

**WORKING PAPER**

**Doing Publishable Research  
with Undergraduate Students**

**By**

**Aju J. Fenn, Daniel K.N. Johnson,  
Mark Griffin Smith and J. L. Stimpert**

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**Department of Economics and Business  
Colorado College  
Colorado Springs, Colorado 80903-3298  
[www.coloradocollege.edu/dept/EC](http://www.coloradocollege.edu/dept/EC)**

# Doing Publishable Research with Students in a Liberal Arts Setting

Aju J. Fenn, Daniel N. K. Johnson, Mark Griffin Smith<sup>1</sup> and J.L. Stimpert

Economics and Business Department  
Colorado College  
14 E. Cache la Poudre Street  
Colorado Springs, Colorado 80906

*Abstract:* This paper considers the challenges associated with conducting research with undergraduates – limited time and resources, limited skills, the tedious nature of data gathering, etc.. We discuss four models of effective research approaches. One is Aju Fenn’s which is to identify a topic and a workable approach, such as competitive balance in sports, and apply it in different contexts – football, basketball, soccer, etc. with different students working on different sports. This model is also successful because much data on both inputs and performance is collected in sports and is readily available from non-propriety sources. The Dan Johnson Model is to develop a huge data set, in this case patents, and then set students to work on problems involving some aspect of the data set while asking them develop one part of the data set through their research. The Smith Model which is to divide a related problem into distinct parts and have students work on each part. Smith discusses this approach on research on recreation values for the Arkansas River a quantitative problem while Stimpert shows its application to a qualitative problem, the role of corporate boards.

## Introduction

Publishable research is generally regarded as the domain of trained economists or graduate students in training. At graduate institutions research assistantships are often tied to external funding, graduate students have more training and undergraduates are so numerous that working on research with undergraduates may be unattractive or infeasible. Nevertheless, at many institutions, undergraduates are the available labor pool and, properly trained and prepared, are capable of doing original, quality, and potentially publishable, economic research.

The benefits of engaging undergraduates in research accrue not only to the student, but also to the institution and the faculty mentor. For students the benefits are numerous. Students have the opportunity to synthesize their undergraduate economics training in the context of working with real data on real problems. More than likely, this research will call on students to develop additional skills beyond their most advanced courses. Completing a research project successfully may significantly students’ graduate school

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<sup>1</sup> Corresponding author: [msmith@ColoradoCollege.edu](mailto:msmith@ColoradoCollege.edu) or (719) 389-6411

and employment opportunities, not to mention the self-confidence and satisfaction associated with overcoming a considerable challenge.<sup>2</sup>

Institutions and departments benefit from the recognition received in providing an exceptional undergraduate experience. Schools are increasingly competing top students by publicizing opportunities to work with faculty on research. Moreover, economics departments should be prepared to get, at least, their share of the best students who come to their institution. Finally, faculty mentors can benefit directly where joint research leads to publishable work resulting in positive outcomes for promotion, tenure and recognition.

Nevertheless, peer-review is never the expectation and rarely the norm for undergraduate research. Taking undergraduate research from inception to publication requires recognition of the challenges and well as the opportunities involved. Our experience with undergraduates is that they have less appreciation for the master-slave that characterizes an aspect of graduate student life. To overcome these challenges, one must leverage the opportunities of working with undergraduates.

Undergraduates' greatest assets are often their energy and enthusiasm. They are motivated by a problem and want to learn or do something about it. They can also be bright and motivated – after all, graduate schools are filled with former undergraduates! While a few exceptional undergraduate majors end up in Ph.D. programs in economics or business, many pursue professional degrees in business or law or graduate programs in other fields. Less influenced by “the problems of the discipline”, their more catholic interests in economics can lead research in novel directions, e.g., how many economists know “garage bands” well enough to understand how recent changes in recording technology have fundamentally changed the economics of making a CD or how terrain parks are used for product differentiation by ski resorts? Their students do. Finally, undergraduates can be just as good as graduate students as such field work tasks as surveying, interviewing and other types of labor intensive data collection.

We will present four models that each of us has used successfully to engage undergraduates in significant research projects. They are:

1. One Question – Different Datasets  
Competitive Balance in Sports – Fenn
2. One Dataset – Many Questions  
Analysis of Patent Activity – Johnson
3. One Quantitative Problem – Different Questions  
Recreation Values in the Arkansas River – Smith
4. One Qualitative Problem – Different Questions  
The Role of Corporate Boards – Stimpert

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<sup>2</sup> There may also be an opportunity to influence decision-making. A study conducted by one of our students in 2001 resulted in a major change in the fish stocking policy for a popular sport fishery in Colorado.

For each approach we will examine: (a) the research question; (b) how the students were organized to do the research; (c) the activities involved in conducting the research; (d) the research outcomes; and (e) an assessment of what each of us learned from our particular project. We end with a few general lessons gleaned from trying to conduct successful research with students at our liberal arts college.

## **Model I - One Method – Different Data Sets**

### **Competitive Balance in Sports – Fenn**

#### The research question

The competitive balance of a sports league can be described as the distribution of wins in that league. Leagues that have an approximately even distribution of wins among teams are said to have better competitive balance than those that do not. This is not exactly a new idea in Sports Economics. According to a study by El-Hodiri and Quirk, predictable outcomes depress attendance.<sup>3</sup> Since then there have been several studies which support the notion that sports fans lose interest when a league lacks parity. When fans lose interest, franchises lose money:

*“One of the key ingredients of the demand by fans for team sports is the excitement generated because of the uncertainty off outcome of league games.”<sup>4</sup>*

Given that competitiveness influences profitability, there is a motive for leagues to promote competitive balance. If competitive balance and attendance are connected, then a study of the determinants of competitive balance in each professional sports league is warranted. The economic question then becomes – What are the determinants of competitive balance in professional league X?

#### The Yogi Berra Approach -The Same (Research Question) -Only Different

Fenn’s work on competitive balance with undergraduate co-authors began when a former student found a paper examining the determinants of competitive baseball by Craig Depken.<sup>5</sup> He was interested in extending the paper to the National Football League (NFL) for an econometrics course project. Upon the successful completion of the project Fenn urged him to apply for summer support so that they might turn the project into a paper worthy of submission. Andrew Larsen applied for the grant and they developed the project into a publishable paper on the determinants of competitive balance in the NFL. Fenn chose to involve a second student Erin Spenner who extended the dataset created by Andrew and added several modifications to measures of competitive balance such as the

<sup>3</sup> M. El-Hodiri and J. Quirk, “The Economic Theory of a Professional Sports League,” **Journal of Political Economy**, 79 (November-December 1971): 1302-1319.

<sup>4</sup> James P. Quirk and Rodney D. Fort, **Pay Dirt The Business of Professional Team Sports**, Princeton, New Jersey: Princeton University Press, 1997.

<sup>5</sup> C. Depken, “Free-Agency and the Competitiveness of Major League Baseball,” **Review of Industrial Organization**, 14 (September 1999): 205-217.

Gini Coefficient and deviations of the Herfindahl-Hirschman Index of Wins (dHHI) based on actual NFL schedules.

Thomas Preissing, a former student (and current NHL player) went on to ask similar questions about the determinants of competitive balance in the National Hockey League. He was interested in examining the impact of the influx of European players on the sport in America. In his case Fenn was able to take his thesis and combine it with the work of Peter von Allmen and Stacey Brook.

Michio Ohno modified the basic determinants of competitive balance model to account for the migration of Japanese players to the U.S. and the inflow of American players into the Nippon Baseball league. That paper is currently under review.

Brandon Polich is currently working on a modification of the determinants of competitive balance as it pertains to professional golf in the U.S. The question here is whether competitive balance similarly promotes interest in individual sports.

The project organization in each case involved finding an applied microeconomic research question and allowing students to test the hypotheses for professional team sports with a data set. In most cases students initially identified their research question during research methods II, a class that prepares at the end of their junior year or beginning of their senior year for senior thesis.

### Research activities

In each case the essential theoretical model remains the same with relevant modifications for the sport at hand. Students conducted the literature review and often proposed innovative modifications to the explanatory variables because of their detailed knowledge of the sport. They also gathered the data during their senior thesis experience. Students often run basic econometrics with Fenn providing his econometric expertise to raise the quality of the paper to peer review standards. The fact remains that each of these applied econometric pieces fills a void in the sports economics literature.

### Research outcomes

The paper on the determinants of competitive balance in the NFL that got it all started was published in the *Journal of Sports Economics* in November, 2006.<sup>6</sup> The determinants of competitive balance in the NHL paper with Thomas Preissing and Peter von Allmen and Stacey Brook appeared in the *Atlantic Economic Journal* in 2005.<sup>7</sup> Erin Spenner went on to write her own senior thesis on testing for rational addiction among

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<sup>6</sup> Andrew Larsen, Aju J. Fenn and Erin Spenner “Competitive Balance in the National Football League: An Application of the HHI,” **Journal of Sports Economics**, 7 (November 2006): 374-390.

<sup>7</sup>Aju Fenn, Peter von Allmen, Stacey Brook and Thomas Preissing, “The Influence of Structural Changes and International Players on Competitive Balance in the NHL.” **Atlantic Economic Journal**, 33 (June 2005): 215-224.

NFL fans. This paper was presented at the *Western International Economics Meetings* in 2004<sup>8</sup> and Erin went on to a Ph.D. program in economics. The paper by Michio Ohno on competitive balance in the Nippon Baseball league is currently under review. Finally the senior thesis on the determinants of competitive balance in professional golf by Brandon Polich is underway and based on the progress made to date I am cautiously optimistic.

Other projects with undergraduate co-authors that deserve mention are papers with Shannon Carney on the determinants of NFL Nielsen ratings (presented at the *Southern Economics Meetings*, 2005) and a new project with Mateo Garcia on the impact of race on National Basketball Association Nielsen television ratings.<sup>9</sup>

### Assessment

There is a reason why co-authoring with undergraduates is the exception rather than the norm. First and foremost startup costs (both in terms of time and money) are steep when it comes to creating undergraduate research collaborations. It is often more efficient to conduct our own research than to take the time to teach the tools to someone else. For this very reason undergraduate research collaborations do not make sense if you plan to do just one of them. However, starting with a single applied paper whose hypotheses may be tested over new datasets to be collected by successive generations of students has been successful. Students may be introduced to such papers in econometrics courses or in classes that prepare them to write a senior thesis or capstone paper. Then students actually have to carry out the project, generating a theory chapter, literature review etc. during the senior thesis or senior seminar course. A word of advice at this stage – even the best students need frequent contact with their research advisor and constant mentoring to ensure that the project is making a genuine contribution to the literature. This is the stage at which you decide which projects have publication potential and which ones are merely good senior projects.

The next step in the process is to convert the student thesis into a working paper. If the student who authored the thesis is around and can be convinced to summarize their thesis into a working paper so much the better. If this is not the case then find a gifted sophomore or junior from your intermediate class to write a summary of the thesis. This has the added benefit of getting your next research assistant trained. Make full use of a writing center (if your institution has one) by sending the students and their rough drafts to a tutor at the center. Make sure that your students spend the time editing their own work before you waste time trudging through garish grammar. This working paper is not necessarily the text for the final journal article but it may serve as a summary of the project to potential faculty co-authors or to other student co-authors that are looking for a quick summary of the methodology used in the paper that has not yet appeared in print.

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<sup>8</sup> Aju J. Fenn, John R. Crooker and Erin Spenner, “The Demand for NFL Attendance: A Rational Addiction Model” Colorado College Working Paper Series No. 2004-01

<sup>9</sup> Aju J. Fenn and Shannon Carney, “The Determinants of NFL T.V. Ratings” Colorado College Working Paper Series No. 2004-02)

Nothing motivates a good student more than the published work of a peer. Once the startup costs have been paid then the plant is ready for production. Talk about your students co-authors research work in your classes and write for summer support monies for selected students who have both the work ethic and the aptitude to conduct research. Choose your co-authors cautiously or you may soon find yourself reading a piece on how to re-engage in conducting scholarship after being disgruntled with futile collaborations. Start on a small scale with one student and replicate that success by choosing students who are willing to work on variations of previous successful projects. Last but not the least, once you have some success – diversify. Work with more than one student at a time so that if some projects hit roadblocks others can be put on the front burner of the peer review process. Of about fourteen senior theses at Colorado College, only five projects are published or in various stages in the pipeline. Finally if you get to the stage where your teaching and scholarship inform and enrich one another you will find that each of these tasks revitalizes you for the next one. If your students are excited about your research then you will be excited about teaching them.

## **Model II – One Dataset - Many Questions Analysis of Patenting Activity – Johnson**

### The research question

There is widespread agreement that technological progress is the single-most important contributor to economic growth and productivity change. Sadly, while economists have increasingly devoted resources to modeling innovation and technological advance, theory is frequently divorced from empirical measurement simply due to a lack of relevant data. While a serious problem at the national level, this lack of data is a crisis at the industry level, where virtually no data exist outside of limited-purpose surveys.

One of the primary challenges has always been how to measure technological advances. While counts of patents have some limited value, and are almost freely available to any investigator, it is still unclear what they measure, how they relate to other economic variables, and what their impact might be. Patents are recorded for legal purposes, not economic ones, and as such are filed according to their technology class. Unfortunately, those technology or product classes are not readily usable for any economic applications.

Over a decade ago, Professor Johnson started to develop a theoretical procedure (with the support of other much wiser minds), a statistical model which would transform the limited information available from granted patents into a dataset of patents aggregated by industry. In particular, given key characteristics of a patent, Professor Johnson's software routine can probabilistically infer what industries created the technology and what economic sectors will first use the technology. For example, a new advance in glassware might originate in the "glass and nonmetallic minerals" industry but be subsequently used primarily in automotive applications. By appropriately setting the parameters of the software package, and by inputting the appropriate patent information,

users can create a matrix of patent counts whose cell entries are the number of patents created by industry  $i$  for use in sector  $j$ .

### Project organization

The software application is introduced to students in Professor Johnson's Economics of Innovation class, and some sample applications are shared. From there, students frequently see the obvious questions to be explored and answered. They frequently begin by emulating an application that they have seen (e.g. do states with more automotive production facilities generate more automotive patents?) and develop into much richer and more far-flung research questions (e.g. do regions with higher gasoline prices generate more patents which are subsequently used in the automotive industry?). Frequently those research questions develop new areas of the common database which become fertile ground for the next generation of students.

This format has grown into a loose community with dozens of participants, some current students and some alumni, who share nothing more than a common starting point. Many interact with each other, looking for advice on specific tasks, and in one popular case (geographic applications that involve mapping the addresses of patent applicants and their connections to other applicants) there has been cause to hire a student coordinator to offer advice and coherence to the data recorded by each interested student. Each student has a sense that they are contributing to a project greater than themselves, and yet each carves off a hypothesis that is answerable by a lone student or collaboration with Professor Johnson.

### Research activities

All research activities focus on the same econometric toolkit, with the exception of Geographic Information Systems (GIS) applications which have involved cartographic toolkits. Most projects have involved integrating patent data with other datasets such as industrial census, population census, financial valuation, political economy, consumer price, or geographic sources. Two have involved travel: one to a patent auction in New York to collect firsthand data on the auction prices of patents offered for sale, and one to a government licensing bureau in Brazil to collect information about the technology transfer contracts issued between innovators and their clients.

### Research outcomes

There have been a number of interesting applications resulting from this common data, including two published academic papers<sup>10</sup>, two more under consideration<sup>11</sup>, and two

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<sup>10</sup> Daniel N. K. Johnson., Nalyn Siripong, Nalyn and Amy S. Brown, "The Demise of Distance? The Declining Role of Physical Distance in Knowledge Transmission." **Growth and Change** 37 (March 2006): 19-33. and Daniel N. K. Johnson and Amy S. Brown, "How the West Has Won: Regional and Industrial Inversion in U.S. Patent Activity," **Economic Geography** 80 (July2004): 241-260.

more under active construction for submission this academic year. They have tackled questions as diverse as:

- do higher gasoline prices lead to more automotive innovation?
- how does federal immigration policy affect the rate of international scientific collaboration in different technologies?
- which socioeconomic attributes of a region are most effective at generating a comparative advantage in innovation within certain industries?
- how has the physical distance between collaborators changed over time, and has that distance been industry-sensitive?
- which attributes of a patent are most indicative of future market value, and does that answer vary by industry?
- how have patents contributed to economic growth within each industry?
- do industries which trade more with foreign nations innovate more, or do industries which innovate more subsequently trade more with foreign nations?

Students who have been part of this project have frequently proceeded to apply their knowledge within the field of economics (and innovation studies in particular). One is pursuing a doctorate at Harvard Business School, where she is focusing on medical innovations in particular. Another is well into her economics doctorate at UCLA. A third is pursuing a career with the United Nations, investigating the introduction of new health innovations in less developed nations. A fourth is considering a career as a consultant in the intellectual property valuation industry.

### Assessment

The myriad lessons from this project distill down to one: it takes a great deal of commitment from the advisor to shepherd multiple research paths to viable conclusions. While students usually become very excited about the prospect of adding to our knowledge about innovation, it is only after long hours of conversation that they are generally able to settle on a tractable hypothesis. Even then, many find the data work too tedious to continue, which necessitates a transfer of partly completed work to another student, or discontinuation of a research trajectory. One of the most challenging elements is the balance between self-direction by students and coercive direction by an experienced advisor. As long as the student retains some degree of ownership, students appear to remain more directed, enthusiastic and motivated. However, the end results are similar to those of any distillation process: enormous amounts of effort go into a bottle of fine wine, but there are certain economies of scale (if not scope), definite cost savings in learning-by-doing, and a few choice bottles at the end of any season.

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<sup>11</sup> Daniel N. K. Johnson and Katherine A. Sneed, "Are Many Heads Better Than Two? Recent Changes in International Technological Collaboration." Colorado College Department of Economics and Business Working Paper 2006-0 and Daniel N. K. Johnson and Malena Mareva, "It's a Small(er) World: The Role of Geography and Networks in Biotechnology Innovation." Colorado College Department of Economics and Business Working Paper 2006-03.

### **Model III – One Quantitative Problem - Different Questions Recreation Values in the Arkansas River – Smith**

#### The research question

Colorado's Arkansas River flows east from the Continental Divide through the mountainous terrain of the Rockies eastern flank, then bisecting the state's southeastern plains it flows on into Kansas and, eventually, the Mississippi and Gulf of Mexico. The river's headwaters are the most heavily boated whitewater river in the United States. Over 350,000 people run the Arkansas in the summer on the 100 mile stretch of river between Granite and Canon City, Colorado. Most run the river on commercial raft trips that draw many tourists to the region from Colorado and beyond, though the river is also extremely popular with private boaters, mostly kayakers. Moreover, the same river reach is home to a self-sustaining brown trout population making it popular with anglers for "catch and release" fly-fishing.

In the 1990's, with growing recreation on the river, Colorado State Parks and the federal Bureau of Land Management jointly formed the Arkansas Headwaters Recreation Area (AHRA) to better manage a river that was becoming over-used. While one might have the initial impression that all recreators have the same interest, this is not the case. Commercial raft companies are running a small business and trying to make money. They would, for the most part, like to run as many trips as possible and have the rafting season last as long as possible. Private boaters while preferring a long season, would prefer to see fewer rafts on the river. Anglers would prefer to see fewer of both. In 1991 responding to pressure from the rafting companies and the AHRA, the Bureau of Reclamation had agreed to release water from an upstream reservoir to maintain "raftable" flow levels in the river until August 15<sup>th</sup>. While a boon to boaters, anglers saw extending these flows to mid-August as a danger to the brown trout fishery and the local chapter of Trout Unlimited sued the Bureau of Reclamation under the National Environmental Policy Act (NEPA). Given the obvious competing interests, Smith decided to estimate the value of a recreational visitor day (RVD) in fishing, commercial rafting and private boating.

#### Project organization

Three students were recruited from Smith's environmental economics class. All three expressed early (spring of junior year) interest in the topic. Having taken environmental economics, they had been introduced to the contingent valuation method (CVM) which they would use for their research. They had also studied the basics of Colorado water law that was important background for this research. Although these students (two men, one woman) were enthusiastic and experienced in the out-of-doors, none had experience with whitewater recreation. Using his contacts with the whitewater community, Smith helped the students get guide training and then summer jobs as whitewater guides. Each student received a grant of \$350 through the Economics and Business Department to pay

for their training. This guide experience not only gave them a solid foundation with the issues as they saw, day after day, the conflicts between the commercial companies, private boaters and anglers, it also heightened their enthusiasm for the research project.

As senior thesis cannot be done as a group project at Colorado College, each student choice one aspect of the research to pursue for their theses – commercial boating, private boating and fishing.

### Research activities

Contingent valuation (CVM) is a survey method widely used in natural resource and environmental economics to elicit the value of goods or services that have no market. In this case, while guests on commercial trips pay for the service, private boaters and anglers simply drive to the river and go boating or fishing without paying anything. The challenge is how to measure the value of this experience, known in the literature as a recreational visitor day (RVD). All three students used surveys. The student working on commercial boating did personal interviews during the summer as she was working as a guide using her off time to interview people as they were coming off the river. The massing of large numbers of people on commercial trips at several major take-outs made this approach viable for commercial boating. Both private boaters and anglers are widely dispersed along the river, thus tracking them down for personal interviews would have been difficult. These groups were surveyed with mail surveys from the membership lists of the Colorado Whitewater Association and the Pikes Peak Chapter of Trout Unlimited. Three to four hundred responses were gathered for all surveys making for a respectable sample size. All analysis was subsequently done using the statistical tools in Excel. The students received funding from the college's "Venture Grant" program run through the Dean's Office to cover the cost of production and postage for the mail survey.

### Research outcomes

Two of the three students completed their research for their senior theses. One student dropped out the project before conducting the angler survey. This component of the project was completed by one of the other students, Rob Naeser, after he had completed his survey of private boaters. Overall, the project was a success for both – but in different ways. Rob Naeser won the award for most innovative thesis that year. That summer, he and Smith revised his thesis on private boating, combined it with the results of the angling survey and submitted it to a peer-reviewed journal. In reply they initially received the most scathing comments such as, "surely a first-time effort". However, after a period of recovery and reflection, they revised the article, submitted one of the top journals in the field that accepted it "with minor revision."<sup>12</sup> Naeser also benefited from presenting his work at a professional meeting, went on to graduate school at Yale and is now a senior manager at an environmental consulting firm. Julie Johnson enjoyed a different type of success – but one appropriate for her. A girl who was once terrified of

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<sup>12</sup> R .B. Naeser and M. G. Smith, "Playing with Borrowed Water: Conflicts over Instream Flows on the Upper Arkansas River," **Natural Resources Journal** 35 (Winter 1995): 93-110.

rafting, now owns a whitewater rafting company with her Kiwi husband on New Zealand's north island.<sup>13</sup>

### Assessment

What are the lessons from this project? First, the project had both an element a fun, the raft guiding and a large amount of real work; the surveys, analysis and write-up. Second, do not make one student's work dependent upon another's. Third, even the most motivated students (and two of them were) require much supervision to take on a project of this magnitude. Fourth, turning the work from a senior thesis into a journal article was a significant amount of work *after* the student's graduation and thus required his continued interest and time. It was, in fact, Naeser's insight that gave the paper its name and "the hook" that got the reviewers interested in the paper.

## **Strategy IV – One Qualitative Problem – Different Questions The Role of Corporate Boards – Stimpert**

### The research question

Research on corporate governance by management scholars has flourished for more than two decades now. Most research studies are grounded in agency theory arguments and take advantage of ready access to archival data on board composition. Questions that have been exhaustively studied include the impact of board composition (usually measured as ratios of inside or outside board members to total board membership) on a wide range of dependent variables, including firm performance, merger and acquisition activity, CEO compensation, expenditures on research and development, and the adoption of anti-takeover amendments.

The trouble with this research is that we have not learned much. The findings of these studies frequently contradicted each other, and rarely do board composition variables explain much of the variance in the dependent variable<sup>14</sup>.

What has been largely ignored in this stream of research is what boards actually do. Much more important than the composition of a board or how a board is organized is what the board actually does to influence firm performance or other organizational outcomes. Studies of board process are sparse and anecdotal, and the challenges of conducting rigorous qualitative research have prevented researchers from pursuing this

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<sup>13</sup> Kiwi River Safaris, Taupo, New Zealand.

<sup>14</sup> See B. K. Boyd, "Board Control and CEO Compensation," **Strategic Management Journal**, 115 (1994): 335-344; J. B. Kaufmann and L. A. Taylor, 1993. "A Resource Dependence Perspective of Corporate Boards in the Savings and Loan Industry," Paper presented at the Academy of Management National Meetings, Atlanta, 1993; I. F. Kesner, 1987. Directors' Stock Ownership and Organizational Performance: An Investigation of *Fortune* 500 Companies. **Journal of Management**, 13 (1987): 499-507 and J. A. Pearce and S. A. Zahra, "Board Composition from a strategic Contingency Perspective," **Journal of Management Studies**, 29 (1992): 411-438.

intriguing line of research<sup>15</sup>. Thus, the purpose of the present effort is to get a number of students engaged in an extensive qualitative study to determine what happens in corporate boardrooms and how board processes actually influence strategy formulation and implementation.

### Project organization

Four students are presently engaged in the project. The first challenge was to get the students sufficiently intrigued to pursue the research question. In some cases, students readily signed on; in other cases they were a bit more reluctant. We have met together a number of times during the academic year to plot out a research strategy and the specific tasks that need to be accomplished, including the need to articulate specific research questions, write literature reviews, identify specific respondents to be interviewed, and develop interview questionnaires. The group has also met to share information and ideas. Stimpert originally thought that the students might collaborate extensively on writing their literature reviews and many other tasks. While they have on occasion shared some sources, much of the sharing has been initiated by Stimpert suggesting key references and materials that they should be consulting. The students have also collaborated to a limited degree on developing their interview questionnaires; again, Stimpert had thought that they would frequently share drafts and other ideas. He realizes now that if he had scheduled more formal meetings for the group, he could have forced more mutual support and collaboration.

As the project got underway, it became clear that students had specific questions that they wished to pursue. Rather than limiting these opportunities, Stimpert gave the students a good deal of freedom to pursue these specific interests. For example, two of the students wanted to focus on the boards of not-for-profit organizations. Of the two students who wished to examine for-profit firms (which were the original focus), one wished to focus on how boards respond to financial difficulties or downturns, while the other student chose to focus on how boards deal with executive succession issues. As the project has unfolded, this diversity in research interests has actually strengthened the project. Giving these students the freedom to tailor their projects to their own specific interests has increased their motivation and ownership of the project.

### Research activities

Qualitative data will be gathered through personal interviews with directors or trustees. Stimpert identified many of the interviewees, but the students have been very eager to identify additional respondents through family connections and, in a few cases, connections the students themselves have made through internships or other experiences.

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<sup>15</sup> See for example, D. Bavyly, "What is the Board of Directors Good for?" *Long Range Planning*, 19 (1986): 20-26; J. R. Daughen & P Binzel, *The Wreck of the Penn Central*. Boston: Little, Brown, 1971; and M. L. Mace, *Directors: Myth and Reality*. Cambridge, MA: Harvard University Press, 1971.

The students have developed their own questionnaires, but have been encouraged to share drafts of their questionnaires with each other to get additional ideas about specific questions and the organization of a good interview questionnaire. The students have learned a great deal about the qualities of a good interview question, the need to have follow-up probes prepared, how to organize a set of questions to produce coherent and effective interview, and how to introduce themselves and the project to the respondents. Students have now begun the interview process. Most of the interviews are taking about an hour, though some have run significantly longer (these have been the in-person interviews) and others have been shorter (the telephone interviews).

From the interview data, the students will develop case studies based on each interview. The students will then use a variety of qualitative methods including content analysis to conduct in-case and across-case analyses.

### Research outcomes

Much like the landmark qualitative research conducted by Mintzberg and his students<sup>16</sup> Stimpert hopes to produce a working paper based on the students' case studies. The hope is that the resulting paper will offer more rigorously developed insights into board processes than the anecdotal or biographical sources that currently exist.

Ideally, students will have opportunities to present their research at one or more conferences. While none of the four plans to pursue a research career, they are clearly intrigued by the possibility that their work might eventually find its way into publication.

### Assessment

When initially developing the idea of getting a number of students to pursue the same senior thesis research question, Stimpert thought the advantages would include getting a significant amount of research done on a topic of interest to him and saving a considerable amount of student advising time since the students would be working together on the same project. While he is still hopeful that the first objective will be accomplished, he does not believe having multiple students pursue the same research questions has saved much time. They have had a few meetings of all or two or three of the four students, but many of the students come by when they have specific questions and at those times it is important to work with them one-on-one. In addition, it is necessary to read the same number of drafts of introductory chapters, literature reviews, and interview questionnaires, and soon the students' case studies and analyses.

The resulting student theses will, with much work, accomplish the overriding objective – a paper suitable for conference presentation and eventual publication.

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<sup>16</sup> H. Mintzberg, "Patterns in Strategy Formation," **Management Science**, 24 (1978): 934-948.

## Lessons

In this paper we have focused on our success, not our failures. We have all failed, as well. Projects that we had hoped might lead to publication have been abandoned, sometimes after much time and effort. Where we have failed, it usually results from one of two causes. The first, is not clearly either knowing or articulating the work involved at the start – the project requires more than the student, or perhaps the professor, is willing or able to do. The second is that we have not understood how much supervision is necessary to make a research project successful. If there is a common theme across our experiences it is that undergraduates will require much supervision to perform the quality of research that may be publishable.

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