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## Teaching Microeconomics in Wonderland

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Teaching Microeconomics in Wonderland

by

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### **Abstract**

A gap has existed between the relative space that authors of intermediate microeconomics textbooks devote to imperfectly competitive markets and their relative frequency. This gap has persisted for at least 40 years even with an almost complete turnover of authors between the decades of the sixties and the nineties. The picture portrayed in most micro textbooks gives students a distorted view of the presence of market imperfections throughout the economy. Even so, there are large differences between authors in their relative coverage of imperfect markets.

It does not appear that the credibility gap exists because the concepts discussed in imperfect markets are more difficult to explain. Nor is there any evidence that authors agree more on what to include in the competitive chapters but differ about what to include in the imperfectly competitive chapters.

It appears that many authors have strong priors that non-competitive behavior permeates most markets even though concentration statistics fail to support these priors. Authors may overly stress non-competitive industry analyses to justify or enlarge their advocacy role in public policy discussions and analyses of firm behavior in antitrust cases and consulting.

Microeconomics has a set of commonly accepted theories that most instructors deem worthy of teaching to their students. By and large, the subjects included in intermediate microeconomics textbooks reflect a general consensus at least about the logical consistency of commonly accepted theories.

This near unity is clearly reflected in the chapters on competition, monopoly and oligopoly. Most micro textbooks include a competitive chapter that spells out how short and long run prices are determined and some include applications of the competitive model in the same or another chapter. Applications of the competitive model differ from textbook to textbook but many authors apply the competitive model by analyzing the effects of government interference with the competitive market such as minimum prices or quotas on consumer and producer surplus. All textbooks include a chapter on monopoly and most devote some space to government regulation of monopoly. All textbooks have at least one chapter on oligopoly where cooperative and non-cooperative models of oligopoly are analyzed and monopolistic competition is discussed. Increasingly, contemporary textbooks include a rudimentary discussion of game theory in either the oligopoly chapter or in a shorter separate chapter on strategy and game theory.

### **A Significant Difference among Textbooks**

This surface uniformity is deceiving for it masks some fundamental differences. Upon closer inspection, differences surface about which subjects are given relatively more or less attention. I focus on just one but significant topic that caught my attention and I think deserves more scrutiny – the more intensive treatment given to the theories of non-competitive relative than to competitive markets. Table 1 presents some summary statistics for a sample of 14 contemporary intermediate micro textbooks that were published from the late nineteen eighties and throughout the nineteen nineties. The first column shows the name of the author and the textbook, the edition and the copyright date of the edition. Column 2 reports the total pages allocated to competitive and non-competitive product markets.<sup>1 2</sup> Columns 3 and 4 show the space devoted to the combined topics of monopoly and oligopoly and to game theory respectively. Column 5 displays the percentage of total pages on competitive and non-competitive markets that are devoted to non-competitive markets. Column 6 shows the percentage of a book's total pages that are devoted to competitive and non-competitive product markets.

The last row of Table 1 presents the mean pages and mean percentages in columns 5 and 6. Authors of contemporary micro textbooks devote an average of 68.9% of the total pages on product markets to explaining theories of imperfect markets.<sup>3 4</sup> There is considerable dispersion. Leading the parade are textbooks authored by Thompson and Katz and Rosen with percentages of 92.6 and 79.0 respectively. At the other end are the textbooks authored by Stigler and Landsburg with percentages of 43.6 and 56.6. Only Stigler spends more space on competitive than imperfect markets. Column 6 shows that pages devoted to competitive and non-competitive markets devoured an average of 24.3 percent of the total pages of the typical intermediate micro textbook.

There is more than a hint of a Chicago School effect on the rankings. Those books at the bottom of the list tend to be written by authors who are or were faculty members or students at the University of Chicago.<sup>5 6</sup>

### **The Prevalence of Non-Competitive Markets in the Economy**

Is this preoccupation with imperfect product markets justified by the relative frequency of monopoly or oligopoly? A comprehensive answer to this question would require information about each firm's price elasticity of demand. Armed with this information, industries could be classified as competitive or non-competitive. Obviously, such detailed firm demand information is unavailable. Rather than leave matters in such an inconclusive state, I have selected two measures as reference standards. The first standard uses four-digit industry concentration ratios, with their admitted imperfections, to get a sense of magnitude of the relative frequency of non-competitive markets.<sup>7</sup> The limitations of concentration ratios are discussed in industrial organization textbooks and a few are mentioned below. If the industry concentration ratios show a large share of industries have high concentration ratios, then contemporary textbooks may be simply mirroring the relative frequency of imperfect markets. If, on the other hand, a large gap is found between what is taught in textbooks and what market types exist, it is unlikely to be closed by adjusting and refining the concentration ratios to take account of the existence of local rather than national markets, too narrowly or too broadly defined four-digit industries, accounting for imports, etc.

Table 2a gives one estimate of the relative presence of non-competitive markets. It shows the frequency distribution of the 4 firm concentration ratio for four-digit manufacturing industries in 1992, the latest year for which concentration statistics are available. I have included all four-digit industries except for industries with a nine in the fourth digit since these typically contain a hodge-podge of miscellaneous industries. Three hundred and ninety-eight four-digit industries remain. Table 2 shows that only 46 of 398 industries or 11.6% of the industries had a four firm concentration ratio above 70%.<sup>8</sup> Even with a more relaxed standard of 60%, only 79 of the 398 industries or 19.8% had concentration ratios in excess of 60%.<sup>9</sup> To completely eliminate the imbalance between the relative coverage in textbooks and the presence of non-competitive markets, one would have to argue that firms in all industries with four-firm concentration ratios starting as low as 30% (or more) face downward sloping demand curves. I am unaware of any serious empirical study that has found industries with concentration ratios as low as 30% earn higher profit rates. Generally, empirical studies find a weak relationship between concentration and profitability.

One criticism of the concentration statistics is that they do not measure the extent of product differentiation. Some industries with low concentration ratios have differentiated products. This criticism is blunted to some degree by the fact that many manufacturing industries sell their products as intermediate inputs to other firms and not to final consumers. In these industrial markets advertising plays a subservient role when firms sell to large informed buyers.

A second standard is the Horizontal Merger Guidelines issued by the U.S. Department of Justice and the Federal Trade Commission. According to these guidelines, a merger with a post-merger Herfindahl-Hirschman Index (HHI) below 1000 is unlikely to have anti competitive effects. Markets with a post-merger HHI between 1000 and 1800 are considered to be moderately concentrated. Markets with a post-merger HHI above 1800 are regarded to be highly concentrated. Table 2b shows the frequency distribution of the HHI. Only 41 of the 390 industries with Herfindahl statistics available or 10.5% of the industries had a Herfindahl index above 1800. Only 101 industries or 25.9% of the 390 industries had a HHI in excess of 1000. Consequently, the DOJ and the FTC would not expect an anti competitive effect of economic consequence from mergers in 74.1% of the industries. Using the merger guidelines of the Department of Justice and the Federal Trade Commission as a reference standard, the relative frequency of non-competitive markets is still well below the relative space allocated to non-competitive markets by authors of intermediate micro textbooks.<sup>10</sup> A reality gap exists between the coverage of market types in intermediate micro textbooks and the market types in the economy.

### **Back to the Sixties**

Are contemporary authors a different breed from the authors who preceded them? Or, is this partiality to monopoly and oligopoly long standing? Table 3 shows similar statistics for a sample of ten textbooks published in the sixties. The means are in the last row. The mean percentage of pages devoted to monopoly and oligopoly, and game theory is 64.9%, just four percentage points lower than for the textbooks published in the nineteen nineties.<sup>11</sup> In that decade expositions of game theory were limited to just two textbooks, a sharp contrast to the nineties where game theory is discussed in most textbooks. Even in the sixties, authors, who for the most part were different from the authors of the nineties, demonstrated a penchant for monopoly and oligopoly theory. So, we are not dealing with a recent emerging phenomenon. This suggests that the motives of micro textbook writers were very similar whether they were writing in the sixties or the nineties. The reality gap of the nineties was somewhat greater than in the sixties but it was there in both decades.

This comparison with the textbooks of the sixties shows some other differences between the textbooks of the nineties and those of the sixties. Not only are the textbooks of the nineties longer but they devote more pages to applications of the theory and relatively more space to analyses of pricing in product markets. The latter development is in large part a response to the increasing use of game theoretic models and the recent developments in the industrial organization literature.

### **Possible Explanations**

What is striking about Tables 1 – 3 is the reality gap between the extensive coverage that authors devote to monopoly and oligopoly and the relative frequency of imperfect markets no matter which reference standard is used.<sup>12</sup>

Several hypotheses might explain why such a large gap exists and why textbook writers display a kindred spirit toward monopoly and oligopoly theory.

•First, the concepts taught in the chapters on imperfect markets require relatively more space because they are allegedly more difficult for a student to master than the simpler concepts of competitive theory. If so, authors can be expected to devote relatively more space discussing the more difficult topics found in the study of imperfect markets. To test this possibility, I selected seven topics commonly covered in the monopoly, oligopoly and game theory chapters and four topics regularly covered in the competitive chapter. The selected topics in the imperfectly competitive chapters were: Cournot model, cartel theory, determination of monopolist's price and output, consumer and producer surplus under monopoly, prisoner's dilemma, the effect of a per unit tax on a monopolist, and third degree price discrimination. The four selected topics in the competitive chapter were: constant cost industry, increasing cost industry, the effect of a per unit tax and consumer and producer surplus in a competitive market. These topics were selected in part because of the common coverage in the fourteen textbooks.

I counted the number of pages the author devoted to the theory of each topic.<sup>13</sup> Table 4 shows each textbook's average number of pages per topic separately for competitive and non-competitive topics. The simple means are shown in the last row. Mean pages per topic are 2.90 for the competitive chapters and 2.64 for the imperfectly competitive chapters. Authors do not use more space per topic explaining the supposedly more difficult concepts in the imperfectly competitive chapters than the supposedly simpler ones in the competitive chapters. The topics discussed in the imperfectly competitive chapters do not appear more difficult for authors to explain. If anything, more space per topic is used for the topics discussed in the competitive chapters. This evidence suggests that the relatively large proportion of pages devoted to monopoly and oligopoly is not because authors find these concepts inherently more difficult to explain.

•Second, the relatively greater space devoted to imperfect competition could occur because authors agree on what topics should be included in the competitive chapter and how many pages should be devoted to them. This along with the expanded coverage by at least some authors of more modern topics, e.g., credible commitments, dominant strategies and entry deterrence etc. in the monopoly, oligopoly and game theory chapters could explain this penchant to cover imperfect markets as well as the heterogeneity of results. If there were agreement about what should be covered in competitive chapters, the ratio of the standard deviation to the mean of the pages spent covering competitive chapter would be smaller than for the chapters on imperfect competition. However the evidence rejects this hypothesis. The standard deviation to mean ratio of pages devoted to coverage of competition is .428 (= 18.3/43.4) among the 14 books and .409 (= 42.8/104.7) for coverage of imperfect markets.

Just as a fine bottle of wine matures with time, competitive theory has been developed, scrutinized and clarified over many decades. Even so, no consensus exists among contemporary authors as to what topics should be included in the competitive chapter or, perhaps more importantly, how intensively they should be covered. If a consensus existed, the standard deviation/mean ratio would be lower for the coverage of

competition. Hence, textbooks are as variable in their coverage of competition as their coverage of imperfect competition. This suggests that authors exert considerable personal leeway and differ in what topics they want to include and emphasize.

- Third, authors respond to the demands of the changing mix of consumers. Whether authors are responding to the demands of instructors or of students is a difficult question to answer. If authors are responding to the demands of students, the final users, students may find analyses of non-competitive markets more interesting than competitive ones. As the market for intermediate micro textbooks is increasingly made up of undergraduate business and MBA students, authors devote more space to ways to create monopolies, collect more consumer surplus -- topics that these students perceive as relevant theory and applications -- even though the probability that a student will be subsequently employed in an imperfectly competitive industry is rather low. Instructors in business schools appear more responsive to the demands of their students than instructors in economics departments are. If authors were responding to these demands, an increase over time in the coverage of monopoly and oligopoly would not be surprising. Such an effect is observed even though the textbooks of the sixties are not dramatically different from those of the nineties, with respect to the relative coverage of monopoly and oligopoly.

- Another explanation is that many authors and instructors question the relevance of or are unaware of concentration statistics, the merger guidelines and empirical studies of profitability and price-cost margins. They have strong priors that non-competitive behavior permeates most markets while competitive behavior is still confined to some agricultural, and perhaps to a few retailing and wholesale markets. Moreover, these convictions are apparently pass on to successive generations of economists as they enter the profession.

- Fifth, authors and instructors may stress non-competitive industry analyses because they want to justify or enlarge their role in public policy discussions and analyses of firm behavior. After all, once an instructor has properly explained the ideal properties springing from competitive markets, the economist becomes rather like an idle bystander and has little room to advocate government intervention into the market at least on efficiency grounds. Advocacy requires a cause. The cause cannot be found in competitive markets. The stability in the percentage of pages devoted to imperfect markets suggests that advocacy motive is a persistent and not cyclical one.

- Finally, authors select topics for inclusion often, but not always, based on logical consistency of the theory and not on empirical relevance. Under this view the purpose of an intermediate micro course is to introduce students to the logic of maximizing behavior of the consumer and the firm and to get students to think logically. The relevance of the theory is a secondary detail. A theory is included even if it might be used only sporadically or not at all to explain some empirical regularity.

Indeed, Stigler's account of the life of the kinked demand curve paints an even more dismal picture of professional indifference and even irresponsibility. In his study of the



history of the kinked demand curve, he found the theory had a long successful life in principles and intermediate micro textbooks even after holes in the theory were pointed out and even after the professional literature found the theory incapable of explaining rigid prices (Stigler). When Stigler wrote on the history of the kinked demand curve in the mid-seventies, he showed that the popularity of the theory grew continuously after the end of World War II and peaked in 1968 –1970 with references in 65.8% of the principles and intermediate micro textbooks surveyed. He would be distressed but relieved to know that by the nineties only 4 of the 14 intermediate micro textbooks mentioned the kinked demand curve and one of these commented unfavorably. Distressed that the rise and fall of the kinked demand curve theory took so long -- over a fifty-years! Relieved that the theory has finally fallen out of favor. This embarrassing example shows just how long a reality gap can persist in the textbook market.

### Conclusions

A gap has existed between the attention that authors give imperfectly competitive markets and their relative frequency for at least 40 years and persists even with an almost complete turnover of authors between the decades of the sixties and the nineties. Apparently, authors have weak incentives to more nearly match the coverage in micro textbooks with the relative frequency of non-competitive markets. I suspect that most readers will agree that a reality gap exists although some may quibble about its size. Most readers, as I, face the challenge of explaining why such a large gap exists and persists. Hopefully, the explanations listed above serve as a starting point for such an investigation and discussion.

The picture portrayed by most micro textbooks gives students a distorted view of the presence of market imperfections throughout the economy. Instead of treating the competitive model as a useful approximation in understanding firm and industry behavior, the competitive model is more often taught as a polar abstraction of limited relevance and little practical use. This would not be a serious failing if it were corrected in other courses that undergraduates, undergraduate business and MBA students subsequently take. However, many students who complete an intermediate micro course never take more advanced courses. Certainly, most MBA students do not take any other course such as an industrial organization course where the record might be set straight. Even worse, some undergraduate business and MBA students go directly into a competitive strategy course without even being required to take a micro course. Competitive strategy courses differ from business school to business school but they tend to either ignore or slight the competitive model and ingrain the view that non-competitive markets are the norm.

The reality gap may not be limited to the teaching of markets in microeconomics. Perhaps, similar gaps exist in other fields as well. It would be interesting to know if medical textbooks overly concentrate on rare diseases and devote relatively little space to how a normal healthy body functions. This analogy is a little strained because physicians typically see only sick patients, not healthy ones, while economists observe and analyze a complete spectrum of industries if they desire to look.

Table 1: Pages Devoted to Competitive and Non-Competitive Market Structures, Intermediate Microeconomics Textbooks Published Between 1987-1999					
Name of Author & Textbook, Edition and Copyright Date  (1)	Total Pages Devoted to Competitive and Non-Competitive Product Markets  (2)	Pages Devoted to Monopoly and Oligopoly  (3)	Pages Devoted to Game Theory & Strategy  (4)	<b>Percent of Pages Devoted to Non-Competitive Product Markets, (3) + (4)/ (2) (5)</b>	Percent of a Book's Total Pages Devoted to Competitive and Non-Competitive Product Markets  (6)
1. Thompson, Economics of the Firm, 5 <sup>th</sup> 1989	162	110	40	<b>92.6%</b>	31.3%
2. Katz & Rosen, Microeconomics, 3 <sup>rd</sup> , 1998	176	110	29	<b>79.0</b>	28.3
3. Varian, Intermediate Microeconomics, 4 <sup>th</sup> , 1996	73	40	14	<b>74.0</b>	11.2
4. Pindyck & Rubinfeld, Microeconomics, 4 <sup>th</sup> , 1998	222	127	37	<b>73.9</b>	32.6
5. Gould & Lazear, Microeconomic Theory, 6 <sup>th</sup> , 1989 (continuation of Ferguson)	136	100	0	<b>73.5</b>	21.9
6. Perloff, Microeconomics, 1 <sup>st</sup> , 1999	241	135	39	<b>72.2</b>	31.3
7. Frank, Microeconomics & Behavior 4 <sup>th</sup> ,	125	76	14	<b>72.0</b>	19.0
8. Pashigian, Price Theory & Applications, 2 <sup>nd</sup> , 1998	171	123	10	<b>71.9</b>	23.7
9. Mansfield, Microeconomics, 9 <sup>th</sup> , 1997	146	72	27	<b>67.8</b>	24.7
10. Browning and Zupan, Microeconomic Theory & Applications, 5 <sup>th</sup> , 1996	147	82	13	<b>64.6</b>	25.1
11. Hirshleifer & Hirshleifer, Price Theory & Applications, 6 <sup>th</sup> , 1998	84	54	0	<b>64.3</b>	15.4
12. Nicholson, Intermediate Microeconomics, 7 <sup>th</sup> , 1997	124	46	27	<b>58.9</b>	23.5
13. Landsburg, Price Theory, 4th, 1999	189	88	19	<b>56.6</b>	28.1
14. Stigler, The Theory of Price, 5 <sup>th</sup> (?) 1987	78	34	0	<b>43.6</b>	23.4
Average	148.1	85.5	19.2	<b>68.9</b>	24.3

Four Firm Concentration Ratio (expressed as a percentage) between	Number of Four Digit Industries in Class	Cumulative Share of All Industries
1. 0 – 10%	17	.043
2. 10+ - 20%	46	.158
3. 20+ - 30%	76	.349
4. 30+ - 40%	70	.525
5. 40+ - 50%	63	.683
6. 50+ - 60%	47	<b>.802</b>
7. 60+ - 70%	33	<b>.884</b>
8. 70+ - 80%	23	.942
9. 80+ - 90%	19	.990
10. 90+ - 100%	4	1.000
Total	398	

HHI Index between	Number of Four Digit Industries in Class	Cumulative Share of All Industries
0 - 200	69	.177
200+ - 400	75	.369
400+ - 600	62	.528
600+ - 800	42	.636
<b>800+ - 1,000</b>	<b>41</b>	<b>.741</b>
1,000+ - 1200	23	.800
1200+ - 1400	9	.823
1400+ - 1600	17	.867
<b>1600+ -1800</b>	<b>11</b>	<b>.895</b>
1800+ -	41	1.000
Total	390	

Name of Author & Textbook, Edition and Copyright Date  (1)	Total Pages Devoted to Competitive and Non-Competitive Product Markets  (2)	Pages Devoted to Monopoly and Oligopoly  (3)	Pages Devoted to Game Theory & Strategy  (4)	Percent of Pages Devoted to Non-Competitive Product Markets, (3) + (4)/ (2) (5)	Percent of a Book's Total Pages Devoted to Competitive and Non-Competitive Product Markets (6)
1. Ferguson, Microeconomics Theory, 2 <sup>nd</sup> , 1969	92	71	6	<b>83.7</b>	20.6
2. Alchian and Allen, Exchange and Production Theory in Use, 3 <sup>rd</sup> , 1968	77	61	0	<b>79.2</b>	13.3
3. Watson, Price Theory and Its Uses, 2 <sup>nd</sup> . 1968	105	80	0	<b>76.2</b>	24.2
4. Leftwich, The Price System and Resource Allocation, 3 <sup>rd</sup> , 1966	81	60	0	<b>74.1</b>	22.4
5. Mansfield, Microeconomics, 1st, 1970	99	67	5	<b>72.7</b>	21.2
6. Due and Clower, Intermediate Economic Analysis, 4 <sup>th</sup> , 1961	101	69	0	<b>68.3</b>	19.0
7. Liebhafsky, The Nature of Price Theory, 2 <sup>nd</sup> , 1968	79	51	0	<b>64.6</b>	13.3
8. Stigler, The Theory of Price, 4 <sup>th</sup> , 1966	80	38	0	<b>47.5</b>	25.7
9. Boulding, Economic Analysis, 4 <sup>th</sup> , 1966	158	69	0	<b>43.7</b>	22.7
10. Gisser, Introduction to Price Theory, 2 <sup>nd</sup> , 1969	84	33	0	<b>39.3</b>	24.3
Average	95.6	59.9	1.1	<b>64.9</b>	20.7

Table 4: Pages per Topic for Topics Explained in Imperfectly Competitive Chapters and in Competitive Chapters, Intermediate Microeconomics Textbooks Published Between 1987-1999a		
	Pages per Topic, Four Topics in Competitive Chapters	Pages per Topic, Seven Topics in Imperfectly Competitive Chapters
1. Thompson, Economics of the Firm, 5 <sup>th</sup> 1989	1.00	3.00
2. Katz & Rosen, Microeconomics, 3 <sup>rd</sup> , 1998	5.25	2.75
3.. Varian, Intermediate Microeconomics, 4 <sup>th</sup> , 1996	3.00	2.45
4. Pindyck & Rubinfeld, Microeconomics, 4 <sup>th</sup> , 1998	1.75	3.45
5. Gould & Lazear, Microeconomic Theory 1989 (continuation of Ferguson)	2.33	2.67
6. Perloff, Microeconomics, 1 <sup>st</sup> , 1999	4.25	2.65
7. Frank, Microeconomics & Behavior 4 <sup>th</sup> ,	1.50	1.90
8. Pashigian, Price Theory & Applications, 2 <sup>nd</sup> , 1998	6.00	3.45
9. Mansfield, Microeconomics, 9 <sup>th</sup> , 1997	2.00	2.50
10. Browning and Zupan, Microeconomic Theory & Applications, 5 <sup>th</sup> , 1996	2.25	2.67
11. Hirshleifer & Hirshleifer, Price Theory & Applications, 6 <sup>th</sup> , 1998	1.75	2.00
12. Nicholson, Intermediate Microeconomics, 7 <sup>th</sup> , 1997	1.75	2.40
13. Landsburg, Price Theory, 4th, 1999	5.75	2.50
14. Stigler, The Theory of Price, 4 <sup>th</sup> 1987	2.00	2.50
Simple Average	<b>2.90</b>	<b>2.64</b>

- a. Not all authors discussed all eleven topics. The pages per topic are based only on the topics discussed by each author.

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<sup>1</sup> I did not include pages that are devoted to monopsony in factor markets.

<sup>2</sup> In selecting pages devoted to competition, I did not include pages that were spent deriving the cost curves of the firm or describing the profit maximizing output of an individual firm, whether competitive or not, since the cost analysis could apply to either type of firm. Rather, I limited the count to only those pages explaining short and long run industry equilibrium and the industry adjustment to demand or cost shifts. Nor did I include general equilibrium treatments of competition and monopoly.

<sup>3</sup> Less the reader infer that I, as a textbook writer, am simply criticizing other micro textbook writers, I cannot rid myself of guilt since my textbook ranks in the middle of pack in position 8.

<sup>4</sup> If statistics on book sales were publicly available, it would preferable to weight the individual percentages by relative book sales.

<sup>5</sup> The simple correlation coefficient between a dummy variable for authors with a Chicago connection and the percentage of pages devoted to imperfect markets is  $-.426$ .

<sup>6</sup> One apparent exception is the textbook co-authored by Gould and Lazear, both of whom were at Chicago at the time of writing. However, Ferguson was the original author of this textbook and the contemporary co-authors seemed content to maintain its original structure while adding some modern embellishments.

<sup>7</sup> For an extensive discussion of studies about the relationship between concentration, barriers to entry, and profitability or price-cost margins, see Carlton and Perloff, Chapter 9.

<sup>8</sup> The 46 industries with concentration ratios in excess of 70% accounted for 17.6% of total shipments in all 398 four-digit industries. The concentrated industries are on average larger than the typical industry.

<sup>9</sup> Most economists familiar with concentration ratios recognize that the concentration ratio is an imperfect measure of monopoly for a variety of reasons, some of which are mentioned in the paper. Hence, the classification of industries by the concentration ratio should be thought of as a useful but necessarily crude way of sorting industries into competitive- imperfectly competitive classes.

<sup>10</sup> This is not the first time that the scope of imperfect markets has been questioned (Harberger).

<sup>11</sup> Where the effect of the growing number of business students may show up, is in the increased percentage of a book's total pages that are devoted to competitive and non-competitive markets. Between the sixties and the nineties the percentage increased from

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20.7 to 24.3. Another difference that may be attributed to expanded business enrollments is the substantial increase in the number of empirical applications included in the textbooks of the nineties compared to those of the sixties.

<sup>12</sup> I suspect that the reality gap would widen still farther if concentration statistics for retailing, wholesaling and services were readily available even though retailing markets are often local. If asset markets such as the stock, futures, option and auction markets were included, the relative frequency of non-competitive markets would be substantially lower.

<sup>13</sup> I concentrated on the development of the theory and not on applications of the theory.