MHR 8781: Research Methods in Strategic Management
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Fall 2017

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Office: Fisher 848; Hours be appointment.   **Class:** To be announced

Introduction to the Course:

This course provides a Ph.D. level overview of research designs used to study non-experimental phenomena within and between organizations. The course assumes that participants are familiar with the philosophy of science as well as basic statistics, probability theory, and linear regression. Familiarity with the foundations of the strategic management field is helpful but not required. Masters students may enroll with the permission of the instructor, but are unlikely to find the material covered helpful in completing their degree plans.

Course Objectives:

This course is designed to help participants improve their ability to apply and evaluate research using methodological approaches commonly used in high-quality, non-experimental management research. While designed for strategic management scholars, it is also of value to others who are interested in publishing in top-tier management journals in other fields. The course provides an introduction to fundamental issues including the assumptions underlying OLS regression, discrete choice analysis, instrumental variables, panel data analysis, and event history analysis. In addition, the course provides examples of well-received papers applying these models and an opportunity to apply these techniques using datasets provided by the professor. Ultimately, the objective is to help you learn to conduct independent empirical research and to critically evaluate others empirical research.

Minimal attention will be given to mathematical proofs and other technical matters in this course. I suggest participants consider purchasing textbooks by Greene, Wooldridge, or others listed in the supplementary readings section of the syllabus. While the course offers basic opportunities to "get your hands dirty" with data, you should also enroll in courses or purchase manuals to help develop your SAS or Stata skills. Again, recommendations are offered under supplementary readings.

Instructional Procedure:

The course will be taught using a seminar style. Each session includes a set of focal conceptual readings (to introduce or review the methodology discussed), a set of applied readings (to illustrate how others have used the tool), and a set of supplemental readings (to allow you to delve deeper into particular topics). I have included a set of questions to guide your thinking before, during, and after each in-class discussion. In contrast to other strategic management seminars that cover particular theories or topics, this seminar will aim, individually and collectively, to develop technical responses to these basic research design questions. Finally, some sessions will include a short problem set assignment to allow you to "get your hands dirty" manipulating and/or analyzing data.

Evaluation:

The grading plan describes the relative importance attached to each of the individual activities used

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[1] I have benefited from conversations with Javier Gimeno, Ashton Hawk, Glenn Hoetker, Tammy Madsen, & Jeff Reuer while developing this syllabus.

to assign a course grade. The overall course grade will reflect your performance in terms of the: **(1) In-Class Discussion (35%), (2) Problem Sets (30%), and (3) Idea Pages (35%).**

1. In-Class Discussion (35%). In this course, effective participation involves reading all assignments, writing short responses to assigned study questions prior to class, and participating in all class discussions. Simply reading the assigned materials is insufficient to earn a good class contribution grade. You must be able to contribute to the discussion—often by articulating cogent responses to the discussion questions. Outlines of written responses to weekly discussion questions should be uploaded to Carmen Canvas at least 24 hours before the corresponding class discussion[2].

2. Problem Sets (30%). I have designed several problem sets in an effort to help you become familiar with the application of the statistical methodologies covered in this course[3]. These problem sets provide an opportunity to apply the methodology associated with the readings (and to foster additional in-class discussion). I ***encourage you to work with others on these problem set assignments***. You may even turn in assignments representing the work of the group as a whole. Problem set responses should be uploaded to Carmen Canvas at least 24 hours before the corresponding class discussion. You are on your honor to only associate your name with problem sets on which you have made some contribution.

3. Idea pages (35%). Research creativity is a fundamental skill required of the successful scholar. As you read the literature, you should always look for opportunities to contribute to the literature. The "idea page" exercise provides you with a low cost opportunity to explore research gaps and potential contributions. In this course, you will be asked to develop two, idea pages that provide a one-page outline of *how the use of one or more of the research methodologies covered in our class might contribute to research in the field of strategic management.* In addition, participants will develop a short presentation describing a potential empirical research presentation to the class (this presentation may, but does not have to be, related to one of your idea pages).

Each assignment will be graded on a scale of 0 to 3, as follows:
0 Assignment either not submitted or totally unacceptable in quality.
1 Sub-standard quality.
2 Good and acceptable, but not especially brilliant, interesting, or insightful.
3 Truly outstanding in some way.

Grades of 3 are expected to be awarded rarely, if ever. So, don't worry if you are not getting 3's. Only worry about not getting 2's. Each of the grade components are described below.

Software Used:

As part of this course, you will need to complete some assignments regarding data manipulation and statistical analysis. I do not have any preferences about the software that you use for the analysis (e.g., R, SAS, Stata).

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[2] I recommend that the group consider having a single course participant to summarize discussions from each session. That is, highlight the main points in the readings and the class discussion in a way that will be helpful as a reminder/study aid to the rest of the group. If the group can organize this effort, I will review and disseminate these summaries to the class during the ensuing session.

[3] We do not have time in this seminar to complete all the problem sets. I am, however, willing to share additional problem sets with students who are willing to work on these exercises outside of this class.

Session 1: Introduction

Strategic Management, Generating (Interesting) Hypotheses, & Testing Hypotheses[4]

1. Rumelt R., Schendel. D., & Teece, D. 1994. *Fundamental Issues in Strategy.* Harvard Business School Press: Boston, MA. Chapter 1: pgs. 9-47.

2. Davis, M.S. 1971. That's Interesting! Towards a Phenomenology of Sociology and a Sociology of Phenomenology. *Philosophy of Social Science*, 1: 309-344.

3. Stinchcombe, Arthur L. 1968. "The Logic of Scientific Inference." See pages 15-56 in *Constructing Social Theories*. Chicago, IL: University of Chicago Press.

4. Angrist, JD & JS Pischke. 2014. Mastering Metrics. Princeton University Press. Chapter 1. pgs. 1-46.

5. Bettis, R., Gambardella, A., Helfat, C., & Mitchell, W. 2014. Quantitative empirical analysis in strategic management. *Strategic Management Journal*, 35: 949-953.

Readings on the Fundamentals of Strategic Management (not required in this seminar):

*   Schendel, D. and C. Hofer. 1979. Strategic Management: A new view of business policy and planning. Little, Brown, and Company. *A summary of the formation of the field and its separation from the AoM. Chapter 10 reviews the main questions as articulated by prominent academics.*

*   Hambrick, D. and J. Fredrickson. 2001. Are you sure you have a strategy? Academy of Management Executive. 15(4): 48-59. *Figure 2 may help you consider the boundaries of the field.*

*   March, J.G., & Sutton, R. I. 1997. Organizational performance as a dependent variable. *Organization Science*, 8: 698-706. *A helpful review of the challenges of studying outcome variables such as organizational performance.*

Supplementary Readings on Hypothesis Testing (not required):

*   Angrist, JD and JS Pischke. 2009. Mostly Harmless Econometrics. Princeton University Press. *MHE provides a longer & more technical treatment of the issues covered in Mastering Metrics.*

*   Helfat, C. 1994. Firm specificity in corporate applied R&D. *Organization Science* 5(2): 173-184. *A wonderful example of using descriptive statistics and tables to generate insight. See also Helfat, C. 1994.* Evolutionary trajectories in Petroleum Firm R&D. *Management Science.* 40(12): 1720-1747.

*   Ketchen, D.J., Boyd, B.K., & Bergh, D.D. 2008. Research methodology in strategic management: Past accomplishments and future challenges. *Organizational Research Methods*, 11: 643-658.

*   Oxley, J., Rivkin, J. W., Ryall, M. D., & the Strategy Research Initiative. 2010. The Strategy Research Initiative: Recognizing and encouraging high-quality research in strategy. *Strategic Organization,* 8: 377-386. (see also http://strategyresearchinitiative.wikispaces.com/file/view/Ph.D.%20reader1.0-1.pdf).

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[4] While the first two sessions include a lot of reading, this material should be familiar. The goal is to review the basic concepts and ensure we've developed a solid foundation.

I've included additional readings on the philosophy of science, theory development, and research methodology for session one. These readings are NOT required. I include these and similar lists of additional readings for other sessions to help you develop deeper insight on topics of personal interest.

This syllabus concludes with a set of additional topics that we do not have time to cover in a 7 week seminar. I'm open to discussing these topics "off line" as we aim to develop additional expertise in research methods.

Supplementary Readings on Theory & Hypothesis Development (not required):

- Christensen, C. and P. Carlile. 2009. Course Research: Using the case method to build and teach management theory. *Academy of Management Learning and Education*. 9(2): 240-251. *An introductory summary of inductive theory development.*

- Christensen, C. M., & Raynor, M. E. 2003. Why executives should care about management theory. *Harvard Business Review*, (9) 67-74. *A simple summary of the theory development process.*

- Colquitt, J.A., & Zapata-Phelan, C.P. 2007. Trends in theory building and theory testing: A five-decade study of the Academy of Management Journal. *Academy of Management Journal*, 50: 1281-1303.

- Davis, James A. 1985. The Logic of Causal Order. Newbury Park, CA: Sage Publications.

- Glaser, Barney B., and Anselm L. Strauss. 1967. The Discovery of Grounded Theory: Strategies for Qualitative Research. New York: Aldine de Gruyter. *A primer on inductive and qualitative research.*

- Hambrick, D. C. 2007. The field of management's devotion to theory: Too much of a good thing? *Academy of Management Journal, 50,* 1346-1352. *A statement urging the field to focus on fundamental questions of managerial relevance.*

- Kuhn, Thomas S. The Structure of Scientific Revolutions. University of Chicago Press, 1970 (especially through page 10). *An important statement on the nature of scientific breakthroughs and a challenge to the concept of normal scientific progression discussed by Popper.*

- Locke, Karen, & Karen Golden-Biddle. 1997. Constructing opportunities for contribution: Structuring intertextual coherence and 'problematizing' in organizational studies. *Academy of Management Journal*, 40(5): 1023-1062.

- Popper, Karl. 1959 / 1968. The Logic of Scientific Discovery. New York: Harper Torchbooks. *Pay particular attention to the sections on scientific method, falsification vs. conventionalism, and the empirical basis.*

- Sutton, R. I., & Staw, B. M. 1995. What theory is not. *Administrative Science Quarterly*, *40,* 371-384. http://links.jstor.org/sici?sici=0001-8392%28199509%2940%3A3%3C371%3AWTIN%3E2.0.CO%3B2-F.

- Weick, K. E., 1995. What theory is *not,* theorizing is. *Administrative Science Quarterly*, *40,* 385-390. http://links.jstor.org/sici?sici=0001-8392%28199509%2940%3A3%3C385%3AWTINTI%3E2.0.CO%3B2-%23

- Whetten, D. 1989. What constitutes a theoretical contribution? *Academy of Management Review*. 14(4): 490-495.

- Varian, H. 1997. How to build an economic model in your spare time (see http://people.ischool.berkeley.edu/~hal/Papers/how.pdf *)*. pgs. 1 to 14.

- Asimov, I. 1988. Chapter 17: The relativity of wrong. The relativity of wrong. NY: Doubleday. pp. 213–225. *An entertaining take on how casual arguments can lead to mistakes.*

- Feynman, RP. 1974. Cargo Cult Science. *Engineering and Science*, 37(7). *An entertaining story about the ways in which we delude ourselves.*
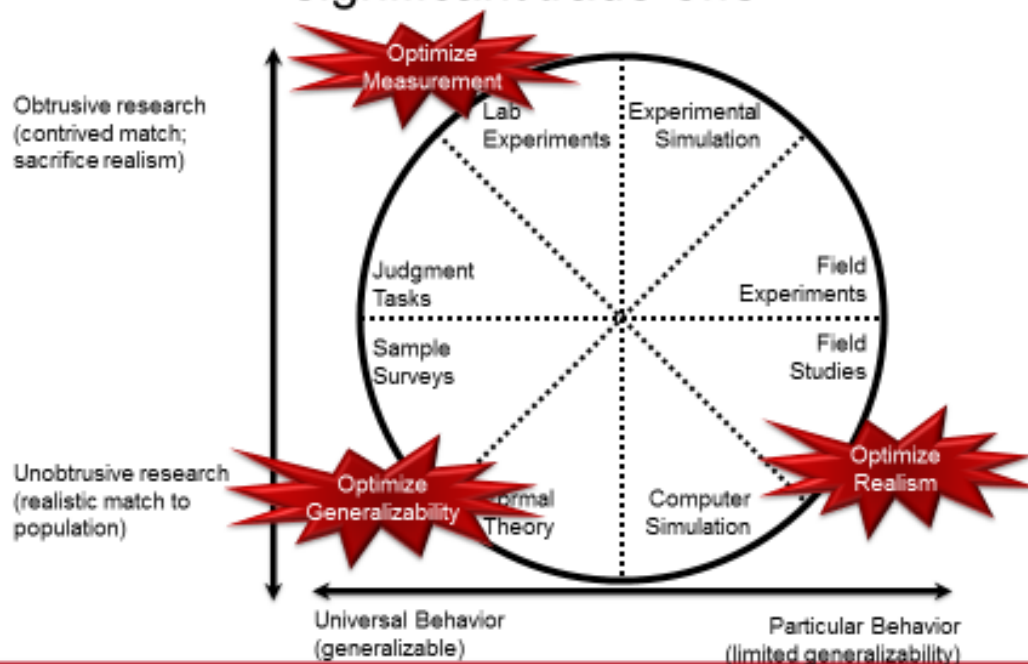
Research Methods in Strategic Management
Michael J. Leiblein
Session 1 Preparation Questions

1. What is social science research? What is strategic management research? What makes strategic management research interesting?

2. Stinchcombe describes the concept of the "crucial experiment". What is it? Could you provide an example of a "crucial experiment" that you have seen in the literature?

3. What are the components of a theory? What are the components of a good theory?

4. What do we mean when we say that X is the "cause" of Y?

5. What criteria do you propose to use when you evaluate the quality of empirical research in Strategic Management?

This variation *necessarily* involves significant trade-offs

Optimize Measurement

Obtrusive research (contrived match; sacrifice realism)

Lab Experiments | Experimental Simulation

Judgment Tasks | Field Experiments

Sample Surveys | Field Studies

Optimize Generalizability

Optimize Realism

Unobtrusive research (realistic match to population)

Formal Theory | Computer Simulation

Universal Behavior (generalizable)

Particular Behavior (limited generalizability)

Source: Leiblein adaptation of material from McGrath (1981)

Session 2: OLS Review: Mediators, Moderators, and Interaction Effects

Conceptual Readings (a lot reading this week; but largely review):

1. Kennedy, P. 2016. <u>A Guide to Econometrics</u>. Wiley-Blackwell. Ch. 1-3. (pgs. 1 to 50).

2. Brambor T, Clark WR, Golder M. 2006. Understanding Interaction Models: Improving Empirical Analyses. *Political Analysis* 14(1): 63-82.

3. Gelman A, Stern H. 2006. The difference between 'significant' and 'not significant is not itself statistically significant. *American Statistician* 60(4): 328-331.

4. Schwab, A., Abrahamson, E., Starbuck, W.H., & Fidler, F. 2011. Researchers should make thoughtful assessments instead of null-hypothesis significance tests. *Organization Science*, 22: 1105-1120.

5. Bettis, R.A. 2012. The search for asterisks: Compromised statistical tests and flawed theories. *Strategic Management Journal*, 33: 108-113.

Application Readings (focus on the methods section):

A. Schilke, O. 2014. On the contingent value of dynamic capabilities for competitive advantage: The nonlinear moderating effect of environmental dynamism. *Strategic Management Journal*, 35(2): 179-203.

B. Rodriguez, A. and M Nieto. 2016. Does R&D Offshoring lead to SME growth? Different governance modes and the mediating role of innovation. *Strategic Management Journal*, 37: 1734-1753.

Supplementary Readings:

- Abelson, Robert C. 1995. Statistics as Principled Argument. Hillsdale, NJ: Lawrence Erlbaum Associates. *Check out his MAGIC criteria—Magnitude of effect; Articulation and precision of claims, Generality of application; Interesting and compelling implications; Credibility of analysis.*

- Aiken, Leona S., & Stephen G. West. 1991. Testing and Probing Three-Way Interactions. In *Multiple Regression: Testing and Interpreting Interactions.* Newbury Park, CA: Sage Publications.

- Baron, R., and Kenny, D. 1986. The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182. *A basic process for testing mediation.*

- Braumoeller BF. 2004. Hypothesis testing and multiplicative interaction terms. *International Organization* 58(4): 807-820

- Edwards, J.R. 2009. Seven deadly myths of testing moderation in organizational research. In Lance, C.E., & Vandenburg, R.J. (Eds.). *Statistical and Methodological Myths and Urban Legends* (pp. 143-164). Routledge: New York, NY.

- Haans, RFJ, C. Pieters, and Z He. 2016. Thinking about U: Theorizing and testing U- and inverted U-shaped relationships in strategy research. *Strategic Management Journal*, 37: 1177-1195.

- Jaccard, James, Robert Turrisi and Choi K. Wan. 1990. *Interaction Effects in Multiple Regression.* Sage University Paper series on Quantitative Applications in the Social Sciences, series no. 07-072. Newbury Park, CA: Sage Publications.

- Kennedy, P. 2016. A Guide to Econometrics. Wiley-Blackwell. Ch. 4 on estimation and hypothesis testing.

- Nagel, Ernest. 1961. The Structure of Science: Problems in the Logic of Scientific Explanation. Indianapolis: Hacket Publishing. *I highlight chapters 13 ("Methodological problems of the social sciences") and 14 ("Explanation and understanding in the social sciences").*

- Paternoster R, Brame R, Mazerolle P, Piquero A. 1998. Using the correct statistical test for the equality of regression coefficients. *Criminology* 36: 859-866

- Popper, Karl R. 1959/1968. The Logic of Scientific Discovery. New York: Harper Torchbooks. *I highlight chapters 1 ("A survey of some fundamental problems"), 4 ("Falsifiability"), and 10 ("Probability").*

- Preacher, K.J. and A.F. Hayes. 2007. Addressing moderated mediation hypotheses. Theory, methods, and prescriptions. *Multivariate Behavioral Research.* 42(1): 185-227. *An alternative way of testing for mediation and moderation.*

- Spurious Correlations: http://www.tylervigen.com/spurious-correlations. *A little humor.*

- Walker, Henry A., and Bernard P. Cohen. 1985. Scope statements: Imperatives for evaluating theory. American Sociological Review, 50: 288-301. http://links.jstor.org/sici?sici=0003-1224%28198506%2950%3A3%3C288%3ASSIFET%3E2.0.CO%3B2-F

- Wooldridge JM. 2003. Introductory econometrics: A modern approach. pgs. 237-240.

Research Methods in Strategic Management
Michael J. Leiblein
Session 2 Preparation Questions

1. The regression model includes an error term. What is that error term supposed to represent? Why do we assume that the error term is distributed as a normal distribution?

2. What are "control variables"? Why are control variables important? What's wrong with having too many control variables? What's wrong with having too few control variables?

3. A reviewer observes that your paper does not control for a variable that has a well-known association with your dependent variable. The reviewer asks that you add the variable. Under what conditions could you make a methodologically credible argument that the lack of the control variable does not pose a threat to the statistical conclusion validity of your analysis?

4. Suppose that your theory predicts a positive relationship between X and Y. Yet, you find a negative correlation. You suspect that the difference between theory and correlation is that you are not controlling for other factors that may influence the DV. You have a list of potential control variables, with information about their correlation with X and Y. How would you identify what missing control variables are likely to explain the unexpected results?

5. Should you include the main effects when you test for interaction effects? Why? Why not? What are the pros and cons of including the main effects?

6. In a model with interaction effects, how should we interpret the main effects?

Session 3: Discrete Choice Analysis

Conceptual Readings:

1. Kennedy, P. 2016. <u>A Guide to Econometrics</u>. Wiley-Blackwell. Ch. 17: pgs 262-273.

2. Wiersema, M.F., & Bowen, H.P. 2009. The use of limited dependent variable techniques in strategy research: Issues and methods. *Strategic Management Journal*, 30: 679-692.

3. Ai, C. and E. Norton. 2003. Interaction terms in logit and probit models. *Economics Letters*, 80(1): 123-129.

Application Readings (focus on the methods section):

A. Leiblein, MJ and DJ Miller. 2003. "An empirical examination of transaction- and firm-level influences on the vertical boundaries of the firm," *Strategic Management Journal,* Vol. 24(9), pp. 839-859. **DOI: 10.1002/smj.340.**

B. Hoetker, G. 2007. The use of logit and probit models in strategic management research: critical issues. *Strategic Management Journal* **28** 331-343.

C. Zelner, B. A. (2009), Using simulation to interpret results from logit, probit, and other nonlinear models. *Strategic Management Journal*, **30**: 1335–1348. doi:10.1002/smj.783.

Supplementary discrete choice models readings (not required):

- Allison PD. 1999. Comparing logit and probit coefficients across groups. SMR/Sociological Methods & Research 28(2): 186-208.

- Ben-Akiva, M. and S. R. Lerman. 1985. Discrete Choice Analysis: Theory and application to travel demand. MIT Press.

- Bowen, H. 2012. Testing moderating hypotheses in limited dependent variable and other nonlinear models: Secondary versus total interactions. Journal of Management. 38(3): 860-889.

- Green, WH. 1997. Econometric Analysis. Pearson. Ch. 19.

- Hennart, J.-F., & Reddy, S. 1997. The choice between mergers/acquisitions and joint ventures: The case of Japanese investors in the United States. *Strategic Management Journal*, 18: 1-12.

- Maddala, GS. 1983. Limited Dependent and Qualitative Variables in Econometrics. Cambridge. (See especially, chapter 2).

- Norton EC, Wang H, Ai C. 2004. Computing interaction effects and standards errors in logit and probit models. *Stata Journal* 4(2): 154-167.

- Pampel, Fred C. 2000. Logistic Regression – A Primer. Sage: Quantitative Applications in the Social Sciences 07-132. Pages 1-54.

- Train, K. 2009. Discrete Choice Methods with Simulation. Cambridge University Press.

Supplementary discrete choice estimation readings (not required).

- Long, J. Scott and J. Freese. 2014. Regression models for Categorical and Limited Dependent Variables. Advanced Quantitative Techniques in the Social Sciences Series, 7. Thousand Oaks, CA: Sage. *I highlight this book with a separate section as it provides nice discussion and exercises to help you get up and running with Stata.*

Supplementary limited dependent variable model readings (not required; also event history):

- Agarwal, R., Ganco, M., & Ziedonis, R.H. 2009. Reputations for toughness in patent enforcement: Implications for knowledge spillovers via inventor mobility. *Strategic Management Journal*, 30: 1349-1374.

- Blevins, D.P., Tsang, E.W.K., & Spain, S.M. 2015. Count-based research in management: Suggestions for improvement. *Organizational Research Methods*, 18: 47-69.

- Carson, S.J., & John, G. 2013. A theoretical and empirical investigation of property rights sharing in outsourced research, development, and engineering relationships. *Strategic Management Journal*, 34: 1065-1085.

- Kennedy, P. 2008. *A Guide to Econometrics* (Sixth Edition). Wiley-Blackwell: Malden, MA. Chapters 16-17. 8

- Oxley, J.E. 1997. Appropriability hazards and governance in strategic alliances: A transaction cost approach. *Journal of Law, Economics, and Organization*, 13: 387-409.

Research Methods in Strategic Management
Michael J. Leiblein
Session 3 Preparation Questions

1. What's wrong with estimating an OLS models with a dichotomous or ordinal dependent variable?

2. Suppose that, in a piece of research, your DV is a categorical binary outcome (yes- no; stay-go; etc.). What are the possible methodologies that you can use to study such DV? List both the ones discussed in the readings and others that you know about. List both univariate and multivariate methods.

3. What are the differences between the following models? What are their assumptions? (i) Linear probability model, (ii) Logit model, (iii) Probit model, (iv) Ordered logit model, or (v) Multinomial logit model.

Session 4: Instrumental Variables

Conceptual Readings:

1. Angrist, JD & JS Pischke. 2014. <u>Mastering Metrics</u>. Princeton University Press. Chapter 3.

2. Hamilton, BH and JA Nickerson. 2003. Correcting for endogeneity in strategic management research. *Strategic Organization*, **1**(1): 51-78.

Application Readings (focus on the methods section):

A. Shaver. J. M. 1998. Accounting for endogeneity when assessing strategy performance: Does entry mode choice affect FDI survival? *Management Science*, 44(4): 571-585.

B. Villalonga, Belen. Does Diversification Cause the "Diversification Discount"? *Financial Management*, Vol. 33, No. 2. (Summer, 2004), pp. 5-27.

C. Berry, H. and A. Kaul. 2016. Replicating the Multinationality Performance relationship: Is there an S-curve? *Strategic Management Journal*, 37: 2275-2290.

D. Novak, Sharon and Scott Stern. 2008. How Does Outsourcing Affect Performance Dynamics? Evidence from the Automobile Industry. *Management Science* Vol. 54, No. 12, December 2008, pp. 1963-1979

Supplementary Conceptual Readings (not required):

- Angrist, JD and JS Pischke. 2009. <u>Mostly Harmless Econometrics</u>. Princeton University Press. Chapter 4.

- Bascle, G. 2008. Controlling for endogeneity with instrumental variables in strategic management research. *Strategic Organization*, 6: 285-327.

- Heckman (1979) "Sample Selection Bias as a Specification Error," *Econometrica*, 47, 153-161.

- Iacus, S., G. King, and G. Porro (2011). "Causal Inference Without Balance Checking: Coarsened Exact Matching." *Political Analysis*.

- Imbens, G. (2004), "Nonparametric Estimation of Average Treatment Effects Under Exogeneity: A Review" *Review of Economics and Statistics*, 86, 4-29.

- Kennedy, P. 2008. *A Guide to Econometrics* (Sixth Edition). Wiley-Blackwell: Malden, MA. Chapter 9

- Murray, M.P. 2006. Avoiding invalid instruments and coping with weak instruments. *Journal of Economic Perspectives*, 20: 111-132.

- Rosenbaum, P. and D. Rubin (1983): "The Central Role of the Propensity Score in Observational Studies for Causal Effects," *Biometrika*, 70, 41-55.

Supplementary Application Readings (not required):

- Anderson, E. 1988. Strategic implications of Darwinian economics for selling efficiency and choice of integrated or independent sales forces. *Management Science*, 34: 599-618.

- Bercovitz, J. Jap, and Nickerson. 2006. The antecedents and performance implications of cooperative exchange norms. *Organization Science*. 17(6): 724-740.

- Campa, Jose Manuel and Simi Kedia, 2002. Explaining the Diversification Discount. *Journal of Finance* 57(4):1731-1762.

- Chang, S. B. Kogut, and JS Yang. 2016. Global Diversification and its discontents: A bit of self-selection makes a world of difference. *Strategic Management Journal*, 37: 2254-2275.

- Elfenbein, D. and AM Knott, 2015. Time to exit: Rational, behavioral, and organizational delays. *Strategic Management Journal*. 36(7): 957-975.

- Hoetker, G. and T. Mellewigt. 2009. Choice and performance of governance mechanisms: Matching alliance governance to asset type. *Strategic Management Journal*, 30(10): 1025-1044.

- Leiblein, MJ, JJ Reuer, and F Dalsace. 2002. "Do make or buy decisions matter? The influence of governance on technological performance," *Strategic Management Journal*, Vol. 23(9), pp. 817-833.

- Nickerson, J.A., & Silverman, B.S. 2003. Why firms want to organize efficiently and what keeps them from doing so: Inappropriate governance, performance, and adaptation in a deregulated industry. *Administrative Science Quarterly*, 48: 433-465.

- Poppo, L. and T. Zenger. 1998. Testing alternative theories of the firm: Transaction cost, knowledge-based, and measurement explanations for make-or-buy decisions in information services. *Strategic Management Journal*, 19(9): 853-877.

- Rawley, E. TS. Simcoe. Diversfication, diseconomies of scope, and vertical contracting. Evidence from the taxicab industry. *Management Science*. 56(9): 1534-1550.

- Sampson, R. 2004. The cost of misaligned governance in R&D alliances. *Journal of Law, Economics, and Organization*. 20(2): 484-526.

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Session 4 Preparation Questions

1. Why are we concerned about sample selection bias? How does sample selection bias influence the internal and external validity of our analysis and results?

2. There is an old maxim in statistics that one "should not sample on the dependent variable". Essentially, this maxim dissuades from going out and picking a group of observations because they exhibit very high or low values of the variable that you are interested in. For instance, if you are interested in firm performance, you should not go out and collect a group of best-performing firms and then draw implications from that sample. What is the statistical logic of that maxim? What threats to validity are involved in the practice of sampling on the DV?

3. Suppose that you conducted a survey of a sample population and obtained a 50% response rate. A reviewer is making a big fuss that your sample may not be representative of the population? What can you do, either it terms of logical argumentation or statistical argumentation, to defend yourself from that claim? What tests could you carry out to show that the sample is not biased?

4. Several papers in this section state that strategy is essentially self-selected (i.e., firms are likely to take whatever strategy is best for them). What are the implications of that view for the analysis of the strategy-performance relationship? (For micro students: human behavior may be goal oriented; what are the implications about the assessment of the behavior-goal relationship?).

5. What is the infamous "inverse of Mill's ratio"? How would you go about calculating it?

6. Think about designing a study in your area of research were you could apply the theory and methods of self-selection.

Session 5: Panel Data Analysis (Fixed Effects, Random Effects, and Diff n Diff)

Conceptual Readings:

1. Kennedy, P. 2008. *A Guide to Econometrics* (Sixth Edition). Wiley-Blackwell: Malden, MA. Chapter 18.

2. Angrist, JD & JS Pischke. 2014. <u>Mastering Metrics</u>. Princeton University Press. Chapter 5.

3. Beck, N. and Katz, J.N. 1995. "What to do (and not to do) with time-series cross-section data". *American Political Science Review*, 89: 634-647.

4. Bowen, Harry P. and Margarethe F. Wiersema. 1999. "Matching method to paradigm in strategy research: Limitations of Cross-sectional analysis and some methodological alternatives", *Strategic Management Journal*, 20: 625-636.

5. Certo, ST, M. Withers, and M. Semadeni. 2017. A tale of two effects: Using longitudinal data to compare within and between-firm effects. *Strategic Management Journal*, 38: 1536-1556. Or Certo, S.T., & Semadeni, M. 2006. Strategy research and panel data: Evidence and implications. *Journal of Management*, 32: 449-471.

Application Readings (focus on the methods section):

A. Shaver, J.M. 2011. The benefits of geographic sales diversification: How exporting facilitates capital investment. *Strategic Management Journal*, 32: 1046-1060.

B. Wiersema, M. and Y. Zhang. CEO Dismissal. The role of investment analysis. *Strategic Management Journal*, 32: 1161-1182.

C. Stan, M. and P. Puranam. 2017. Organizational adaptation to interdependence shifts: The role of integrator structures. *Strategic Management Journal*, 38: 1041-1061.

Supplementary Conceptual Readings (not required):

- Abadie, A. (2005) "Semiparametric Difference-in-Differences Estimators" *Review of Economic Studies*, 72, 1-19.

- Alcacer, J., W. Chung, A. Hawk, and G. Pacheco-de-Almeida. 2013. Applying random coefficient models to strategy research: Testing for firm heterogeneity, predicting firm-specific coefficients, and estimating strategy trade-offs. Harvard Business School working paper 14-022. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2323578. *This is a potentially very promising method to help strategy scholars estimate firm-specific effects.*

- Arellano, M. 2003. Panel Data Econometrics. Oxford University Press. *Arellano's work offers particularly good discussions of lagged dependent variables and autocorrelation.*

- Athey, S. and G. Imbens. 2006. "Identification and Inference in Nonlinear Difference-In-Differences Models," *Econometrica*, 74(2): 431-497.

- Baltagi, Badi H. 1995. Econometric Analysis of Panel Data. Chapter 1. Chichester, UK: Wiley.

- Greene, William H. 1997. Econometric Analysis. Third edition. Chapter 14.Upper Saddle River: Prentice Hall.

- Hsiao, C. 2014. Analysis of Panel Data (3rd edition). Cambridge University Press.

- Kmenta, Jan. 1986. Elements of Econometrics. Second edition. Sections 12-1 and 12-2. New York: MacMillan.

- Sayrs, Louis W. 1989. Pooled Time Series Analysis. Sage University Paper series on Quantitative Applications in the Social Sciences, series no. 07-070. Newbury Park, CA: Sage Publications.

- Wooldridge, J.M. 2006. *Introductory Econometrics* (Third Edition). Thomson South-Western. Mason, OH. Chapters 13-14. (see https://pdfs.semanticscholar.org/6bd0/adf734a194039061d085202808e5a0763289.pdf)

Supplementary Application Readings (not required):

- Agrawal, A., and A. Goldfarb. 2008. "Restructuring Research: Communication Costs and the Democratization of University Innovation." *American Economic Review*, 98(4): 1578–90.

- Angrist, JD and JS Pischke. 2009. Mostly Harmless Econometrics. Princeton University Press. (Note. MHE provides a longer & more technical treatment of the issues covered in Mastering Metrics).

- Azoulay, P., J. Graff-Zivin and J. Wang. 2010. "Superstar Extinction." *The Quarterly Journal of Economics, 125 (2): 549-589.*

- Chang, S. B. Kogut, and JS Yang. 2016. Global Diversification and its discontents: A bit of self-selection makes a world of difference. *Strategic Management Journal*, 37: 2254-2275.

- Donald, S. and K. Lang. 2007. "Inference with Difference in Differences and Other Panel Data" *Review of Economics and Statistics*, 2, 221-233.

- Henisz, W., S. Dorobantu, and L. Nartey. 2014. Spinning gold: the financial return to stakeholder engagement. *Strategic Management Journal*, 35: 17271748.

- Lavie, D., P. Haunschild, and P. Khanna. 2012. Organizational differences, relational mechanisms, and alliance performance. *Strategic Management Journal*, 33: 1453-1479.

Research Methods in Strategic Management
Michael J. Leiblein
Session 5 Preparation Questions

1. What is panel data? Find an example in your literature of someone using panel data in their research. Bring a copy of the paper to class.

2. Why would anybody want to collect panel data as opposed to cross-sectional or time- series data? What are the advantages of panel data? What are the problems?

3. How important are panel data techniques for experimental researchers? And for non-experimental researchers?

4. What are the problems of analyzing panel data using the traditional OLS approach – i.e., pooling all observations and running an OLS regression?

5. What are the differences between fixed effects and random effect estimators? What are the pros and cons of each? How would you know if you need to use one or the other? While knowing the formulas is a plus, try to understand the insight behind the formulas.

6. What are the differences between the various panel estimators (e.g., standard pooled OLS estimator, the within estimator, the between estimator)? If needed (I'm not asking you to), how would you calculate these estimators in your package of choice?

Session 6: Event History Analysis

Conceptual Readings:

1. Allison, P.D. 2012. Survival Analysis.

   o See https://statisticalhorizons.com/wp-content/uploads/2012/01/Allison_SurvivalAnalysis.pdf

2. Cleves MA., W. Gould, and R. Gutierrez 2016. An introduction to survival analysis using Stata (4th edition). Stata Press: College Station, Tex. Ch. 1-4.

   o See 2004 edition at:
   http://www.takasila.org/classroom/dataupload/takasila/13/file/An%20Introduction%20to%20Survival%20Analysis%20Using%20stata.pdf

Application Readings (focus on the methods section):

A. Gimeno, J., Folta, T.B., Cooper, A.C., & Woo, C.Y. 1997. Survival of the fittest? Entrepreneurial human capital and the persistence of underperforming firms. *Administrative Science Quarterly*, 42: 750-783.

B. Henisz, W. J. & Delios, A. 2001. Uncertainty, Imitation, and Plant Location: Japanese Multinational Corporations, 1990-1996. *Administrative Science Quarterly*, 46(3): 443-75.

C. Hoang, H. and F. Rothaermel. 2010. Leveraging internal and external experience: Exploration, exploitation, and R&D project performance. *Strategic Management Journal*, 31: 734-758.

Supplementary Readings on Count Models (not required):

- Cameron, A. Colin & Pravin Trivedi. 1986. Econometric Models Based on Count Data: Comparisons and Applications of Some Estimators and Tests. *Journal of Applied Econometrics*, 1: 29-53.

- Cameron, A. Colin & Pravin Trivedi. 1998. *Regression Analysis of Count Data*. New York, NY: Cambridge University Press.

- Wooldridge, J.M. 2006. *Introductory Econometrics* (Third Edition). Thomson South-Western. Mason, OH. Chapter 19. (see https://pdfs.semanticscholar.org/6bd0/adf734a194039061d085202808e5a0763289.pdf)

- Murray and S. Stern. 2007. ―Do formal intellectual property rights hinder the free flow of scientific knowledge? An empirical test of the anti-commons hypothesis,‖ Journal of Economic Behavior and Organization, 63: 648-687.

Supplementary Event History Readings (not required):

- Allison, Paul D. 1982. Discrete-time methods for the analysis of event histories. In S. Leinhardt (Ed.) <u>Sociological Methodology</u> 1982, 61-98. San Francisco: Jossey-Bass.

- Cleves MA. 2008. An introduction to survival analysis using Stata (2nd ed.). Stata Press: College Station, Tex. Ch. 1-3.

- Hachen, David S. 1988. The Competing Risks Model. <u>Sociological Methods and</u> <u>Research</u>, 17(1): 21-54.

- Kiefer, Nicholas M. (1988) ―Duration Data and Hazard Functions‖ Journal of Economic Literature 26(2): 646-679.

- Petersen, Trond. 1991. The statistical analysis of event histories. <u>Sociological Methods</u> <u>and</u> <u>Research</u>, 19: 270-323.

- Yamaguchi; K. 1991. Event History Analysis. Sage Publications. Newbury Park, California. *The introduction provides a lucid description of censoring.*

- Amburgey, T. and A. Miner. 1992. Strategic momentum: the effects of repetitive, positional, and contextual momentum on merger activity. *Strategic Management Journal*, 13: 335-348.

- Amburgey, Terry L., Dawn Kelly, and William P. Barnett. 1993. Resetting the clock: The dynamics of organizational change and failure. *Administrative Science Quarterly*, 38(1): 51-73.

- Blodgett, LL. 1992. Factors in the instability of international joint ventures: An event history analysis. *Strategic Management Journal*, 13: 475-481.

- Blossfeld, H.-P., K. Golsch, et al. (2007). Event history analysis with Stata. Mahwah, N.J., Lawrence Erlbaum Associates., Ch 2 .

- Penning, Johannes M., Harry Barkema, and Sytse Douma. 1994. Organizational learning and diversification. *Academy of Management Journal*, 37(3): 608-640.

- Wooldridge, J.M. 2006. *Introductory Econometrics* (Third Edition). Thomson South-Western. Mason, OH. Chapter 20. (see https://pdfs.semanticscholar.org/6bd0/adf734a194039061d085202808e5a0763289.pdf)

Research Methods in Strategic Management
Michael J. Leiblein
Session 6 Preparation Questions

1. What is the difference between censored and truncated samples? What is left-censoring? What is right censoring? What challenges arise (using OLS) in censored or truncated samples?

2. What is event history analysis? What is the difference relative to other longitudinal methods?

3. What is the hazard rate? Is it a probability? How does it relate to the survivor function? Can you provide examples of hazard rates and survivor functions relevant to the strategic management literature?

4. What are the differences between (1) nonparametric, (2) semiparametric, and (3) parametric event history models? Could you classify the models that you have read about in these three categories? What are the assumptions underlying each? What are their weaknesses/strengths? The Cox (semi-parametric) model is one of the most popular models in statistics. What are the appealing properties of this model?

5. What is the "proportional hazards" assumption? Under what conditions is this assumption likely to be violated?

6. What are the different ways to handle time-varying variables? What are the differences between continuous-time and discrete-time methods? What are the advantages/disadvantages of discrete time modeling?

7. What is time (or duration) dependence? Why is it important? What are the ways in which we can model time dependence in an event history model?

Session 7A & 7B: Complementarity & Class Summary Presentations

Conceptual Readings:

1. Athey, S. and S. Stern. 1998. An empirical framework for testing theories about complementarity in organizational design. NBER working paper 6600.

2. Milgrom, P and J. Roberts. 1990. The economics of modern manufacturing: Technology, strategy, and organization. *American Economic Review. June: 511-528*.

Application Readings (focus on the methods section):

A. Cassiman, B. and G. Valentini. 2016. Open Innovation: Are inbound and outbound knowledge flows really complementary? Strategic Management Journal. **37**: 1034-1046.

B. Grimpe, C. and W. Sofka. 2016. Complementarities in the search for innovation—managing markets and relationships. Research Policy. 45: 2036-2053.

C. Cassiman, B. and R. Veugelers. 2006. In search of complementarity in innovation strategy: Internal R&D and external knowledge acquisition. Management Science. 52(1): 68-82.

Supplementary Readings:

- Aral, S., E. Brynjolfsson, and L. Wu. 2012. Three-Way Complementarities: Performance Pay, Human Resource Analytics, and Information Technology. Management Science 58(5):913-931.

- Bresnahan, T. E. Brynjolfsson, and L. Hitt. 2002. Information Technology, Workplace Organization, and the Demand for Skilled Labor:Firm-Level Evidence. Quarterly Journal of Economics, 117(1): 339-376.

- Drazin, Robert, and Andrew H. Van de Ven. 1985. Alternative forms of fit in contingency theory. *Administrative Science Quarterly*, 30: 514-539.

- Siggelkow, N. 2002. Evolution toward fit. *Administrative Science Quarterly*. 47(1): 125-159.

- Miller, D and PH Friesen, 1986. Porter's (1980) generic strategies and performance: an empirical examination with American data. *Organization Studies*. 7(1): 37-55.

Research Methods in Strategic Management
Michael J. Leiblein
Session 7 Preparation Questions

1. Be ready to discuss the similarities and differences of these concepts: (i) Contingency theory, (ii) Fit, (iii) Moderator relationship, (iv) Interaction effect, and (v) Complementarity.

2. What is fit? What is complementarity? Find an example in your literature of an argument suggesting that two or more variables have a complementary or substitutive relationship. Be prepared to discuss how one might test the existence of such a relationship.

3. Please prepare a 15 minute presentation of a research project that you will analyze after this seminar, paying particular attention to the hypotheses, research design and specification of your model. If you have a draft paper, please bring send me an electronic copy so that I can become more familiar with your project.

    a. Davis depicts theoretical models graphically in systems of boxes and arrows. In your presentation, use a path diagram to represent your model.

    b. Using the ideas discussed by Murray Davis (1971), develop a slide that outlines the introduction of your paper. How are you making your paper interesting? How are you "problematizing" your contribution?

    c. Think about your research project, and about the main relationship that you expect to find. Come up with at least 2 different alternative explanations for that relationship that do not involve your suggested mechanism. How could you control for those alternative theories? How could you build a critical experiment?

    d. Describe the research design you intend to conduct in your project. Why do you believe this design is appropriate?

Session X: Other Topics You May Consider on Your Journey

There are many additional research methodologies that we do not have time to cover in a restricted, seven week seminar. I've collected some additional readings that you may find useful to start your own reading in these other areas.

Doctoral Dissertations in Strategic Management

- I encourage you to read one or two award winning dissertations early in your doctoral education. This exercise provides you with an opportunity to better understand what a high-quality dissertation looks like before you begin your endeavor.

Managing the Research Process

- Barzun, Jacques. 1986. On Writing, Editing, and Publishing, 2nd Ed. Chicago: University of Chicago Press.

- Becker, Howard S. 1986. Writing for Social Scientists: How to Start and Finish your Thesis, Book, or Article. Chicago: University of Chicago Press. Chapters 1-6.

- Becker, Howard S. 1998. Tricks of the Trade: How to Think about Your Research While You're Doing It. Chicago: University of Chicago Press.

- Booth, Wayne C., Gregory G. Colomb, and Joseph M. Williams. 1995. The Craft of Research. Chicago: University of Chicago Press.

- Daft, Richard L. 1985. Why I recommended that your manuscript be rejected and what you can do about it. In Larry L. Cummings and Peter J. Frost, eds., Publishing in the Organizational Sciences: 193-209. Homewood, IL: Irwin.

- Fiske, Donald W, and D. Campbell. 1992. Citations do not solve problems. Psychological Bulletin, 112 (3): 393-395.

- Germano, William. 2001. Getting it Published: A Guide for Scholars and Anyone Else Serious about Serious Books. Chicago: University of Chicago Press.

- Gopen, George D., and Judith A. Swann. 1990. The science of scientific writing. American Scientist, 78: 550-558.

- Starbuck, William H. 1999. Fussy Professor Starbuck's Cookbook of Handy-Dandy Prescriptions for Ambitious Academic Authors. http://pages.stern.nyu.edu/~wstarbuc/Writing/Fussy.htm

- Weick, Karl E. Re-punctuating the problem. 1977. In P. Goodman, J. Pennings, and Associates, New Perspectives on Organizational Effectiveness. San Francisco: Jossey-Bass.

- Discussion Questions: ♦How can I make my writing more persuasive? ♦How should I conduct a thorough and efficient literature review? ♦How am I supposed to structure a paper so it reads like a journal article? ♦♦How can I manage my relations with collaborators? ♦♦Whom should I ask for comments on papers? At what stage? How many people should I ask? How many times can I reasonably ask any one person? ♦♦♦How does the review process operate? ♦♦♦How should I respond to those $%^&#@!!! reviewers?

Sample Selection and Matching

- Iacus, S.M., King, G., & Porro, G. 2011. Causal inference without balance checking: Coarsened exact matching. *Political Analysis*, 19: 1-24.

- Imbens, G. 2004. Nonparametric Estimation of Average Treatment Effects Under Exogeneity: A Review. *Review of Economics and Statistics*, 86, 4-29.

- Lim, M. 2013. Using the propensity score method to estimate causal effects: A review and practical guide. *Organizational Research Methods*, 16: 188-226.

- Masten, S.E., Meehan, J.W., & Snyder, E.A. 1991. The costs of organization. *Journal of Law, Economics, and Organization*, 7: 1-25.

- Mindruta, D., Moeen, M., & Agarwal, R. 2016. A two-sided approach for partner selection and assessing complementarities in partners' attributes in inter-firm alliances. *Strategic Management Journal.* 9

- Reuer, J.J., & Ragozzino, R. 2012. The choice between joint ventures and acquisitions: Insights from signaling theory. *Organization Science*, 23: 1175-1190.

- Rosenbaum, P. and D. Rubin 1983. "The Central Role of the Propensity Score in Observational Studies for Causal Effects," *Biometrika*, 70, 41-55.

- Research Questions: ♦ What is the goal of matching techniques? ♦ ♦ How do you choose when to use control variables, instrumental variables (including Heckman), 2SLS, or propensity scoring techniques? What can we learn from propensity score matching techniques that we can't learn from other research designs?

Experiments

- Azoulay, P., Zivin, J.S.G., & Wang, J. 2010. Superstar extinction. *Quarterly Journal of Economics*, 125: 549-589.

- Chatterji, A.K., Findley, M., Jensen, N.M., Meier, S., & Nielson, D. 2016. Field experiments in strategy research. *Strategic Management Journal*, forthcoming.

- Cook, Thomas D., and Donald T. Campbell. 1979. Quasi-Experimentation: Design and Analysis Issues for Field Settings. Boston: Houghton Mifflin. Chapter 8 ("The conduct of randomized experiments").

- He, J., & Tian, X. 2013. The dark side of analyst coverage: The case of innovation. *Journal of Financial Economics*, 109: 856-878.

- Meyer, B. 1995. Natural and quasi-experiments in economics. *Journal of Business and Economic Statistics*, 13: 151-161.

- Natividad, G., & Rawley, E. 2016. Interdependence and performance: A natural experiment in firm scope. *Strategy Science*, forthcoming.

- Research Questions: ♦ What are the features of good laboratory experiments? ♦♦ What are the biggest drawbacks with laboratory experiments?

Qualitative Research

- Bettis, R.A., Gambardella, A., Helfat, C., & Mitchell, W. 2015. Qualitative empirical research in strategic management. *Strategic Management Journal*, 36: 637-639.

- Eisenhardt, K.M. 1989. Building theories from case research. *Academy of Management Review*, 14: 532-550.

- Ozcan, P., & Eisenhardt, K.M. 2009. Origin of alliance portfolios: Entrepreneurs, network strategies, and firm performance. *Academy of Management Journal*, 52: 246-279.

- Siggelkow, N. 2007. Persuasion with case studies. *Academy of Management Journal*, 50: 20-24.

- Suddaby, R. 2006. What grounded theory is not. *Academy of Management Journal*, 49: 633-642.

- Research Questions: ♦ What is qualitative research? ♦♦ What can we learn from qualitative research and case studies that that we can't learn from other research designs? How does research that is primarily inductive differ, in practice, from research that is primarily deductive? ♦♦♦ What are the strengths and weaknesses of case studies?

Measurement, Validity, and Reliability (See also Professor Klein's OBHR methods course).

- Calder, Bobby J., Lynn W. Phillips, and Alice M. Tybout. 1982. The concept of external validity. Journal of Consumer Research, 9: 240-244. http://links.jstor.org/sici?sici=0093-5301%28198212%299%3A3%3C240%3ATCOEV%3E2.0.CO%3B2-K

- Calder, Bobby J., Lynn W. Phillips, and Alice M. Tybout. 1983. Beyond external validity. Journal of Consumer Research, 10: 112-114. http://links.jstor.org/sici?sici=0093-5301%28198306%2910%3A1%3C112%3ABEV%3E2.0.CO%3B2-1.

- Campbell, Donald T., and Donald W. Fiske. 1959. Convergent and discriminant validation by the multi-trait-multimethod matrix. Psychological Bulletin, 56: 546-553.

- Cook, Thomas D., and Donald T. Campbell. 1979. Quasi-Experimentation: Design and Analysis Issues for Field Settings. Boston: Houghton Mifflin. Chapter 2 ("Validity").

- Cronbach, Lee J., and Paul E. Meehl. 1955. Construct validity in psychological tests. Psychological Bulletin, 52: 281-302.

- Research Questions: How do we determine whether our measures are valid? Whether they have internal validity, construct validity, or external validity? How do we develop reliable and valid measures?

Surveys.

- Babbie, Earl. 1973. Survey Research Methods. Belmont, CA: Wadsworth. Chapters 3-5.

- Dillman, Don A. 1991. The design and administration of mail surveys. Annual Review of Sociology, 17: 225-249. http://links.jstor.org/sici?sici=0360-0572%281991%2917%3C225%3ATDAAOM%3E2.0.CO%3B2-I

- Sudman, Seymour, and Graham Kalton. 1986. New developments in the sampling of special populations. Annual Review of Sociology, 12: 401-429. http://links.jstor.org/sici?sici=0360-0572%281986%2912%3C401%3ANDITSO%3E2.0.CO%3B2-M

- Research Questions: ♦What does it take to construct and conduct good surveys? ♦♦What are structured interviews and how can I conduct them? ♦♦♦What are the strengths and weaknesses of these research designs?

NBER Methods MiniCourse

- Lecture notes and videos on various estimation techniques at http://www.nber.org/minicourse3.html

Research Methods in Strategic Management
Michael J. Leiblein
Problem Set #1
Due prior to Session 3

Instructions:
Good empirical researchers faithfully report basic descriptive statistics in their work. At least in part, this is good practice because we are investigating samples. Theoretically, these samples are randomly taken from a general population. We want to maintain transparency so other scholars may evaluate, test, and/or replicate our findings on their samples. Moreover, a good description of your data can help you develop insights and understanding regarding any anomalies or oddities in your data.

This problem set asks you to perform some basic data manipulation processes and to conduct some simple statistical analyses. The problem set is designed to help you familiarize yourself with a statistical program and gain some experience generating insights from descriptive statistics, correlations, and differences in sample means.

I do not have any preferences about the software that you use for the analysis; you are free to use whatever software package you deem appropriate. I *encourage* you to work with others on these problem set assignments. You may even turn in assignments representing the work of the group as a whole. If you need a basic resource for Stata, I recommend the following: http://www.ats.ucla.edu/stat/stata/.

1. Import the Game Data and Cognition Data excel datasets from the Carmen / Canvas course site. The Cognition Data file reports scores from multiple user ids on several cognitive tests (we only wish to retain Mind Reading, Race to 100, and Cognitive Reflection). The Game Data file reports Game Date, Game Id, User Id, Round, Funds, Marginal Cost, R&D Investment, R&D Outcome (New Marginal Cost), Entry Choice, and Predicted Number of Rivals). Our objective is to test whether Mind Reading, Race to 100, or Cognitive Reflection Tests affect choices to invest or compete in the game.

2. Please merge the two datasets on the common variable, userid, and create the following new variables.
   a. Actual Number of Rivals: A count of the number of rivals in a given game and round.
   b. Accuracy: Actual Number of Rivals – Predicted Number of Rivals.

3. Create a table of descriptive statistics and correlations (mean, standard deviation, minimum, and maximum values) for each of the following variables. R&D Investment, Marginal Cost, Entry Choice, Actual Number of Rivals, Predicted Number of Rivals, Accuracy, Mind Reading, Race to 100, Cognitive Reflection Test.

4. Conduct a t-test of differences in means for R&D investment, Entry Choice, and Accuracy across the top and bottom quartiles of the Mind Reading, Race to 100, and Cognitive Reflection scores.

5. What do you observe? What inferences do you draw?

6. Copy your code, tables, and observations into an MS Word document and upload to the appropriate Carmen dropbox at least 24 hours prior to our next seminar.

Instructions:

We all want to design research studies that are realistic and unbiased, offer generalizable truths, and precisely control and measure relevant variables. Research designs vary, however, in their ability to address these basic concerns (see Leiblein & Weber slide below). There are significant tradeoffs.

Historically, research in the field of strategic management has emphasized non-experimental research

methods. Whereas experimental research allows for control via the experiment itself (e.g., random assignment, same conditions, materials, etc.), non-experimental field studies utilize statistical control. The objective of this problem set is to help you familiarize yourself with one of the basic tools to achieve statistical control in non-experimental studies, multivariate regression.

Again, I do not have any preferences about the software that you use for the analysis (e.g., R, SAS, Stata) and I *encourage* you to work with others on these problem set assignments. You are simply on your honor to only associate your name with problem sets on which you have made some contribution.
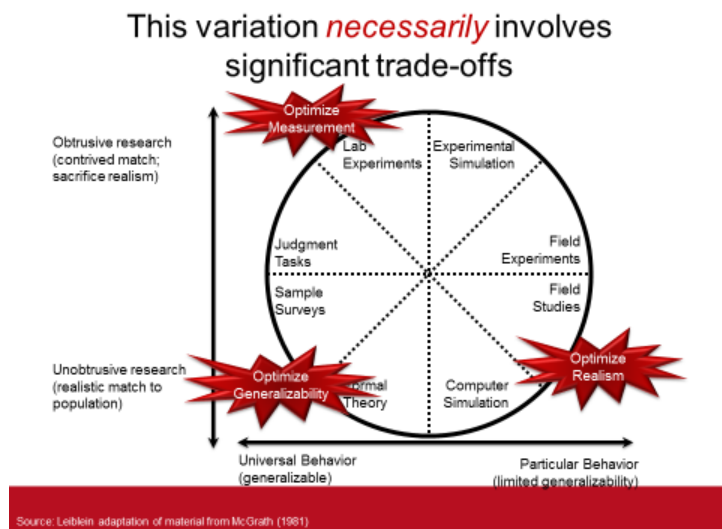
1. Import the Leiblein MillerJ NCMM Survey excel dataset from the Carmen / Canvas course site. This survey was developed to explore whether and how elements of organization (e.g., incentive intensity, decision-making process, resource allocation process) and innovation outcomes varied across small-, medium-, and large-sized firms.

2. Create a table of descriptive statistics and correlations for the variables in the dataset.

3. Test for differences in means for these variables across the small-, medium-, and large-firm size categories.

4. Estimate regression models to explore whether and how CEO compensation, the use of ROI hurdles, Incentive Compensation, the allocation of funds via User Groups, Scarcity of Financial Resources, Provision of Funds, Selection of Projects by Senior Management, Firm Age, Firm Size, and Innovation Expenditures affect the # of New to Firm Products and Services.

5. What do you observe? Do you have concerns with the residuals? Are there outlier observations (from the residual plot, DFFITS or DFBETA statistics)? Can you imagine a better model to test this theory?

Copy your code, tables, and observations into an MS Word document and upload to the appropriate Carmen dropbox at least 24 hours prior to our next seminar.

Instructions:
In social science we are often interested in exploring issues involving dichotomous or nominal dependent variables. This is particularly true in strategic management where our focus on the interdependence across choices highlights questions of choice (e.g., choices to organize via a firm or market; choices to diversity in a related or unrelated fashion; choices to expand in domestic or non-domestic markets; estimates of complementarity across a bundles of resources).

The existence of a discrete dependent variable introduces a series of statistical complications. In particular, residuals tend to be skewed. This implies that parameter estimates may be wrong and standard errors will be wrong. As we'll discuss in this session, the existence of discrete dependent variables also complicates the interpretation of statistical estimates.

The objective of this problem set is to help you familiarize yourself with estimation using logit and probit models. The assignment asks you to manipulate a subset of responses from a paper I published with Doug Miller (a successful OSU alumnus).

Again, I do not have any preferences about the software that you use for the analysis (e.g., R, SAS, Stata) and I *encourage* you to work with others on these problem set assignments. You are simply on your honor to only associate your name with problem sets on which you have made some contribution.

1. Import the Leiblein Miller Make-Buy dataset from the Carmen / Canvas course site. The Leiblein Miller dataset reports

2. Create a table of descriptive statistics and correlations.

3. Estimate regression models to explore whether and how smallno (# of suppliers), asset specificity, demand uncertainty, and firm fab experience are related to the choice between market or hierarchical organization (vdmake).

4. What do you observe? What is the overall fit of your model? What does it mean to report a "pseudo R^2" term? How do you interpret your coefficients?

    Jordan Siegel is currently attempting to refine the model reported in this paper (using this data). If you met Jordan at a conference, what question would you ask him?

5. Copy your code, tables, and observations into an MS Word document and upload to the appropriate Carmen dropbox at least 24 hours prior to our next seminar.

Research Methods in Strategic Management
Michael J. Leiblein
Problem Set #4
Not Required

Instructions:
The introduction of statistical control is a powerful tool. Yet, it too has its limits. Unless the specification of your model, including the vector of control variables, is perfect, your estimate of associations between independent and dependent variables will be biased.

Establishing rigorous control is a daunting task. Imagine a researcher wants to better understand how outsourcing or diversification affects risk or performance outcomes. Theory informs us to explore how exchange- and firm- effects influence the choice (to diversity) and its consequences. And, we may control for a broad range of factors (e.g., focal firm age, industrial concentration and technical trajectory in existing and new product markets, formal and informal institutions in existing and new geographic markets). If you can confidently claim you accurately measured all the relevant confounding variables, you have a good argument for conditional independence (of X and Y) and may employ models such as multiple regression. If, however, after inclusion of your control variables, there is a correlation between the treatment indicator, T, and the error term, we say that the treatment is ENDOGENOUS. This is problematic since a valid estimate of treatment effects requires EXOGENOUS regressor variables.

The objective of this problem set is to introduce you to instrumental variable estimation tools that account for this selection effect. The assignment asks you to manipulate data from a paper I published with Jeff Reuer and Frederic Dalsace (LRD, 2002) using the Heckman procedure. .

Again, I do not have any preferences about the software that you use for the analysis (e.g., R, SAS, Stata) and I *encourage* you to work with others on these problem set assignments. You are simply on your honor to only associate your name with problem sets on which you have made some contribution.

1. Import the Leiblein Reuer Dalsace dataset from the Carmen / Canvas course site (upload). The Leiblein Reuer Dalsace dataset reports performance consequences of individual exchange decisions.

2. Estimate a first stage regression model as per Table 2, Model III in the Leiblein, Reuer, and Dalsace (LRD, 2002) paper.

3. Estimate the performance consequences of governance decisions using the LRD data (applying 2-stage method as in LRD or propensity score matching as in Leiblein & Awate).

4. What do you observe? Do you believe that LRD introduce a "good" instrumental variable? What do you think LRD mean by "misalignment"? Is there a way to advance this analysis? Do you think it would be useful to move beyond the average treatment effect (ATT) to develop a local treatment effect (LATE)?

5. Copy your code, tables, and observations into an MS Word document and upload to the appropriate Carmen dropbox at least 24 hours prior to our next seminar.

Research Methods in Strategic Management
Michael J. Leiblein
Problem Set #5
Not Required

Instructions:
A separate set of strategic management research questions aim to describe whether or when certain events will occur. For instance, one might imagine questions such as what effects the time until the adoption of a new technology, entry into a new (non-domestic) market, or persistence of a competitive advantage. The incidence of time introduces two complications. One, tools such as logistic regression waste information (why did one firm adopt early and another late)? Two, tools such as logistic regression do not allow us to deal with censoring (how to combine data on observations that did and did not experience an event).

Event history (a.k.a., Duration or Survival) analysis refers to a collection of statistical tools that aim to describe how or explain why certain events do or do not occur. Typically, these methods deal with discrete events (e.g., market entry or survival) but can respond to sharp qualitative changes. The typical goal of the analysis is to estimate a hazard rate or (akin to) probability that an event will occur in a given period.

The objective of this problem set is to introduce you to the application of a few of the simplest event history analysis tools, the Kaplan Meir estimate and the Cox Proportional Hazard method. The assignment asks you to manipulate data from my dissertation.

Again, I do not have any preferences about the software that you use for the analysis (e.g., R, SAS, Stata) and I *encourage* you to work with others on these problem set assignments. You are simply on your honor to only associate your name with problem sets on which you have made some contribution.

1. Import the Leiblein Adoption 9096 dataset from the Carmen / Canvas course site. The New Technology Adoption dataset reports adoption of 0.05 um process technology as a function of firm, product market (e.g., Analog, ASIC, Boolean, DSP, …), and production capacity.

2. Organize the data as survival data aiming to estimate the hazard of adopting technology generation (as a function of firm characteristics).

3. How many observations survived five years? How many are censored?

4. Plot a hazard function and the survivor function assuming a Weibull and exponential distribution. Do your plots lead you to favor a parametric or partial likelihood approach to modeling this data?

5. What other functional form or modeling choices would you make for this dataset? Why?

6. Copy your code, tables, and observations into an MS Word document and upload to the appropriate Carmen dropbox at least 24 hours prior to our next seminar.