

**Coverage of Behavioral and Experimental Economics in Undergraduate
Microeconomics Textbooks**

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Abstract

This paper analyzes to what degree 25 undergraduate microeconomics textbooks incorporate contributions from behavioral economics and experimental economics.

We find that ten of the 25 textbooks examined make no reference at all to behavioral economics; six dedicate less than 1% of total pages to it, six between 1% and 2.6 %, and three between 6% and 11%. When behavioral economics is discussed, the focus tends to be on bounded rationality rather than on bounded self-interest or bounded willpower. Experimental economics is not discussed at all in ten textbooks, twelve textbooks dedicate less than 0.6% of total pages to it, while three dedicate between 2% and 10% of total pages.

We discuss the possible causes of the detected variation in the coverage of behavioral economics drawing from a variety of qualitative materials.

Author Keywords: behavioral economics, economics education and teaching of economics, experimental economics, microeconomics, psychology, textbooks.

JEL classification codes: A22, B49, B59, D01.

1 Introduction

“Without doubt, the next hot research topic after new growth theory, at least here in Cambridge, has been behavioral economics, which integrates economics and psychology. [...] Research on behavioral economics has promise for providing new perspective on public policy.” (Source: Mankiw, Greg, Behavioral Economics, Greg Mankiw’s blog, viewed 28 June 2006.)

So responds Gregory Mankiw’s, professor of economics at Harvard as well as author of one of the most popular undergraduate economics principles textbooks, to a reader who asked what had been the most important developments in economics in the last 10-15 years. Mankiw’s evaluation of the importance of behavioral economics in research is shared by the Royal Swedish Academy of Science, which awarded in 2002 the Nobel Prize for economics to Daniel Kahneman, one of the fathers of behavioral economics. The Royal Swedish Academy of Science (2002) wrote:

“Today behavioral economics and experimental economics are among the most active fields in economics, as measured by publications in major journals, new doctoral dissertations, seminars, workshops, and conferences.”³

³ The growing importance of behavioral economics is far from limited to the economic journals. The journals *Science* and *Nature* have featured several articles on behavioral economics (e.g. Bernhard et al 2006, Camerer 2003, Fehr 2002, Fehr & Gächter 2003, Fehr & Rockenbach 2003, Kosfeld et al 2005, Lehrer 2006). In fact, Tversky’s and Kahneman’s 1974 seminal article in behavioral economics was published in *Science*. Behavioral economics has also been featured in magazines and daily newspapers such as the *Economist*, the *New York Times*, and the *Financial Times* (e.g. Harford 2007, Leonhardt 2007, Olin 2003, Behaviourist at the gate 2003, Rethinking thinking 1999).

The significance of behavioral economics is also reflected by other prestigious awards such as the 2001 John Bates Clark medal, the highest recognition given to American economists under the age of 40, awarded in 2001 to Matthew Rabin for his work in behavioral economics.⁴

In our paper, we examine if behavioral economics, in addition to being highly topical in research has also influenced the content of microeconomics textbooks. We focus on microeconomics as the major contributions of behavioral economics tend to focus on individual behavior.

In doing so, we participate to the ongoing discussion on the practices of teaching economics (e.g. Colander 2005, Emerson & Taylor 2007), which also concerns textbooks' content (e.g. Hill & Maytt 2007, Pashigian & Self 2007).

Using content analysis (Bauer 2000), we examine how behavioral economics is covered in undergraduate microeconomics textbooks. We also analyze undergraduate microeconomics textbook coverage of experimental economics, the field of economics which studies economic behavior with the aid of laboratory experiments. Finally, we attempt an interpretation of the results of our textbooks' analysis using a variety of qualitative data.

The double focus on behavioral and experimental economics is motivated by the fact that although behavioral and experimental economics share the use of laboratory experiments, a common origin in psychology (Loewenstein 1999, F25) and an increased

⁴ In 1999 the John Bates Clark medal had been awarded to Andrei Schleifer for his research on securities markets and behavioral finance (Schleifer 2000). For a detailed history of behavioral economics the see Sent (2004).

academic recognition,⁵ they nevertheless tend to differ in their emphasis on the robustness of the assumption of agents' rationality. Behavioral economics tends to focus on those situations in which human behavior deviates from the one expected on the basis of conventional economic theory. It underlines bounded rationality, bounded self-interest, and bounded willpower (Mullainathan & Thaler 2001). Some experimental economics, on the other hand, especially Vernon Smith's work, tends to emphasize economics agents' rationality and markets' efficiency. As Smith himself writes (2004, 149):

“My point is simple: when experimental results are contrary to standard concepts of rationality, assume not just that people are irrational, but that you may not have the right model of rational behavior.”

Behavioral and experimental economics' different emphasis on the robustness of the assumption of agents' rationality, coupled with their increased academic recognition and great areas of overlap, raises the question of which contributions from these two economics fields are presented in undergraduate microeconomics textbooks. Textbooks are a key tool for socializing students to economics. Therefore, the inclusion or exclusion of experimental and behavioral economics can have significant effects on how students come to understand both economic theory and economic methods, especially in the case of students who do not take other economics courses.

⁵ Maybe in recognition of such close relationship the 2002 Nobel prize in economics was also awarded to Vernon Smith for having laid the foundations of experimental economics.

The rest of the paper is organized as follows. Section two describes the data and the methodological approach. The results of the textbooks analysis are presented in Sections three and four. Section five discusses the possible causes of the significant variability in textbooks' coverage of behavioral economics and experimental economics as it emerges from our analysis. Section six concludes.

2 Data and method of analysis

The main data for the analysis are given by the textbooks adopted for teaching undergraduate courses in microeconomics in the 30 world's top economics departments as identified by Roessler (2004) following the methodology used in Kalaitzidakis et al (2003). The ranking is reported in appendix 2. These prestigious departments are at the cutting edge in research, which may make them also more inclined to include recent research developments into teaching. Thus, the textbooks chosen by these departments is more likely to reflect innovative trends in teaching.

The data on textbooks adoptions was collected by searching the internet for information about the textbooks adopted in the undergraduate courses in microeconomics lectured in 2006-2007 in the 30 world top ranked economic departments.⁶ If textbook information could not be accessed via internet, we contacted the departments via e-mail asking for the syllabi of their undergraduate microeconomics courses. Our data, presented in appendix 3, covers the textbooks adopted in 28 introductory and 12 intermediate

⁶ In some instances textbook data is either from the year 2005-2006 or 2007-2008 if we could not locate 2006-2007 data. See appendix 3 for details.

microeconomics courses in 27 of the 30 top economics departments, including 19 of the top 20 departments. The adopted textbooks were Besanko and Braeutigam (2005), Case and Fair (2007), Cowell (2005), Frank (2006), Frank and Bernanke (2006), Hubbard and O'Brien (2006), Krugman, Wells and Graddy (2008), Mankiw (2006), Nicholson (2005), Parkin (2008), Peters (2005), Pindyck and Rubinfeld (2006), Stiglitz and Walsh (2006), Taylor (2007), and Varian (2006).⁷

Due to partial access to course information, the data set often includes only one course per department. However, at any one time several microeconomics courses are likely to be taught simultaneously in the same department. Thus our data is only indicative of the textbooks adopted. For this reason, and in order to increase the scope of the analysis, we complemented the list of adopted textbooks with additional undergraduate microeconomics' textbooks chosen by searching for bestselling titles in Amazon (22 August 2007) using the key word microeconomics. This led to the inclusion of the books by McConnell and Brue (2005), Colander (2005), and McEachern (2007). In addition, we included also three "special-focus" textbooks: the institutionally-oriented Himmelweit, Simonetti and Trigg (2001), the experimental-economics rich Schotter (2001), and the behavioral and experimental economics focused Burkett (2005).⁸

⁷ We could not find recent data on undergraduate microeconomics textbooks' adoption in the literature with the exception of Gartner (2001, 225), who examined microeconomics textbook adoption in a sample of European universities. According to his data Varian (1999) was the leading microeconomics textbook adopted in 40% of the sampled universities. Frank (2000) was the third most adopted textbook, with 6% of total adoptions after Katz and Rosen (1998) with 7%.

⁸ As our analysis is restricted to undergraduate microeconomics textbooks, it excludes the very behavioral economics oriented textbook by Bowles (2004), which is meant for graduate students.

Having selected the textbooks, we constructed a list of key terms in behavioral economics on the basis of the review articles by Camerer and Loewenstein (2003), Mullainathan and Thaler (2001), and Rabin (1998 & 2002). The list, presented in appendix 5, was used as the basis for the search of both the textbooks' tables of contents and analytical indexes for behavioral and experimental economics related material.

We then analyzed which key concepts of behavioral and experimental economics were presented and how in the pages identified through the analysis of the table of contents and of the analytical index.

Two very rough quantitative indexes were then calculated: the number of pages dedicated to behavioral economics (table 1) and to experimental economics (table 2) as well as their percentage with respect to the total number of pages in the textbook dedicated to microeconomics excluding indexes and glossaries.

This quantitative analysis was followed by a qualitative one. In order to deepen our understanding of the results of the textbooks' analysis, we collected material such as articles on peer-reviewed journals, newspaper articles, as well as posts on economics blogs, to help us sketch the current debate on the appropriate role of behavioral economics in both microeconomics textbooks and teaching. All material is listed in appendix 4. Although the data was not systematically selected, nevertheless it offers anecdotic evidence of such debate.

4 Analysis of the Coverage of Behavioral Economics

Among the textbooks which discuss behavioral economics, a great deal of variability emerges.⁹ Some books include a short box (Beggs, Fisher, & Dornbush 2005, 235; Krugman & Wells 2006, 244;¹⁰ Taylor 2007, 124-125). Others, such as Hubbard and O'Brien (2006, 284-290), Mankiw and Taylor (2006, 455-459)¹¹, Pindyck and Rubinfeld (2005, 179-183), Stiglitz and Walsh (2006, 119-121, 202-203), concentrate the discussion of behavioral economics in clearly identifiable sections in the main text. Varian (2006, 549-563) includes an entire chapter dedicated to behavioral economics. Other textbooks scatter behavioral economics key ideas throughout the text (Colander 2005, Frank and Bernanke 2006).

Frank (2006) and Burkett (2006) emerge as the textbooks which offer the greatest coverage of behavioral economics. Frank (2006) includes a chapter on bounded self-interest (ch. 7, 'Explaining Tastes: The Importance of Altruism and Other Nonegoistic Behavior', 231-258) and one on bounded rationality and bounded will-power (ch. 8: 'Cognitive Limitations and Consumer Behavior', 259-283). Issues related to behavioral economics also show up in other parts of Frank's textbook, suggesting an effort to integrate the contributions of behavioral economics throughout the text.

⁹ Thus one could question Uwe Reinhardt's (2007) view that "*there is not much more substantive difference in the structure and content of introductory economics texts than there is among different brands of toothpaste.*"

¹⁰ In the European edition the corresponding box in Krugman, Wells, and Graddy (2007, 251) introduces behavioral economics with reference to studies on decision making under uncertainty and the anchoring effect.

¹¹ Mankiw and Taylor (2006) is the European edition to Mankiw's Principles of Economics 4th edition.

Table 1 Coverage of behavioral economics in selected undergraduate microeconomics textbooks

Textbook	# pages	tot pages*	% of total pages	bounded rationality	bounded self-interest	bounded will-power	course adoptions	experimental economics
Behavioral + Experimental								
Burkett (2006)	33	296	11,15 %	yes	yes	yes	0	yes
Frank (2006)	52	678	7,67 %	yes	yes	yes	1	yes
Himmelweit et al. (2001)	34	556	6,12 %	yes	yes	no	0	yes
Frank & Bernanke (2006)	12	470	2,55 %	yes	yes	yes	2	yes
Varian (2006)	15	715	2,10 %	yes	yes	yes	7	yes
Schotter (2001)	14	729	1,92 %	yes	yes	no	0	yes
Colander (2005)	9	509	1,77 %	yes	yes	yes	0	yes
Hubbard & O'Brien (2006)	8	581	1,38 %	yes	yes	yes	2	yes
Mankiw (2006)	5	461	1,08 %	yes	yes	yes	11	yes
Stiglitz and Walsh (2006)	2	495	0,40 %	yes	no	no	1	yes
Taylor (2007)	2	514	0,39 %	yes	no	yes	1	yes
Krugman, Wells & Graddy (2008)	1	554	0,18 %	yes	no	no	2	yes
Only behavioral								
Pindyck & Rubinfeld (2006)	4	682	0,59 %	yes	yes	no	4	no
Beggs et al (2005)	0,3	331	0,09 %	yes	no	no	0	no
Besanko & Braeutigam (2005)	0,5	706	0,07 %	yes	yes	no	1	no
Only experimental								
MacEachern (2007)	0,3	380	0,08 %	no	no	no	0	yes
Parkin (2008)	0	488	0,00 %	no	no	no	2	yes
O'Sullivan, Sheffrin & Perez (2007)	0	435	0,00 %	no	no	no	0	yes**
No behavioral nor experimental								
Baumol & Blinder (2008)	0	441?	0	no	no	no	1	no
Case-Fair (2007)	0	458	0,00 %	no	no	no	1	no
Cowell (2005)	0	628	0,00 %	no	no	no	1	no
McConnel & Brue (2005)	0	488	0,00 %	no	no	no	0	no
Nicholson (2005)	0	648	0,00 %	no	no	no	2	no
Peters (2005)	0	139	0,00 %	no	no	no	1	no
Preston McAfee (2006)	0	314	0,00 %	no	no	no	0	no
							40	

* Total pages: total pages dealing with microeconomics excluding glossary and indexes.

If the book discussed also macroeconomics, only the chapters related to microeconomics were taken into account.

** Experimental economics per se is not discussed but several chapters contain instruction for experiments as classroom activities.

Burkett (2006) touches on behavioral economics in the chapters on “Loss Aversion and Reference-dependent preferences” (ch. 11, 122-136), on “The Context and Framing of Choice” (ch. 12, 137-145), on “Inconsistent Intertemporal Choice” (ch. 13, 207-213), and on “Behavior in the Face of Risk” (ch. 20, 225-240). He illustrates in detail the experimental method while presenting key behavioral economics results. Also Schotter (2001) describes several experiments with the aid of which he illustrates a wide array of behavioral economics concepts.

Bounded rationality is the thematic area most discussed in the textbooks. This is not surprising, considering that it was research related to bounded rationality that led to Kahneman's 2002 Nobel Prize in economics. It also appears that the analyzed textbooks share Krugman's and Well's (2006, 244) view that:

“... it's hard to find a behavioral economist who thinks that the insights of this field should replace the analysis of utility maximization. The theory of the rational consumer remains the main way in which economists analyze consumer behavior. (See also Stiglitz and Walsh 2006, 121, Besanko & Braeutigam 2005, 126, Pyndick & Rubinfeld 2005, 182).

Finally, it is worth underlining that two of the most adopted textbooks in the sample, Mankiw (2006) and Varian (2006), offer a well-round, albeit brief, introduction to behavioral economics. This could be read as a sign of increased attention to behavioral economics in undergraduate microeconomic textbooks.

4 Analysis of the Coverage of Experimental Economics

As shown in table 2, there is also significant variability in the textbooks' coverage of experimental economics and in its integration with behavioral economics. Some authors do not discuss experimental economics at all (Baumol & Blinder, Besanko & Braeutigam 2005, Cowell 2005, McConnell and Brue 2005, Nicholson 2005, Peters 2005, Preston McAfee 2006, Pindyck & Rubinfeld 2005) or limit their discussion to the statement that there is very limited scope for the use of experiments in economics: "Economics is only rarely an experimental science." (Beggs et al. 2005, 21), "... economists cannot generally do controlled experiments..." (Case & Fair 2006, 14). Other authors offer a brief paragraph, simply acknowledging the existence of experimental economics (Stiglitz & Walsh 2006, 321). Frank and Bernanke (2006, 462-463), Frank (2006, 269-270), Krugman et al. (2008, 251), and Varian (2006, 555, 560) illustrate some experiments but do not explicitly talk of experimental economics. Colander (2005, 201-202), Mankiw and Taylor (2006, 458), Hubbard and O'Brien (2006, 284-285) define experimental economics and exemplify it using the ultimatum game experiment. Himmelweit et al. (2001, 53-54) add to the definition of experimental economics the description of Simmel's (1997) experiment to test consistency of choices. McEachern (2007, 169) and Parkin (2008, 150-151) focus on those applications of experimental economics which "show that under most circumstances, markets are extremely efficient" (McEachern 2007, 168) and underline that "Experiments have provided empirical support for economic theory" (McEachern 2007, 169).

Table 2 Coverage of experimental economics in selected undergraduate microeconomics textbooks

Textbook	# pages dedicated to experimental economics	tot pages*	% of total pages	course adoptions
Schotter (2001)	74	729	10,15 %	0
Burkett (2006)	28	296	9,46 %	0
O'Sullivan, Sheffrin & Perez	9	435	2,07 %	0
Colander (2005)	3	509	0,59 %	0
Himmelweit et al. (2001)	3	556	0,54 %	0
Varian (2006)	3	715	0,42 %	7
Parkin (2008)	3	488	0,61 %	2
Hubbard & O'Brien (2006)	2	581	0,34 %	2
Frank (2006)	2	678	0,29 %	1
Frank & Bernanke (2006)	2	470	0,43 %	2
MacEachern (2007)	2	380	0,53 %	0
Taylor (2007)	2	514	0,39 %	1
Mankiw (2006)	1	461	0,22 %	11
Stiglitz and Walsh (2006)	1	495	0,20 %	1
Krugman, Wells & Graddy (2006)	1	554	0,18 %	2
Baumol & Blinder (2008)	0	441	0,00 %	1
Besanko & Braeutigam (2005)	0	706	0,00 %	1
Beggs et al (2005)	0	331	0,00 %	0
Case-Fair (2007)	0	458	0,00 %	1
Cowell (2005)	0	628	0,00 %	1
McConnel & Brue (2005)	0	488	0,00 %	0
Nicholson (2005)	0	648	0,00 %	2
Peters (2005)	0	139	0,00 %	1
Pindyck & Rubinfeld (2006)	0	686	0,00 %	4
Preston McAfee (2006)	0	314	0,00 %	0
				40

Interestingly McEachern (2007) and Parkin (2008) are two of the three books which disregard completely behavioral economics. O'Sullivan et al (2007, 47, 96, 151, 252, 269, 297, 336, 353, 373) include brief sections titled "Economics experiments" at the end of some chapters. These sections give instructions for some experiments without however discussing the intuition behind the experiments. Burkett (2006) and Schotter (2001) offer the largest coverage of experimental economics. Schotter (2001) includes numerous boxes called "Experimental evidence", in which he describes various experimental tests of economic theories. Burkett (2006) widely discusses the derivation of behavioral economics key results from experiments.

In summary, we find significant variation in coverage of both experimental and behavioral economics among the textbooks analyzed. In the following section, we suggest some possible explanations to such variation with a focus on behavioral economics.

5 Possible Causes of the Variability in the Coverage of Behavioral Economics

On the basis of qualitative evidence, we suggest that variation in the coverage of behavioral economics could be explained by 1) disagreement as to what constitutes the core of microeconomics coupled with the need to avoid excessively long textbooks; 2) different views as to whether behavioral economics theories range of application is large enough; 3) different beliefs about how challenging behavioral economics models are to

students fairly new to economics. In what follows, we discuss each of these motives in more detail.

Behavioral economics and the core of microeconomics theory

“I skip it [behavioral economics], for two reasons. First, I find that otherwise I don't have time for oligopoly or other more important topics...”

“In intro micro, none of the three of us spends any time on behavioral economics, for the usual reason-there's not enough time to do everything.”

... “It [behavioral economics] is also ignored at Columbia, understandably, because of the wide array of topics that are crammed into the 300-person Principles class already.”

Comments to the post ‘Behavioral microeconomics bleg’, 15 March 2007
on Cowen's blog *Marginal Revolution*

As the comments above suggests, lecturers are pressed with time when trying to cover the already wide content of microeconomics textbooks. Adding new topics without eliminating existing ones may thus run the risk of making textbooks and the courses they are based on unmanageable considering that microeconomics textbooks are already quite long.¹² In fact, there is a lively discussion among peers on what to add and what to

¹² Recognizing this, Varian (2006) for instance eliminated the chapter on law and economics when he added the chapter on behavioral economics.

eliminate from principles textbooks (see e.g. Round & Shanaham 2005, Hill and Myatt 2007, Pashigian and Self 2007, and Chatterji 2005).

Burkett (2006, vii), who gives quite extensive coverage to both experimental and behavioral economics within his relatively thin 296-pages textbook, argues that behavioral and experimental economics can be covered satisfactorily in an undergraduate microeconomics textbook, provided that one strikes a new balance between issues, theory and data. Conventional introductory textbooks, he suggests, focus on issues and theory, while more advanced textbook focus solely on theory. Data, usually from observational studies, is used minimally as it is felt that students lack the necessary econometric skills to understand the testing of theory with such data. Burkett (2006, vii) believes that the testing of theory via experimental data is more accessible to students and, therefore, should find greater place in textbooks.

Domain of application of behavioral economic models

Rather than being concerned with textbooks growing in size, Fudenberg (2006) calls into question whether behavioral economics theories range of application is large enough so as to justify their inclusions in a principles course. He argues that behavioral economics should not be taught as part of undergraduate microeconomics courses because “there are too many behavioral theories, most of which have too few applications” (Fudenberg 2006, 697). He writes:

“The proliferation of theories also raises the question of what the theories are trying to do. Since psychology papers tend to be less formal than economists are used to, one is simply to give a precise statement of the

chosen behavioral regularity. A second role is to exhibit a set of assumptions that can generate the specified behavior, be it the endowment effect or the law of small numbers. As an economic theorist, I don't find either of these objectives very satisfying, and certainly neither is grounds for teaching the model in question in first-year microeconomic theory.”
(Fudenberg 2006, 698)

Because of the restricted domain of applicability of behavioral economics models, he suggests they should be taught in specialized, field courses.

Fudenberg's view is not shared by Rabin (2002, 671), who believes behavioral economic models have indeed a large domain of applicability. As an example, he underlines how present-biased preferences can be applied to:

“... savings behavior, credit-card debt, the nature of marketing and advertising consumer goods, procrastination at work and at home, organizational design (to fight procrastination), the self-help industry, welfare participation rates, job search by the unemployed, and why people live poor and die prematurely from smoking, alcoholism, overweight, gambling, illicit drug use, unsafe sex, and other risky activities. “ (Rabin 2002, 671.)

Even though Fudenberg opposes the inclusion of behavioral economics in principles courses, he argues that behavioral facts, such as instances of preferences intransitivity and dependence on irrelevant alternatives, should be illustrated to students in introductory courses as a way to point out the limitations of the standard assumption in

economics. He also sees a role for the use of some behavioral economics models as examples or exercises. (Fudenberg 2006, 698.)

Degree of challenge posed by behavioral economics

“... as interesting as behavioral economics is, I think it mostly confuses the students.”

(Comment to the post Behavioral Economics Bleg on Marginal Revolution, March 15 2007)

The above comment suggests that introducing behavioral economics may be even detrimental to students’ learning. Frank (2006, ix) disagrees and suggests that the concern with the excessive complexity of behavioral economics is understandable but unfounded:

“It may seem natural to wonder whether discussing examples of irrational choices might confuse students who are struggling to master the details of the rational choice model. Ironically, however, my experience has been exactly to the contrary.” (Frank 2006, ix.)

Given the large areas of overlap between experimental and behavioral economics, it would be worth exploring whether behavioral economics could be made more accessible to students by presenting it through classroom experiments. Their use is well documented (see for instance Becker et al., 2006) and there are suggestions that students who attend courses with experimental sections perform better than those in lecture-

oriented introductory courses (Emerson and Taylor 2004 and 2007, see also Dickie 2006).

Another interesting question would be whether disregarding behavioral economics or, at least behavioral facts, could demotivate students thereby be detrimental to students' learning in so far as they perceive too wide a gap between the economic theory presented in class and the behaviors they observe in everyday life.

As it can be seen from our analysis, there is still considerable debate on the most appropriate coverage of experimental and behavioral economics in intermediate microeconomics textbook. We began our paper by reminding the reader of the high level of academic recognition achieved by behavioral and experimental economics. We can wrap up the discussion by sighting Colander (2005, 253), who suggests that in the end:

“The deciding factor of what instructors teach in principles should not be what is most up-to-date but what adds the most value to students' understanding of the economy. Given that decision factor, there are numerous pedagogical reasons why instructors might choose to teach something different from the latest research that economists do.”

Thus high academic recognition does not necessarily imply that behavioral and experimental economics should be integrated into undergraduate microeconomics teaching. Whether they add enough value to students' understanding so as to justify its inclusion in intermediate microeconomics courses is an issue that remains open to discussion.

6 Conclusions

Behavioral and experimental economics are among the most active research fields in economics. Both fields have gained increasing recognition culminating with the award of the Nobel Prize to Daniel Kahneman and Vernon Smith in 2002. Nevertheless, as our analysis shows, undergraduate microeconomics textbooks cover both behavioral and experimental economics quite unevenly. In our sample of 25 undergraduate microeconomics textbooks, ten textbooks make no reference at all to behavioral economics concepts and models; six dedicate less than 1% of total pages to behavioral economics, six between 1% and 2.6 %, and three between 6% and 11%. Experimental economics is not discussed at all in ten textbooks, twelve textbooks dedicate less than 0.6% of total pages to it, while three between 2% and 10%.

The textbooks' analysis thus suggests the existence of some differentiation among undergraduate microeconomics textbooks: along with textbooks covering none of the two, we find textbook which dedicate a considerable amount of space to behavioral economics (Frank 2006), to experimental economics (Schotter 2001), or to both (Burkett 2006). However, one should not overemphasize this differentiation. When the focus is restricted to the textbooks which, in our sample, have the largest number of adoptions in introductory and intermediate microeconomics, respectively Mankiw (2006) and Varian (2006), a middle way approach seems to emerge with moderate coverage of behavioral economics and some references to experimental economics.

We suggest that this variation in coverage could be explained by disagreement as to what constitutes the core of microeconomics. Different beliefs about the challenge

posed by behavioral and experimental economics to students, about the range of applicability of behavioral economics models, and about what is most valuable in fostering students' understanding of the economy also seem to play a role.

Our paper focused on textbook content. A natural extension would be to examine how behavioral and experimental economics are incorporated into the actual teaching of undergraduate microeconomics courses for instance by surveying course instructors in selected universities.

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Appendix 2 Ranking of Economics Departments (Roessler 2004)¹³

1	Harvard U	USA	210.7	121
2	U Chicago	USA	159.3	94
3	Massachusetts Institute of Technology (MIT)	USA	136.8	65
4	U California - Berkeley	USA	134.9	93
5	Princeton U	USA	118.3	52
6	Stanford U	USA	114.3	92
7	Northwestern U	USA	112.9	68
8	U Pennsylvania	USA	110.9	78
9	Yale U	USA	108.9	60
10	New York U (NYU)	USA	105.1	82
11	U California - Los Angeles (UCLA)	USA	94.9	70
12	London School of Economics (LSE)	UK	94.9	74
13	Columbia U	USA	93.2	85
14	U Wisconsin - Madison	USA	69.5	53
15	Cornell U	USA	68.6	66
16	U Michigan - Ann Arbor	USA	68.0	66
17	U Maryland - College Park	USA	67.4	65
18	U Toulouse I (Sciences Sociales)	France	65.3	34
19	U Texas - Austin	USA	62.1	43
20	U British Columbia	Canada	61.6	52
21	U California - San Diego	USA	61.4	29
22	U Rochester	USA	58.0	35
23	Ohio State U	USA	57.7	54
24	Tilburg U	Netherlands	56.8	58
25	U Illinois - Urbana-Champaign	USA	56.6	58
26	Boston U	USA	56.0	28
27	Brown U	USA	52.8	30
28	U California - Davis	USA	49.3	47
29	U Minnesota	USA	48.8	54
30	Tel Aviv U	Israel	48.0	35

¹³ Methodological notes are available at <http://www.econphd.net/rankings.htm> (viewed 29 May 2007) and the full ranking is available at <http://www.econphd.net/rank/rallec.htm> (viewed 29 May 2007)

Appendix 3

Table 3 Adopted textbooks at top economics departments

University in ranking order	textbook	name of the course	introd.	interm.	term/year
Harvard U	Mankiw	Social Analysis 10 : Principles of Economics	1		full year 2006-07
	Varian	Economics 1010a : Microeconomic Theory		1	fall 2006
U Chicago	Parkin	Economics 19800 Introduction to Microeconomics	1		autumn 2006
MIT	Pindyck & Rubinfeld	14.01A Principles of Microeconomics	1		fall 2005
UC Berkeley	Pindyck & Rubinfeld	Economics 100A Economic analysis micro	1		spring 2006
Princeton U	Nicholson	ECON 310 Microeconomic theory: a mathematical approach		1	spring 2007
	Nicholson			1	
Stanford U	no set text, recommended	Econ 51 Economic analysis 2		1	winter 2007
Northwestern U	Mankiw	ECON Economics 202-0: Introduction to Microeconomics,	1		spring 2007
	Hubbard & O'Brien	Economics 202 Introduction to Microeconomics		1	winter 2007
	Varian (recommended)	Economics 310-2 Intermediate Microeconomics		1	winter 2007
U Pennsylvania	Parkin	Economics 1 , economics 2 (introductory economics)	1		spring 2007
Yale U	Pindyck & Rubinfeld	Econ115b Introductory Economics (Micro),	1		spring 2006
New York U	Baumol & Blinder	Microeconomics C30-0001-001		1	fall 2007
UCLA	Krugman & Wells	Principles of Economics – Microeconomics	1		spring 2007
LSE	Frank (required)	EC101: Introductory Microeconomics	1		summer 2007
	Cowell	EC202 Microeconomics		1	2006-2007
	Varian (recommended)	EC101: Introductory Microeconomics	1		summer 2007
Columbia U	Mankiw	W1105y Principles of Economics	1		spring 2005
U Wisconsin Madison	Krugman & Wells	Economics 101 Principles of Economics	1		spring 2007
	Mankiw	Economics 101	1		spring 2007
Cornell U	Mankiw	ECON101-2 Introductory Microeconomics	1		fall 2006
U Michigan Ann Arbor	Taylor	101 Principles of Economics I	1		fall 2007
U Maryland College Park	Mankiw	ECON200 Principles of Economics	1		spring 2007
U Toulouse	n.a.				
U Texas Austin	Case & Fair	ECO304K Introduction to Microeconomics	1		fall 2007
U British Columbia	Gateman	Microeconomics 101	1		fall 2006
	Peters	ECO304 Honours microeconomics		1	fall 2005
UC San Diego	Frank and Bernanke	Econ 1 Elements of economics	1		winter & spring 2007
U Rochester	Manikw	Principles of Economics 108	1		spring 2007

University in ranking order	textbook	name of the course	introd.	interm.	term/year
Ohio State U	Mankiw	ECON H-200 Principles of Microeconomics	1		autumn 2006
	Stiglitz & Walsh	Ohio State University Economics H200	1		summer 2007
Tilburg U	n.a.				
U Illinois Urbana Champaign	Besanko and Braeutigam	Econ 302 Intermediate microeconomics (section 4)		1	spring 2007
	Varian	Econ 302 Intermediate Microeconomic Theory		1	spring 2007
Boston U	Mankiw	CAS EC101 Introductory Microeconomic Analysis	1		spring 2007
Brown U	Mankiw	Economics 11 Principles of Economics	1		spring 2007
	Varian	Economics 111: Intermediate Microeconomics		1	spring 2006
UC Davis	Varian	Intermediate Microeconomic theory		1	spring 2006
U Minnesota	Frank and Bernanke	APEC1101 Principles of Microeconomics	1		spring 2007
	Hubbard & O'Brian	Econ 1101.05 Principles of microeconomics	1		summer 2007
	Mankiw	Principles of microeconomics 1101	1		spring 2006
Tel Aviv U	n.a.		28	12	

Appendix 4 Qualitative data for the discussion of possible causes of coverage

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Appendix 5 List of key behavioral economics terms

Following Mullainathan and Thaler (2001), we grouped the behavioral economics-key concepts in three thematic areas: bounded rationality, bounded self-interest (also called bounded selfishness), and bounded willpower.

Bounded rationality: most of the key terms in this group relate to departures from the assumption of rational formation of beliefs, such availability bias, availability heuristics, biased estimates, bounded rationality, cognitive limitations, emotions, framing, hedonic framing, judgmental heuristics, mental accounts; misprediction, misrepresentation, and misremembering of one's own utility; overconfidence, preference reversal, projection bias, representative ness heuristics, satisficing, sunk costs and cognitive limitations. Other terms relate to the idea of reference-based utility functions such as anchoring, asymmetric value function, endowment effect, loss aversion, prospect theory, reference-dependent preferences, value function.

Bounded self-interest (also called bounded selfishness): includes all concepts linked to other-regarding behavior such as: altruism, co-operation (in public good and prisoners' dilemma games), envy, fair-minded utility, fair-mindedness, inequality aversion, non-self-interested behavior, process-regarding preferences, reciprocal altruism, reciprocal preferences, reciprocity, retaliation, social preferences, strong reciprocity, taste for fairness, taste for retaliation, and ultimatum games.

Bounded willpower: related to bounded will-power are concepts such as hyperbolic discounting, present-biased preferences, procrastination, and time inconsistency.