty*

Just as the statistical analysis of economic data bound the economics to business, so too did statistical techniques more generally form a nexus for the intersection of multiple higher-level practices. Especially in the early twentieth century, when advanced statistical methods were just being developed and gaining a foothold in many areas, a competent statistician could glide from one to another. In particular, that meant that the engineers who had been brought into the new industrial corporations of the turn-of-the-century might find both opportunity and need to put their statistical acumen to other use. No one exemplified that better than Malcom C. Rorty (1875-1936), perhaps the least heralded of the significant contributors to interwar American economics.

After graduating from Cornell with degrees in engineering, Rorty began his career with American Telephone & Telegraph (AT&T) as an installer’s assistant. Rising through the ranks over the next decade, he was asked to organize AT&T’s commercial engineering department in 1910, eventually becoming chief statistician for the company, and then assistant vice-president (*Industry Illustrated* 1922, 15; Belcher 1936). By his own account, the “necessities” of his work for AT&T led him repeatedly “to undertake a study of economic fact and theory” to meet “the pressing demands of some practical problem” (Rorty 1922, 5–6). From 1917 onwards, he wrote a number of articles on the creation and analysis of economic data (especially related to income and investment, and eventually more general commentaries on political economy.

Yet Rorty’s main legacy for economics came not through his writing but through his capacity for organization. According to its official history, Rorty was the founder of the NBER. Though Wesley Mitchell guided its early agenda and gave it intellectual gravitas, Rorty had developed the initial idea of a multi-partisan organization that would generate consensus, non-partisan research; Rorty had enlisted Mitchell, Edwin Gay, and other economists; Rorty had reached out to various executives and business association officials to gain their support; and Rorty eventually raised the necessary funds “single-handed” (N. I. Stone 1945, 5–10, esp. 10). He held leadership posts within...
the NBER for many years, while also serving in several capacities within the American Statistical
Association (including as president in 1930). In 1930, Rorty again played a founding role in a major
economics organization, this time as one of the original sixteen members of the Econometric
Society (Econometric Society 1952, 115). Rorty’s career illustrated how a businessman could make
common ground with, and even become a part of, the practice of economics to the benefit of each.
In 1923, he had called for the “statistical control of business activities” (1923); in 1934, he found
that vision validated in his election as president of the American Management Association.

Rorty’s prominence was unusual, but he was not unique in finding statistics to be a bridge
into economics. Of the 151 American members of the Econometric Society in 1934, twenty-four
worked in private firms, with many of these being mathematicians, engineers, and scientists
employed by major corporations (six came from AT&T or Bell Telephone alone; Econometric
Society 1934). Moreover, these corporate employees provided crucial support to the new group:
when Alfred Cowles III was debating whether or not to fund the Econometric Society, he consulted
with Thornton Fry (a mathematician with Bell Telephone), Donald Belcher (statistician at AT&T), J.
W. Glover (president of Teachers Insurance and Annuity Association of America), and Walter
Shewart (physicist and statistician with Bell). The only academics involved were Irving Fisher,
Harold Hotelling, and eventually Ragnar Frisch (Christ 1952, 8–10). Just as with the NBER, the
Econometric Society flourished in part because businessmen (including Cowles himself) recognized
that business and economics could benefit from the same form of research.

### Economics and Marketing: Divergence and Expansion

Social practices are never stable, and the very activities that fell within both economics and business
could equally become the basis for a new practice, namely the business scholar – the individual with
academic training and housed in a university who made the study of business activity his or her
primary focus and aimed to help businesspersons. Business schools had their own origins, distinct
from departments of economics or political economy. Nonetheless, as McCrea had noted in the
roundtable at the *Journal of Political Economy*, many faculty members in the early business schools had
doctoral training in economics (1926, 220), and J. C. Bonright pointed out that one common
definition of economics was “the science of business conduct” (Wolfe et al. 1926, 233). Such
intersections offered the possibility that business scholarship could grow into a subfield of
economics, but it did not always develop in that way.

Marketing offers a prime example. As we have seen, market research began outside the
universities, and the first scholars to study marketing from within the new business schools often
had backgrounds in economics and connections to economic organizations. Men such as Paul T.
Cherington (1876-1943), Paul H. Nystrom (1878-1969), and Louis D. H. Weld (1882-1946) were
typically members of the American Economics Association (AEA), appeared at its meetings, and
published papers and book reviews in economics journals well into the 1920s. Each straddled the
boundary between academia and business: Weld and Cherington left academic posts (Yale and
Harvard, respectively) for various companies but continued to publish in professional journals, while
Nystrom remained at Columbia but also served as president of the Limited Price Variety Stores
Association (a trade association for dime stores) for over twenty years. However, the formation of
the American Marketing Association (AMA) in 1931 and its associated journal cemented a split as these scholars became less involved in the AEA and shifted their activities to the AMA (all three served as president during the 1930s) and to marketing journals.\footnote{For biographical details, see articles in the New York Times as well as Duncan (1957) and Cowan (1960). Cherington advised the U.S. Bureau of the Census on its new census of distribution and continued to do so until his death. Nystrom published several books that were favorably reviewed in economics journals before shifting his focus to marketing publications, while Weld published a number of articles in economics journals through the early 1920s before moving to generalist journals, the Journal of the American Statistical Association, and various marketing journals.}

All three of these scholars analyzed statistics as part of their work, with correlation techniques becoming increasingly important. Weld, for example, had begun using multiple correlation analysis in the 1920s, and defended its value for market research after a critique of the practice in the Journal of Marketing (1939). That critique had been prompted largely by the work of Lyndon O. Brown (another economics Ph.D. who bounced between posts in business schools and in advertising agencies), who had recently promoted multiple correlation analysis in his textbook on Marketing Research and Analysis (1937; on Brown’s career, see Smith 1965). Despite their use of statistical tools and their backgrounds in economics, however, none of these men allied themselves with econometrics as it developed as a formal field in economics during the 1930s. Neither Cherington, nor Nystrom, nor Weld (nor Brown, for that matter) joined the Econometric Society, much less published in Econometrika.

The distance between these scholars and the Econometric Society contrasts with the tight connections to econometrics developed by another group of applied economists focused on distribution: agricultural economists. Not only did agricultural economists begin using multiple correlation analysis in the 1920s and contribute to the practical and theoretical development of such statistical tools (Fox 1986; Fox 1989), but they also joined the Econometric Society and published in Econometrika (e.g., Ezekiel 1933; Working 1934; Bercaw 1934, all from the first two years alone). In part, institutional factors contributed to this difference: as described above, the U.S. Department of Agriculture fostered econometric analysis, and it is no accident that all three of the papers just cited came from economists working in the federal government. Yet there was a second factor as well. The agricultural economists understood themselves to be serving farmers by forecasting demand for markets over which the farmers themselves had little control; by contrast, the economists-cum-marketing-professionals interacted with large manufacturers, distributors, and retailers who aimed not only to forecast demand but actually increase sales. Accordingly, these economists built connections to psychologists and advertising men (Weld and Cherington both worked for advertising agencies at various times, Weld for most of his career), and the field of marketing emerged from that nexus. For their part, the agricultural economists did not pursue similar cross-disciplinary connections and instead maintained a view of their work as a subfield of economics, despite their separate institutional bases in agricultural schools, their own association (The American Farm Economic Association), and their specialized Journal of Farm Economics.\footnote{That self-image was hard won: agricultural economists defeated rival agronomists in order to capture control of a political and professional niche and to stabilize it as a branch of economics. See Fox (1989) and Banzhaf (2006a, 9–15).}
focused on similar problems (the statistical study of consumer demand), they approached their work as part of distinct practices.

Weld, Nystrom, and Cherington’s gravitation toward the AMA reflected the construction of a particular professional identity, not a gap between econometrics and corporate commercial research writ large. We have already seen that a sizable number of scientists and engineers from communications and utility companies were members of the Econometric Society (indeed, these men published several early articles in *Econometrica*: Shewhart 1933a; Shewhart 1933b; Vinogradoff 1933). Moreover, several manufacturing and retail companies had members in the Society (including United Fruit Co., American Rolling Mills, and Proctor & Gamble), as did several banks, investment firms, and insurance agencies (Econometric Society 1934). Roswell Whitman, an economist with Macy’s department stores, even published an early article in *Econometrica* (1936). Yet Whitman’s case is illustrative: his other published work appeared in economics venues, and he does not seem to have been a member of the AMA. Still, professional identities were not always clear cut: Weld, Nystrom, and Cherington all remained members of the AEA throughout their lives, and the obituaries for both Weld (*New York Times* 1946) and Nystrom (*New York Times* 1969) described them as “economists.” (Cherington was an “authority on marketing and distribution”; *New York Times* 1943). The rise of the “statistical control of business” created a fluid space in which scientists and engineers could contribute to economics, economists could become executives in advertising agencies, and the statistical analysis of economic data could link multiple social practices.

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*The Economist as Investment Expert: Irving Fisher*

“In the five years beginning in 1925,” wrote Yale economist Irving Fisher’s biographer, Robert Allen, “Fisher went from a university professor to business publicist and financial tycoon, from small businessman to a board member of important corporations, and stock-market prophet” (1993, 179). It would be tempting to see a familiar narrative in that statement: the senior scholar who abandons serious research to pursue practical affairs. Yet that would misunderstand Fisher, as Allen himself recognized. In the first place, Fisher continued to publish important work after 1925 (such as Fisher 1930), and he played a central role in creating the Econometric Society (Christ 1952; Bjerkholt 2014). Second, though Fisher only became a “financial tycoon” and “stock-market prophet” in the late 1920s, he had begun to position himself as both an economist and an investment expert almost since the beginning of his career.

Fisher was by no means the only economist from this period to travel such a path. Frederick Macaulay earned his PhD in economics from Columbia University in 1924 and worked for the NBER from 1920 - 1938, yet he also helped to run stock holding companies in the 1920s and in 1934 co-founded the investment advising firm Bernstein-Macaulay, Inc., where he remained vice-president until retiring in 1961 (Central National Corporation 1928; *New York Times* 1934; Poitras 2007). Other prominent examples would be Lionel D. Edie (who received his Ph.D. in political economy from Indiana University in 1927, wrote several economics textbooks, and taught finance at the University of Chicago for several years before founding Lionel D. Edie & Co. investment services) or Alexander Sachs (chief economist at Lehman Brothers during the interwar years who also worked in various federal agencies). Indeed, in a remarkable sign of the changing times,
Courtney Brown actually left a position in investment banking in 1935 to pursue a PhD in economics at Columbia precisely to improve his skill as an investment analyst. After graduating, Brown led the research division at Standard Oil before returning to be dean of Columbia’s business school (C. C. Brown 1983). Yet Fisher stands out for his central position in American economics and the spectacular nature of his rise and fall.

Fisher had woven commentary on investments and forecasting into his earliest work. Fisher (1906) had considered how probability theory could be applied to risk analysis for investments, and he followed his seminal book on *The Purchasing Power of Money* (1911) with a collaborative volume on *How to Invest When Prices Are Rising* (Fisher et al. 1912; for details, see Dimand 2007, 49, 47). *Purchasing Power* introduced Fisher’s equation of exchange, which (as already noted) he began to tout as a forecasting tool beginning in 1912. Thus when Fisher began selling economic data through his new Index Number Institute in 1923 and then added weekly commentary and forecasts in the mid-1920s, it was the entrepreneurial culmination of a trend begun nearly two decades before (Friedman 2014, 71–76). He even experimented with novel forms of securities: when Rand Kardex Company bought Fisher’s firm Index Visible (maker of a filing card system) in 1925, the new venture issued bonds with principal and interest rates linked to the price index produced by Fisher’s Index Number Institute (Dimand 2007, 48).

Fisher’s entrepreneurial activities were underwritten by his wife’s inherited fortune and later by the substantial financial windfall from the Rand Kardex purchase of Index Visible. Fisher ran his operations from the first floor of his sprawling New Haven home, where the staff of the Index Number Institute at different times comprised several administrative assistants, assistants to perform statistical calculations, various students who had been pulled into Fisher’s projects, and three core professional staff members: Max Sasuly (a statistician), Royal Meeker (an economist with a Ph.D. from Columbia and the former commissioner of the U.S. Bureau of Labor Statistics), and Karl Karsten (a former Rhodes Scholar who had started his own “statistical laboratory” in New Haven and served as president of the Kardex Institute in the 1920s). The Institute even had its own sales team, which both Karsten and Fisher pushed to travel to regional newspapers across the country to recruit new subscribers (Friedman 2014, 78–79).

Within a few short years, though, Fisher’s newly built forecasting empire had collapsed. Fisher famously failed to predict the onset of the Great Depression, and repeatedly issued optimistic forecasts even after the crash of 1929. His subscriber base fell, staff departed, and Fisher himself went heavily into debt (Friedman 2014, 82–83). Nevertheless, Fisher’s forecasting legacy has found its own defenders, and there is no doubt that he made major contributions to the development of financial economics (Dimand 2007, 52–57) as well as to the establishment of econometrics. Likewise, he stands as a primary example of an individual who could pursue both business and economics simultaneously by crafting a new social persona, the economist as an investment expert. Fisher did not merely trade on his economic expertise; from the very beginning he saw his research into monetary theory, and economic statistics as serving multiple ends. His economic models (like

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13 It is difficult to establish the exact timeframe for each of these individuals from published sources, though Meeker seems to have worked for Fisher from the mid-1920s to 1936, and Karsten from 1928 – 1933. In general, see Allen (1993, 191, 204–5); Dimand (2007, 54–56); Friedman (Friedman 2014, 76–78, 82–83).
the equation of exchange) served both to advance economic theory and to advance his own forecasting, both substantively and rhetorically. Like Macaulay, Edie, Sachs, and their many successors in financial economics, Fisher could inhabit two practices at once and pursue them simultaneously; he was both businessman and economist.

*Institutions at the Boundaries: The Harvard Economic Service*

Harvard’s analogue to Yale’s Irving Fisher was not a person but an institution: the Harvard Economic Service (HES). The story of the HES has been well told elsewhere (Friedman 2009; Friedman 2014), so I will focus on its status as a multivalent institution, subsisting within multiple practices. On the one hand, the HES was unquestionably dedicated to developing the practice of economics. Harvard economics professor Charles Bullock (1869-1941) created the Harvard University Committee for Economic Research in 1917 to bolster Harvard’s otherwise lackluster reputation in the field, and the Committee established the HES to improve forecasting techniques, the analysis of economic statistics, and the quality of economic data more generally. The HES launched a major journal, the *Review of Economic Statistics*, in 1919, and hired the economist Warren M. Persons to direct its research and edit the journal. Person’s work features prominently in the pre-history of econometric analysis and the history of business cycle research (e.g., Morgan 1991, 56–63), and the *Review* (renamed the *Review of Economics & Statistics* in 1948) became a major academic journal. Moreover, the HES fostered numerous international connections among individual scholars and business cycle research institutes (Friedman 2014, 144–51).

Yet the HES was also very much a business, equally dedicated to selling economic information and analysis. Bullock offered the *Review* for free to “a limited number of libraries and scientific investigators,” but everyone else had to purchase a hefty package subscription ($100) that included a monthly statistical supplement (Bullock 1919), upgraded to a Weekly Letter in 1922. Bullock hired salesmen to boost subscriptions, sent direct mail advertising (440,000 pieces in 1922 alone), and pitched the service to prominent Harvard alumni at invited dinners. By the mid-1920s, the HES had almost 2,400 subscribers – only one-sixth of major commercial forecasters like Babson, but focused on elite business executives – and a staff of forty, including fourteen economists and statisticians. The subscribers fell to about 1,500 by 1927 as Bullock decided to cut advertising costs and concentrate on a limited market, but the HES aimed for an annual profit between $5,000 and $10,000 (Friedman 2014, 141–44). That profit-oriented attitude troubled Harvard president Lawrence Lowell and several Harvard alumni (who felt, correctly of course, that the HES was trading on Harvard’s name), and in 1928 Harvard divested itself from the HES, which was renamed the Harvard Economic Society. Tellingly, Warren Persons left that same year “to become a vice president of the National Investors Corporation, which had been organized by a former business manager of the Harvard Economic Service,” and eventually founded his own consulting company (Friedman 2014, 155–56).

As with Fisher, the business and economics aspects of the HES cannot be cleanly separated because many activities served both ends. Persons’ research into forecasting techniques and business cycles contributed to economic theory but were also intended to strengthen HES predictions and hence its commercial potential. Unlike Babson or other commercial forecasters, HES shared its
methodology openly, but that did not undercut its subscription base both because of the expense of producing the HES core indicators and the need for proper interpretation, which (as Persons emphasized) required expert analysis of changes in “underlying economic conditions” (Persons 1920, 40; Friedman 2014, 129, 138). Likewise, the Review of Economic Statistics quickly became a central journal for anyone interested in the statistical analysis of economic data, but it was also a constant advertisement for Persons (who edited the journal and wrote thirty-three of its articles over a nine-year period), a symbol of the expertise behind the HES, and an inducement for subscriptions. Or again, the HES efforts to bolster international cooperation created key networks and connections (including with Keynes, Hayek, Corrado Gini, and Nikolai Kondratiev; Friedman 2014, 144–51), but it also allowed the HES to differentiate itself from other commercial forecasters by having an international scope and including international data. Even the governing structure of the Harvard Committee for Economic Research pointed to the dual nature of its activities, including “a mixture of businesspeople, government bureaucrats, and academics” and drawing funds from “the Rockefeller Foundation, several private companies, wealthy individuals, and subscriptions to the group’s publications” (Friedman 2014, 133).

Harvard’s divestiture from the HES reveals the institutional tensions in that period between operating a university and operating a for-profit business. (Today, of course, it would be precisely the profits that might attract Harvard.) Yet as Fisher, Paul Nystrom, and others demonstrated, it was perfectly possible for individual faculty to hold an academic post and engage in related business practices at the same time. The true downfall of the HES was not its separation from Harvard but, as with Fisher, its failure to adequately predict or assess the Great Depression. With dwindling subscribers, the HES closed in 1935 and transferred the Review of Economic Statistics to Harvard’s Economics department. Having built a business model on the quality of its economic knowledge, it could not survive when that knowledge proved inadequate.

The Economist as Consultant: Charles F. Roos
Along with Irving Fisher and Ragnar Frisch, Charles F. Roos was one of the primary founders of the Econometric Society and the first director of research for the Cowles Commission for Research in Economics (1934 – 1937). His death in 1958 warranted a five-page biography in Econometrica plus a bibliography of over ninety items, including books, journal articles, lectures, newspaper essays, and Congressional testimony (Davis 1958). He was, according to Harold Hotelling’s elogy in Science, a “unique and outstanding figure” (1958, 128) whose early accomplishments seemed to presage a successful academic career. After receiving his doctorate in mathematics from Rice University (with a focus on mathematical applications to economics), he was a National Research fellow at both the University of Chicago and Princeton before accepting a position at Cornell University (during which time he helped to form the Econometric Society). In 1931, he became permanent secretary of the American Association for the Advancement of Science, a post that he resigned in 1933 to begin a Guggenheim fellowship to study mathematical economics in Europe. At that moment, however, Roos’ career trajectory took a sharp turn.

The advent of the New Deal brought Roos back to the U.S. where he served as a research director for the National Recovery Administration (NRA). There, according to his friend and
colleague Harold T. Davis, “the gulf between the models of theoretical economics and the actual behavior of economic time series...became forcibly impressed upon Roos” (1958, 582). In truth, Roos had likely been primed for that view already: his graduate studies at Rice under Griffith C. Evans had already imbued him with skepticism toward economic theory (Dimand and Veloce 2007). Nonetheless, Roos’ efforts to construct models of consumer demand for the NRA introduced him to the difficulty of such work but also its commercial potential. After the demise of the NRA in 1934, Roos accepted a joint position as research director for the Cowles Commission and professor of econometrics at Colorado College, where he continued to pursue research on empirically-grounded models of business cycles and consumer demand (Roos 1934a; Roos 1934b) while also reflecting on his experience in the NRA (Roos 1937). In 1937 he left Cowles to become research director for an investment management firm, and a year later he formed his own consulting company, the Institute of Applied Econometrics, later renamed the Econometric Institute (Dimand and Veloce 2007, 534).

Roos’ first step was to purchase Irving Fisher’s firm, the Index Number Institute (Friedman 2014, 82), and the publication of economic data and short-term forecasts through the Institute’s Economic Measures became the bedrock of the firm’s work (Econometric Institute 1953). Yet whereas Fisher had aimed for a broad public audience through newspaper subscriptions, Roos pursued a targeted clientele of large corporations whom he could also interest in specific consulting projects (Hotelling 1958; Dimand and Veloce 2007, 534–35). For the next twenty years (until Roos’ death in 1958), the Econometric Institute continued to attract clients from a range of different industries, as well as cities hoping to improve economic development, with the roster being a veritable Who’s Who of American commerce: Bank of America, Bank of New York, Dean Witter, Gulf Oil, John Hancock, Johnson & Johnson, Eli Lilly, McCann Erickson, Monsanto, J. P. Morgan, Standard Oil, Swift & Co., Westinghouse, Walgreens, General Motors, and Caterpillar, among many others.14 The Econometric Institute was thus a forerunner of later econometric forecasting firms established in the 1960s (including Wharton Econometric Forecasting Associates; Data Resources, Inc.; and Chase Econometrics; Fourcade 2009, 118–19).

Dimand and Veloce argue that Roos became far less influential in postwar economics despite serving as president of the Econometric Society in 1948 (2007, 535–36). Indeed, work for the Econometric Institute consumed most of Roos’ time from the late 1930s onward, and he published only a handful of articles in economics journals over that period though he remained active in the meetings of the Society. Moreover, the probability approach to econometrics developed by Haavelmo eclipsed the mathematical techniques that Roos had pursued alongside Davis and his own mentor, Griffith Evans (Dimand and Veloce 2007, 537–38). On the other hand, Roos continued to write, publish, and speak at a high rate, energetically promoting the value of econometric research to his corporate clients, in the pages of business publications such as the American Management Association, the Journal of Business, or the Commercial and Financial Chronicle, and in seminars hosted by the Econometric Institute (Davis 1958, 586–89).

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14 This list is taken from a record of clients and some correspondence, all dating from 1940 – 1950. “Bound List of Clients, 1949,” Box 1, Charles F. Roos Papers, David M. Rubenstein Rare Book & Manuscript Library, Duke University.
Roos’ career forces us to return to a question I posed in the beginning of this essay: what do we mean by the contributions of businesspersons to econometrics? If we mean significant contributions to econometric theory, Roos made his primary innovations during the late 1920s and 1930s, prior to his full immersion in the practice of business (Dimand and Veloce 2007; Fox 2012). Yet if we mean contributions to the practice of econometrics as a whole, then Roos’ ability to sell econometrics (and “sell” is not an inappropriate word here) to corporations and city-planners takes on a new significance. As we have seen, many economists (and non-economists) in the business world used statistical techniques to analyze economic data. Yet it was Roos who insisted on the centrality of both economic models and the statistical analysis of time-series data to proper forecasting (as opposed to simpler tools such as “barometers” or leading indicators; Roos 1955); Roos -- as co-founder of the Econometric Society, former officer, and former president -- who embodied the institutional connections between econometrics and the practice of business; and Roos who placed the term “econometrics” in the very title of his successful consulting firm at a time when almost no one else knew what the word meant. Roos, in short, did the most to bring econometrics to the attention of corporate managers in the interwar and postwar period. He was thus the harbinger of a massive transformation in the academic culture of economics, the symbol of a future wherein thousands of undergraduates would trudge through introductory econometrics courses every year in hope of landing a corporate job.

**Conclusion**

In the early twentieth century, the practices of American business and American economics reshaped one another, taking on new forms and relationships. At the center of this reconfiguration were novel techniques and activities that could be pursued simultaneously through multiple practices. The adoption of statistical methods in economics allowed mathematicians, engineers, and natural scientists to contribute to the development of economics, to claim competencies in economics, and even on occasion to understand themselves (and be understood) as economists. The promulgation of those same methods within business and their application to forecasting (whether of business cycles, prices, or consumer demand) created space for economic knowledge and economists with advanced academic training within corporations, finance, and investing. The continued development of statistical methods, the creation of economic data, the development of forecasting techniques, the study of business cycles, the creation of demand curves, the analysis of time-series data on a whole range of topics – all of these thereby became activities that could be at home within both business and academic economics.

That possibility led to structural transformations. The federal government began producing reams of economic data for businesses but also valuable for economic analysis; business schools, schools of agriculture, and government became sites for applied economic research; corporations created research divisions and hired economists; and banks and investment firms looked to economists to guide both them and their customers. New social possibilities emerged: engineers and mathematicians could be economists; economists could be advertising executives, investment gurus, or wide-ranging business consultants. It became feasible to be both an economics scholar and a
corporate employee, both an academic economist and an entrepreneur. New fields appeared both within economics (financial economics, agricultural economics) and on its margins (marketing).

Woven throughout was econometrics, both in its broad sense (the statistical analysis of economic data) and subsequent narrower definition (the creation and evaluation of economic models through statistical analysis). The tantalizing promise of econometrics inspired the structural transformations described above, even as those transformations further enabled and shaped the practice of econometrics. Starting from the question of how businesspersons affected econometrics, this essay has equally and unapologetically been about how econometrics affected business – indeed about how those two movements were intertwined, were often indistinguishable, and in fact frequently enacted by the very same individuals.

15 These options had of course existed in the natural sciences since the late nineteenth century. See Dennis (1987) for one perceptive analysis of their rise and subsequent tensions, as well as Zunz (1998, chap. 1).
REFERENCES


