

One Essay on Dissertation Formats in Economics

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I. Introduction

The dissertation component of PhD training originated in Germany in the nineteenth century. A dissertation is usually conceived as systematic research using logical argument and, often, incorporating empirical evidence in support of a hypothesis. According to the Council of Graduate Schools (1991, p. 12), a PhD dissertation is “a unified work with a single theme, including an introduction and literature review, a description of methods and procedures used, a presentation of results, and a concluding discussion of the meaning of the results.” The strength of a PhD dissertation is its depth of analysis. The traditional form of a dissertation (or thesis) in economics has been a treatise, a book-length exploration of a hypothesis that adds to our understanding.

In the decades after World War II, all economics PhD dissertations were treatises. Copies were deposited at University Microfilms, Inc. at the University of Michigan. Some were eventually published as books, but most sat passively in the degree-granting university’s library. By the 1970s, most new PhDs in economics had discovered that their dissertation work did not end with the congratulatory handshake from their thesis advisors but also included months of painstakingly converting their treatise into essays short enough to submit to the discipline’s increasingly influential professional journals. As the role of journals expanded in economics, directly constructing the dissertation as a set of essays could be viewed as a lower-cost path to publication.

Thus was born the dissertation format that forty years later has become the norm in economics, a number (usually three) of (somewhat) related essays. Some of the sets of essays

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employ similar methodology (e.g. three applications of a new model), while others range over methodologies (e.g. an historical, theoretical, and empirical investigation). The essays format permits students to address more than one question, or to combine different methodological approaches to a single question. Most importantly, the essays format allows students to avoid the effort to convert a treatise into separate journal articles.

As shown in Table 1, among dissertations listed in the 1970 and 1980 *American Economic Review* and the 1990, 2000, and 2010 *Journal of Economic Literature*, the proportion organized as a set of essays has grown from virtually zero in 1970 to 69 percent in 2010. Of essay-style theses for which we could count the number of essays (1,315 of the 4,586 listed theses), 72 percent contained three essays, 20 percent contained two essays, and 6 percent contained four essays.

II. Advantages and Disadvantages of Essays as a Dissertation Format

Essay-style dissertations have several possible advantages. First, because PhD students mostly read articles in professional journals, it may be easier for students to identify essay-length questions than to formulate one large question sufficient to anchor a treatise. Second, it may be possible to write a set of essays faster than a treatise, thereby reducing the opportunity cost of earning a PhD. In an earlier analysis of the time taken to earn a PhD in economics (Stock and Siegfried, 2006) we found that students writing essay format dissertations finished about six months faster than those writing a treatise.² Third, the essays format eliminates the time required to re-format a treatise into potential journal articles, thereby accelerating the launch of a budding scholar's career. Fourth, an essay-style dissertation trains young scholars to do what they are most likely to do throughout their careers, namely, write articles. Finally, sound research is expected to be transparent and authenticated through replication and review by other scholars. To the extent that

² However, when we split the time required to earn a PhD into the pre-dissertation and dissertation writing stages, we found that dissertation format is unrelated to the length of the dissertation writing period. Apparently those who sail through the pre-dissertation stage of the program are more likely to write a set of essays, although they do not complete that dissertation any faster than colleagues who write a treatise.

treatises are seldom read by anyone other than the PhD candidate's dissertation committee and perhaps a few mystified relatives, the essays format offers the promise of broader scrutiny of dissertation research, since at least one of a set of submission-ready essays is more likely to be published in a journal than is a treatise or works derived from it (Duke and Beck, 1999).

On the negative side, essays reduce the practice young scholars get in conducting a major research project or program that might require them to undertake book-length analysis of a question. Finally, to the extent that the essence of the PhD dissertation is in-depth analysis and coherence, a set of related essays could be criticized as lacking depth.

III. Data

We have data about dissertation format for two large samples of U.S. PhDs who graduated in 1996-97 or 2001-02. We previously collected information about these cohorts for studies of the labor market for new PhD economists (see Siegfried and Stock, 1999, 2004, for details). We have survey responses and dissertation type for 446 1996-97 PhD degree recipients, and more limited information from the thesis advisors of an additional 115 non-respondents who earned their PhD in 1996-97. For the 2001-02 cohort, we have 397 survey responses from graduates and 119 responses from advisors. Thus we have information on 561 PhDs for 1996-97 and 516 PhDs for 2001-2002.

We identified the dissertation style for each PhD in these cohorts using records in *ProQuest*, the successor organization to University Microfilms, Inc., the long-time depository for dissertations. If the title of the dissertation included the fact that it was a series of essays, e.g. "Three Essays on X," we ended the search and recorded it as a set of essays dissertation. If there was ambiguity, we looked at the dissertation itself to ascertain the correct classification.

We collected *EconLit* data about early-career publication productivity of each graduate. For each person, we counted the number of journal publications and the number of top-50 journal

publications produced within five years of earning the PhD.³ For the class of 1996-97, publication counts were as of December 2002; for the class of 2001-02, December 2007.

IV. Dissertation Format Differences Across Graduate Program Characteristics

Table 2 reports dissertation formats for our sample of PhDs. Forty-one percent of the class of 1996-97 and 65 percent of the class of 2001-02 samples wrote essay-style dissertations. Table 2 also reports dissertation format across National Research Council (NRC) rankings of PhD programs (Goldberger et al., 1995). We grouped the programs into five tiers. The first tier includes programs ranked 1-6 and the second tier includes programs ranked 7-15. The third tier is programs ranked 16-30, the fourth tier programs ranked 31-48, and the fifth tier includes the remainder of the programs. Essay-style dissertations are clearly more common at tier 1 and 2 programs, constituting over 70 percent of dissertations among the highest ranked 15 PhD programs in 1997 and 2002. Essay-style dissertations comprise less than half of the theses in programs ranked below the top 30.

There are also significant differences in thesis formats between specific PhD programs. Of the 27 universities reporting at least fifty total PhDs awarded in 1970, 1980, 1990, 2000, and 2010, the five with the highest percentage of essay-style dissertations are Princeton (67%), California-San Diego (62%), MIT (53%), Harvard (48%), and Yale (40%). The five with the lowest percentage of set of essays dissertations are North Carolina State (9%), Purdue (14%), Michigan State (17%), Chicago (19%), and North Carolina (22%). With the notable exception of Chicago, tier 1 economics programs clearly have led the trend toward essay-style dissertations.

V. Who Writes Essays and Who Writes Treatises?

The comparisons above suggest differences in the propensity to write an essay-style dissertation across time, across the prestige level of the department, and across specific PhD programs. Because these various characteristics are interrelated, we used Probit analysis to identify

³ The top-50 journals were selected based on the list in Kalaitzidakis, et al. (2001). We did not distinguish between joint and sole-authored publications when making the publication counts.

partial equilibrium relationships between demographic, economics subfield, and graduate school characteristics and the propensity to write a set of essays dissertation. Several characteristics help predict dissertation format. U.S. citizens are 8 percentage points less likely than non-citizens to write a set of essays, and students specializing in industrial organization, public economics or development are 20 to 24 percentage points less likely to write a set of essays than students in microeconomics. Those with an assistantship when they begin their studies are 13 percentage points more likely to write a set-of-essays than others. Finally, students from higher ranked programs are significantly more likely to write essay-style dissertations.

VI. Dissertation Format and Job Outcomes

The essay-style dissertation format may result in faster publication and more research output during the early years of a scholar's career. This would likely be particularly true for new PhDs taking academic jobs. Our data reveal that graduates who enter academe are more likely to have written essay-style dissertations than others. Those taking government jobs (including the Federal Reserve) are more likely to have written a treatise. Not surprisingly, those who took academic jobs have more total and top-50 journal publications than their counterparts in other sectors, while those in business, industry, and consulting publish less than those in other employment sectors.

Table 3 reports publication outcomes across demographic groups, fields of specialization, and graduate school characteristics. Graduates who wrote essay-style dissertations averaged 2.8 refereed journal publications within five years of completing their PhD, while treatise authors averaged 1.9 journal publications. There are also significant differences in research productivity between men and women; men averaged 2.7 publications within five years while women averaged 1.6 publications. Graduates who specialized in quantitative economics or econometrics averaged 2.9 publications; those in financial economics had only 1.5 publications. Graduates of tier 1 and 2 programs averaged about three journal publications within five years of earning the PhD, while those from Tier 5 programs had only half as many early-career publications (1.5).

To better investigate the hypothesis that essay-style dissertations help launch a professional career, we regressed the number of journal publications within the first five post-PhD years on demographic, field, and graduate school characteristics. Because publications is a count variable and many individuals do not publish anything in the first five years after graduation, we used a zero-inflated Poisson regression. Because students could graduate in any month of the year but publication counts were made at the end of the fifth post-PhD year, we also include *time to publication count (months)* in the regression to control for differences in time available after graduation to publish articles. The journal publication regression estimates are reported in Table 3.⁴

For the full sample of graduates, the estimated coefficient on *essay-style dissertation* is statistically insignificant, indicating no systematic relationship between dissertation style and early career publication productivity. There are differences in publication productivity for other graduate characteristics, however. After controlling for other factors, U.S. citizens have 1.1 times as many publications as non-citizens; females have only 0.6 times as many publications as their male counterparts. Graduates in quantitative economics or econometrics have 1.4 times as many publications as those in microeconomics, while those in financial economics, health, education, and welfare economics, or a field not listed in Table 3 have only one-half to three-quarters as many publications as those in micro. Taking longer to earn the PhD is associated with fewer journal articles, each additional year costing about 0.14 articles. Finally, graduates from higher tier programs have 1.3 to 1.8 times as many publications as those from Tier 5 programs.

Graduates who enter academic jobs are more likely to write an essays dissertation. Because academic jobs and research productivity are likely endogenous but we have no instruments with which to separately identify these outcomes, we estimate the publication regression separately for academics alone. Among academics, those who graduated in 1996-97 had only three-quarters as

⁴ We conducted the same regression using top-50 journal publications as the dependent variable. The results are generally similar to those for academics only and for academics from Tier 1 and 2 only in Table 3. For academics from Tier 3 and 4, there were too few top-50 publications for the regression to converge. These estimates are available from the authors.

many publications within five years post-PhD as those who graduated in 2001-02. Academics who are parents produced 0.80 as many publications as their childless counterparts. Married graduates published more than single graduates who entered academe.

The higher rate of publication for graduates in quantitative economics or econometrics and the lower rate of publication among those in financial economics persists among academics alone, while the lower rate of publication for women relative to men is even starker among just academics. Academics in public economics or agricultural and natural resource economics published at higher rates than those in microeconomics. While academics who held assistantships in graduate school published at lower rates than their counterparts without assistantships, this difference could reflect that many programs award work-free fellowships rather than assistantships to the most promising students. The negative time-to-degree and positive quality tier impacts on publication rates persist in the narrower academics-only sample.

Students at higher-ranked programs are more likely to write a set of essays. If admissions committees can identify applicants with greater prospects for long-run research contributions, then graduates of the leading departments also will possess more human capital (and maybe more ambition) than others. Consequently, it is difficult to disentangle effects of the human capital of students at top programs from effects of writing an essay-style dissertation on subsequent research productivity. To circumvent this problem we estimate the relationship between dissertation format and research productivity for academics who graduated from tier 1 and 2 programs separately from those from tier 3 and 4 programs. We combine the tiers this way because the estimated coefficients on the *tier 1* and *tier 2* variables (and the *tier 3* and *tier 4* variables) in the full sample regression are statistically (and practically) indistinguishable from each other but are all substantially different from *Tier 5* coefficients. By limiting our estimates to graduates of tier 1 and 2 programs separately from tier 3 and 4 programs, we eliminate the variation in propensity to write a set of essays thesis

across tiers likely reflecting career prospects, and just compare post-degree research productivity of relatively homogeneous sets of students who differ only by dissertation style.

Results are reported in columns 4 and 5 of Table 3. For 1996-97 graduates of tier 1 and 2 programs, an essay-style dissertation is associated with roughly two more publications than a treatise. In contrast, academics in the 2001-02 cohort from tier 1 and 2 programs who wrote essay-style dissertations had only half as many publications as their counterparts who wrote treatise dissertations. Academics who graduated from tier 3 and 4 programs who wrote essay-style dissertations had 1.3 more publications than those who wrote treatise-style dissertations, and there is no significant difference in publication rates across the cohorts from these tiers.

The publication cost of children is statistically significant among graduates from tier 3 and 4 programs, but not among tier 1 and 2 graduates. U.S. citizenship has contrasting relationships with publication productivity for graduates from the two groups of tiers. Among academics who graduated from tier 1 and 2 programs, U.S. citizens published only two-thirds as many papers as their non-citizen classmates, while among those who graduated from tier 3 and 4 programs, U.S. citizens published 1.2 times as much as non-citizens.

VII. Conclusion

Dissertations in economics have changed dramatically over the past four decades from primarily treatise-length books to sets of essays on related topics. Students at higher ranked PhD programs, non-U.S. citizens, and students specializing in microeconomics have been at the forefront of this trend. Economics PhD graduates who eventually take jobs as academics are more likely to have written essay-style dissertations, while those who take jobs in government are more likely to have written a treatise. Finally, most, but not all of the evidence suggests that essay-style dissertations enhance economists' early career research productivity.

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Table 1 - Economics Ph.D. Dissertation Styles Across Time

| | Year | | | | |
|---------------------------------------|-------|------|------|------|------|
| | 1970 | 1980 | 1990 | 2000 | 2010 |
| Essay-style dissertation ^a | 0.003 | 0.05 | 0.24 | 0.44 | 0.69 |
| Number of observations | 984 | 692 | 935 | 962 | 1013 |

Source: Estimates based on lists of dissertations in the *American Economic Review* (1970, 1980) and *Journal of Economic Literature* (1990-2010) and dissertations in ProQuest database (all years).

^a Proportion whose dissertation is best described as a set of essays, rather than a single topic treatise or some other format.

Table 2 - Ph.D. Dissertation Styles and Publication Rates, by Program Rank

| | Tier | | | | | Total |
|---------------------------------------|-------------------------|-------------|-------|-------------|-------------|-------|
| | 1 | 2 | 3 | 4 | 5 | |
| Program rank | 1-6 | 7-15 | 16-30 | 31-48 | >48 | - |
| Essay-style dissertation ^a | 0.75^b | 0.68 | 0.52 | 0.46 | 0.35 | 0.52 |
| 1996-97 cohort | 0.66 | 0.60 | 0.34 | 0.32 | 0.24 | 0.41 |
| 2001-02 cohort | 0.84 | 0.78 | 0.70 | 0.62 | 0.47 | 0.65 |
| Number of observations | 190 | 180 | 199 | 149 | 359 | 1077 |

Source: Authors' surveys of 1996-97 and 2001-02 Economics Ph.D. graduates and their advisors and ProQuest dissertation data.

^a Proportion whose dissertation is best described as a set of essays, rather than a single topic treatise or some other format.

^b Numbers in bold indicate that the rate for that tier is statistically different from the rate for the rest of the tiers combined at the 0.10 significance level (two-tailed tests).

Table 3 - Predicting Publication Productivity
 Dependent Variable: Number of Journal Publications within 5 years post-PhD (zero-inflated Poisson regression)

| | (1) | (2) | | (3) | | (4) | | (5) | | |
|--|---|----------------|-----------|----------------|-----------|-----------------------------------|-----------|-----------------------------------|-----------|--|
| | Mean number of journal publications | Full Sample | | Academics only | | Academics from Tier 1 & 2 only | | Academics from Tier 3 & 4 only | | |
| | | $exp(\beta)^a$ | $z-stat.$ | $exp(\beta)$ | $z-stat.$ | $exp(\beta)$ | $z-stat.$ | $exp(\beta)$ | $z-stat.$ | |
| Essay-style dissertation | 2.76 | 1.12 | 1.30 | 1.05 | 0.44 | 0.54 | -3.17 | 1.30 | 1.96 | |
| Treatise dissertation | 1.90 | - | - | - | - | - | - | - | - | |
| 1996-97 cohort | 2.54 | 0.89 | -1.21 | 0.75 | -2.62 | 0.31 | -5.59 | 1.17 | 1.06 | |
| 2001-02 cohort | 2.24 | - | - | - | - | - | - | - | - | |
| Essay style dissertation * 1996-97 cohort ^b | - | 0.95 | -0.50 | 1.15 | 1.04 | 2.44 | 3.72 | 0.87 | -0.76 | |
| <u>Demographic Characteristics</u> | | | | | | | | | | |
| Age | - | 1.00 | 0.86 | 1.00 | 0.39 | 1.00 | 0.09 | 1.01 | 1.42 | |
| Married | 2.28 | 0.99 | -0.10 | 1.19 | 2.43 | 1.13 | 1.10 | 1.07 | 0.71 | |
| Not married | 2.52 | - | - | - | - | - | - | - | - | |
| Have children | 2.13 | 0.90 | -1.50 | 0.80 | -2.77 | 0.98 | -0.14 | 0.66 | -3.52 | |
| Do not have children | 2.49 | - | - | - | - | - | - | - | - | |
| U.S. citizen | 2.25 | 1.12 | 1.93 | 1.03 | 0.37 | 0.67 | -3.28 | 1.19 | 1.78 | |
| Non-U.S. citizen | 2.53 | - | - | - | - | - | - | - | - | |
| Female | 1.62 | 0.63 | -6.60 | 0.52 | -7.23 | 0.48 | -5.19 | 0.65 | -3.33 | |
| Male | 2.65 | - | - | - | - | - | - | - | - | |
| Hold prior graduate degree | 2.60 | 1.07 | 1.13 | 1.01 | 0.12 | 0.89 | -0.96 | 0.86 | -1.47 | |
| Do not hold prior graduate degree | 2.19 | - | - | - | - | - | - | - | - | |
| Hold prior degree in economics | 2.39 | 1.10 | 1.43 | 1.00 | -0.04 | 0.73 | -2.61 | 1.02 | 0.17 | |
| Do not hold prior degree in economics | 2.35 | - | - | - | - | - | - | - | - | |
| <u>Field of Specialization</u> | | | | | | | | | | |
| Microeconomics | 2.85 | - | - | - | - | - | - | - | - | |
| Macroeconomics | 2.54 | 0.93 | -0.62 | 1.13 | 0.87 | 1.11 | 0.52 | 1.17 | 0.76 | |
| Quantitative/Econometrics | 3.20 | 1.38 | 2.38 | 1.87 | 3.77 | 1.73 | 2.13 | 1.93 | 2.96 | |
| Industrial organization | 2.06 | 0.82 | -1.54 | 0.94 | -0.40 | 0.77 | -1.19 | 0.93 | -0.28 | |
| International economics | 2.25 | 0.89 | -0.95 | 0.96 | -0.29 | 0.91 | -0.40 | 0.88 | -0.57 | |
| Financial economics | 1.45 | 0.54 | -4.11 | 0.64 | -2.48 | 0.59 | -2.06 | 0.67 | -1.45 | |
| Labor economics | 2.43 | 0.90 | -0.81 | 1.01 | 0.04 | 1.14 | 0.49 | 0.99 | -0.03 | |
| Public economics | 2.92 | 1.09 | 0.68 | 1.35 | 1.95 | 2.09 | 3.38 | 1.05 | 0.19 | |
| Health, Ed., Welfare | 1.83 | 0.77 | -1.69 | 0.91 | -0.54 | 1.25 | 0.89 | 0.78 | -0.89 | |
| Development economics | 2.41 | 0.93 | -0.55 | 1.12 | 0.72 | 1.20 | 0.78 | 1.24 | 0.98 | |
| Ag./Natural resource economics | 2.93 | 1.21 | 1.36 | 1.55 | 2.61 | 1.52 | 1.24 | 1.64 | 2.26 | |
| Economic history | 2.27 | 0.79 | -0.94 | 0.83 | -0.71 | 0.99 | -0.04 | 0.41 | -1.91 | |
| Other field | 2.10 | 0.73 | -2.01 | 0.96 | -0.25 | 1.02 | 0.08 | 0.81 | -0.79 | |
| <u>Graduate School Characteristics</u> | | | | | | | | | | |
| Had assistantship | 2.43 | 1.01 | 0.11 | 0.80 | -2.09 | 0.98 | -0.11 | 0.53 | -4.25 | |
| Did not have assistantship | 1.95 | - | - | - | - | - | - | - | - | |
| Time to publication count (months) | - | 1.03 | 3.80 | 1.03 | 3.89 | 1.06 | 5.31 | 1.00 | -0.32 | |
| Time to degree | - | 0.86 | -7.63 | 0.90 | -5.13 | 0.88 | -3.54 | 0.86 | -4.77 | |
| Tier 1 | 2.88 | 1.66 | 5.81 | 1.39 | 3.25 | - | - | - | - | |
| Tier 2 | 3.21 | 1.76 | 6.86 | 1.43 | 3.74 | - | - | - | - | |
| Tier 3 | 2.46 | 1.30 | 2.93 | 1.04 | 0.35 | - | - | - | - | |
| Tier 4 | 2.33 | 1.36 | 3.35 | 1.27 | 2.20 | - | - | - | - | |
| Tier 5 | 1.51 | - | - | - | - | - | - | - | - | |
| Number of observations | 770 | 770 | | 425 | | 174 | | 251 | | |

Source: Authors' survey. Numbers in bold identify coefficients that are statistically significantly different from zero at the 0.10 significance level (two-tailed tests).

^a Reports exponentiated coefficients. The expected number of publications changes by $exp(\beta)$ for each unit increase in the independent variable. For binary variables, the expected number of publications is $exp(\beta)$ times that of the comparison group.

^b We also estimated the models including full interactions between *1996-97 cohort* and all other independent variables. For the sake of brevity we do not report the estimates here, but they are available from the authors.