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## **A heterodox teaching of neoclassical microeconomic theory**

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**Abstract:** In this article, I advocate a different way to teach neoclassical microeconomic theory to graduate students in heterodox programs that accomplishes the goals of providing them with a critical and ‘technical’ understanding of neoclassical theory as well as a critical awareness of how heterodox microeconomic theory is organised, structured, and different. In this way, it is possible to calm the fears of many heterodox economists that the complete dismissal of neoclassical microeconomic theory is not a nihilistic endeavour, but a connected prelude to delineating a heterodox microeconomic theory. It is done by teaching microeconomic theory as a critical historical discourse, or more precisely a historical story, that deals with its evolution and its theoretical and empirical shortcomings that place the theory in the incoherent state that it is in today.

**Keywords:** microeconomic theory; neoclassical; heterodox; teaching.

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**Biographical notes:** Frederic S. Lee is a Professor of Economics at the University of Missouri-Kansas City. He has taught both neoclassical and heterodox microeconomics at the undergraduate and graduate level for 30 years in the USA and England. He has also published extensively on heterodox microeconomics, on the history of heterodox economics, on the ranking of journals and departments and their impact of heterodox economics. He was the editor of the *Heterodox Economics Newsletter* and he is currently the editor of the *American Journal of Economics and Sociology*. He has published in numerous heterodox journals including *Journal of Post Keynesian Economics*, *Review of Radical Political Economy*, *Review of Social Economy* and the *Journal of Economic Issues*.

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### **1 Introduction**

Heterodox economists have longed raised many complaints about neoclassical economic theory, evidenced by the numerous books and articles detailing its shortcomings and incoherence, starting with methodology, proceeding to supply and demand theory of

markets, and ending with game theory and general equilibrium.<sup>1</sup> The critiques have, in turn, raised the question: “Is there anything worth keeping in neoclassical microeconomics?” If the question is directed at what aspects of neoclassical theory is relevant to the development of heterodox microeconomic theory, the answer is no.

However, the question may be interpreted as raising the possibility of not teaching neoclassical microeconomic theory because of its incoherence. Yet, because a theory may be ‘wrong’ or incoherent does not legitimise its non-teaching.<sup>2</sup> In fact, in many disciplines ‘wrong’ explanations and theories are taught because they are important to understanding a particular historical period or the historical development of a particular discipline. Knowing about ‘wrong’ theories helps knowing ‘right’ theories.

Moreover, intellectual diversity, free inquiry, and the realisation that there is no humanly accessible truth not open to challenge are indispensable to the central purposes of a university. Hence adherents to a particular economic theory claiming a monopoly on truth and wisdom and rejecting a diversity of approaches to unsettled questions are not compatible with the mission of a university.<sup>3</sup> In this light, undergraduate students should be exposed to different and ‘wrong’ theories so that they can make up their own minds about which is the best for understanding and explaining the social provisioning process of the capitalist economy in which they live and to avoid being duped by economists.

To have this opportunity, it is necessary that their professors have at least a good working knowledge of both mainstream and heterodox economic theories; so to be a good economist, it is necessary to have a good understanding of various different theoretical positions, even if they are ‘wrong’. Therefore all graduate economic programs should at least meet this minimal knowledge requirement even though its particular orientation and strength is neoclassical or heterodox theory.

As open and pluralistic as this position is, mainstream and many heterodox economists agree that neoclassical theory, and especially neoclassical microeconomic theory, should be nearly exclusively taught to undergraduate and graduate students. Their justification is that neoclassical microeconomics is the dominant theory and graduate students must know it if they are to be taken seriously as economists. Thus graduate students in both neoclassical and heterodox graduate programs spend nearly all of their time learning neoclassical material, and often become so overwhelmed that they know only neoclassical microeconomic theory and little else.

The unintended (or not) consequence is graduate students believe neoclassical micro theory is all that is needed and that heterodox microeconomic theory is more or less unimportant in one’s training. Consequently heterodox graduate students are left with an undeveloped critical understanding of neoclassical microeconomics and no capabilities to teach heterodox microeconomics.

In this article I advocate a different way to teach neoclassical microeconomic theory to graduate students in heterodox programs in order to provide them with a critical and technical understanding of neoclassical theory as well as a critical awareness of how heterodox microeconomic theory is organised, structured, and different.<sup>4</sup> Thus, we can allay the fears of many heterodox economists that the complete dismissal of neoclassical microeconomic theory is not nihilistic, but rather a connected prelude to delineating a heterodox microeconomic theory. This is accomplished by teaching microeconomic theory as a critical historical discourse, or more precisely a historical story, focusing on its evolution and its theoretical and empirical shortcomings that place the theory in the incoherent state that it is in today. This story allows an understanding of the key concepts

in microeconomic theory by revealing their historical origins and role in developing the theory. Hence the teaching of neoclassical theory is not a set of theoretical stories outside of history – such as utility functions one week, the Slutsky equation the next week and then production functions the following week; but rather, for example, linking the evolution of the utility function to the ‘emergence’ of the Slutsky equation. Like all stories, this one has an ending and one that provides a substantive but negative answer to the above question: “Is There Anything Worth Keeping in Neoclassical Microeconomics?” (Guerrien, 2002a, 2002b)

## 2 Teaching neoclassical microeconomic theory as a historical story?

To claim that microeconomic theory can be taught as a story presupposes that there is a significant degree of historical-theoretical continuity. This can be established via Table 1 below. The tools, models, and discourse that comprise and concretely define neoclassical microeconomic theory can be identified from the textbooks assigned in introductory, intermediate, and graduate economic courses. Table 1 lists the 29 core tools and models included in US neoclassical microeconomic theory textbooks in the last 100 years.<sup>5</sup> They are divided into four time periods, the first being the base period, while the next two represent the supposed period of pre-1940 pluralism and the post-war ascendancy of neoclassical economics, and the last period represents neoclassical economics at the end of the 20th century.<sup>6</sup>

The first entry in each column represents the number of textbooks that included either the tool or model and the second entry in parentheses gives the percentage of textbooks that included the tool or model. Table 1 establishes that the core theoretical tools of neoclassical microeconomics circa 1900–1910, such as scarcity, maximisation, utility and marginal utility, marginal products and the law of diminishing returns, supply and demand curves, and marginal productivity principle of distribution, and the core model of competition have been retained throughout the century. Moreover, it demonstrates that the number of core theory components, such as utility functions and income and substitution effects, production functions, monopolistic competition, oligopoly, game theory, and general equilibrium, have increased over time. Thus, there has been no break in the past hundred years within neoclassical economics – that is a period when neoclassical economics did not exist and a period in which it did exist. Rather neoclassical economics as defined in terms of the tools, models, and discourse of its microeconomic theory has always been with us throughout the 20th century.

**Table 1** Neoclassical microeconomics in the 20th century as represented in US textbooks\*

<i>Tools and models</i>	<i>Time periods</i>			
	<i>1899–1910</i>	<i>1911–1940</i>	<i>1941–1970</i>	<i>1971–2002</i>
Economics defined as the allocation of scarce resources		5 (19)	25 (81)	37 (86)
Scarcity, scarce factor inputs	9 (75)	23 (88)	24 (77)	31 (72)
Production possibility frontier			7 (33)	36 (84)
Opportunity costs	5 (42)	12 (46)	18 (58)	33 (77)

Note: \*The list of textbooks examined is found in the Appendix I.

**Table 1** Neoclassical microeconomics in the 20th century as represented in US textbooks\* (continued)

<i>Tools and models</i>	<i>Time periods</i>			
	<i>1899–1910</i>	<i>1911–1940</i>	<i>1941–1970</i>	<i>1971–2002</i>
<i>Demand side</i>				
Utility/diminishing marginal utility	12 (100)	22 (85)	26 (84)	43(100)
Maximise utility	8 (67)	18 (69)	28 (90)	43 (100)
Utility functions, indifference curves, marginal rate of substitution			21 (68)	43 (100)
Income/substitution effects			20 (65)	43(100)
Individual consumer/market demand curves	11 (92)	26 (100)	31 (100)	43 (100)
Price elasticity of demand	7 (58)	22 (85)	31 (100)	43(100)
<i>Production and costs</i>				
Production function			15 (48)	39 (91)
Single input variation, marginal products	12 (100)	25 (96)	29 (94)	43 (100)
Law of diminishing returns	12 (100)	26 (100)	30 (97)	39 (91)
Proportional input variation, returns to scale	1 (8)	2 (8)	14 (45)	34 (79)
Isoquants, marginal rate of technical substitution			11 (35)	36 (84)
Marginal costs: $MC = P_x/MP_x$	3 (25)	12 (46)	31 (100)	42 (98)
Firm/market supply curve	11 (92)	25 (96)	30 (97)	42 (98)
<i>Markets</i>				
Perfect, pure or free competition	10 (83)	24 (92)	31 (100)	43 (100)
Profit maximisation	6 (50)	22 (85)	31 (100)	43 (100)
Marginal cost = price	1 (8)	10 (38)	31 (100)	43 (100)
Imperfect/monopolistic competition		7 (27)	31 (100)	40 (93)
Firm demand curve		6 (23)	29 (94)	42 (98)
Marginal revenue = marginal costs (or equivalent)		7 (27)	31 (100)	42 (98)
Oligopoly with firm demand curve			19 (61)	34 (79)
Kinked demand curve			17 (55)	27 (63)
Game theory			6 (25)	32 (74)
<i>Distribution and general equilibrium</i>				
Marginal productivity principle	6 (50)	14 (54)	26 (84)	30 (70)
Wage rate = $MP_L \times \text{Price}$ , Profit = $MP_K \times \text{Price}$	10 (83)	18 (69)	27 (87)	42 (98)
General equilibrium			17 (55)	30 (70)
Pareto-efficiency/optimality			8 (26)	31 (72)
Total number of textbooks	12	26	31	43

Note: \*The list of textbooks examined is found in the Appendix I.

In addition to establishing the existence of theoretical continuity, Table 1 also identifies the tools and concepts that constitute the theory – the *dramatis personae* and their genesis and/or acceptance into the theory. Moreover, the *dramatis personae* are interrelated hierarchically: at the top is the theoretical core consisting of the primary theoretical concepts and propositions accepted unconditionally; from them, synthetic propositions are deduced. For example, the core concepts of relative scarcity, rationality, optimisation, and preference structure and the core propositions of convexity, equilibrium, exchange, and technology combine to produce the synthetic propositions of demand curves, supply curves, and market equilibrium. The synthetic propositions in turn are the basis for deriving lower level propositions that directly engage issues derived from the economy. In addition, the tool *qua* concept of the competitive market is the comparative benchmark by which all imperfectly competitive markets are defined, identified, and evaluated. More generally, imperfections in exchange, competition, information, and the like only have derived-comparative meaning.<sup>7</sup> For example, if a core concept or theoretical proposition is ambiguous or incoherent, so are the synthetic propositions; and if, for example, perfect information is incoherent then imperfect or asymmetrical information has no theoretical substance.

With the *dramatis personae* related in such a manner, the structure of the story is established: demand, production and costs, markets, factor inputs and distribution, general equilibrium and welfare; and in this context, the role of the core and synthetic concepts and propositions in the historical development of neoclassical microeconomics is told. But the outcome is not an inexorable march of progress to greater logical consistency and higher levels of understanding economic reality; rather, neoclassical microeconomic theory is incoherent because so many of its core and synthetic concepts and propositions are problematical at best. For example, since aggregate demand curves are problematical, utilising them to explain real-world prices does not produce greater understanding but generates further misunderstanding and incoherent theorising. Instead of focusing on progress, the story focuses on the theoretical concepts and propositions that constitute neoclassical micro and tells their historical-theoretical story, one by one and then all together. In this way, a coherent story of a clearly incoherent theory is possible while explaining why it is not possible to retain any components for economic theorising (Halevi, 2002).

### **3 How to teach neoclassical microeconomic theory as a story**

Teaching microeconomics as a historical-theoretic story does not mean minimising the teaching of its mathematical component; nor exclusive emphasis on it. Rather, my position is that the core theoretical content of neoclassical microeconomics can be fully articulated with calculus and linear algebra. After all, if the theory is incoherent, higher-level mathematics will not save it. On the other hand, teaching microeconomics as a historical-theoretic story does mean that knowledge of the history of economics and other related disciplines such as the history of mathematics is important (Weintraub, 2002, 2005). Finally, since microeconomics consists of mathematical-technical and theoretical knowledge, evaluation of students' knowledge must be multi-faceted. These points will be expanded below.

### 3.1 The prerequisites

A student entering any heterodox graduate economics program will have taken introductory and intermediate courses in neoclassical microeconomics. But this is not sufficient for taking the course advocated in this article. Before enrolling, students must acquire a sufficient mathematical background, specifically a minimum of two courses in calculus and at least one course in linear algebra, with an additional course in calculus and/or numerical analysis desirable. Students should also have an undergraduate or graduate course in mathematical economics where the basic text is at least at the level of John Hoag's (2008) *Calculus and Techniques of Optimization with Microeconomic Applications*, Alpha Chiang's and Kevin Wainwright's *Fundamental Methods of Mathematical Economics* (2005), Wade Hand's *Introductory Mathematical Economics* (2004), Peter Hess's *Using Mathematics in Economic Analysis* (2001), or Michael Klein's *Mathematical Methods for Economics* (2001). This background will enable students to easily comprehend the calculus-based approach used to delineate the theory.

In addition, students should ideally have taken one course in the history of economic thought, another in a specific heterodox approach, such as Marxism, Institutionalism, or Post Keynesian economics, and a third in the history of the social sciences – but practically any one of the three would be fine. The first two courses provide the student with a theoretic contrast to neoclassical economics as well as introductions to its critiques, while the third affords an overview of how economics is differentiated from other social sciences.

The final set of courses students should have include the history and philosophy of mathematics, 19th and 20th century philosophy, and the philosophy of science. The rationale for the philosophical courses is that they introduce students to ways of thinking that have profoundly impacted how neoclassical theory is articulated while the history of mathematics course affords the tools to understand the evolution of particular concepts used by economists, such as equilibrium.<sup>8</sup>

### 3.2 Texts and readings

The primary neoclassical texts for the course should use a calculus-based approach that has introductory chapters which link the previously taken mathematic and mathematical economic courses with the economic content. Nicholson and Snyder *Microeconomic Theory: Basic Principles and Extensions* (2008) and Silberberg and Suen, *The Structure of Economics* (2001) are quite adequate, while Varian's *Microeconomic Analysis* (1992), Jehle and Reny's *Advanced Microeconomic Theory* (2001), and Rubinstein's *Lecture Notes in Microeconomic Theory* (2006) serve as excellent supplemental texts. Together, these books provide an excellent, conventional, uncritical, and not overly difficult summary of neoclassical microeconomics. The use of more mathematical sophisticated texts, such as Mas-Colell et al. *Microeconomic Theory* (1995) may provide a more thorough description of the mathematical structure of microeconomic theory but do not increase the theoretic content or provide a better understanding of the material; hence their use is not necessary. Moreover, none of them provide a critical evaluation of theory, its historical sense, or that microeconomics could be conceptualised differently.

To get beyond the unreflective, believe-without-question and non-historical attitude embodied in microeconomic texts, it is necessary to introduce additional primary texts.

However, this is difficult because the ideal text should cover classical political economy, the rise to dominance of supply and demand theories, detailed presentation of an early ‘microeconomic’ book to contrast contemporary microeconomic theory, a historical overview of the evolution of the theory since 1900, and a systematic account of all the criticisms of neoclassical microeconomics. Therefore, I have assigned one additional basic text, Alfred Marshall’s *Principles of Economics* (1972) as the early ‘contrastive’ text and assigned the readings for the other material to the course readings (discussed below). Because of its widespread use in the teaching of neoclassical economics circa 1900–1930, Marshall’s *Principles* is an ideal text to highlight the historical evolution of microeconomics for the last century and more. The other readings for the course are not just to supplement the primary texts, although some do; rather they are selected to contribute material that the primary texts do not. Thus, they are required reading.

### 3.3 Assessment

Assessing students’ knowledge of both the technical and theoretical components of microeconomic theory is difficult to do adequately. Some students are more adept at mathematics while others have better skills at writing essays; thus it would be pedagogically imprudent to over-emphasise one particular skill. However, since this course values historical-theoretical knowledge more than mathematical skills in understanding the theory, the assessments are weighted differently and are taken under different conditions.

The technical assessments are take-home exams, which allow students time to work through the mathematics while the ‘theoretical’ assessments are in-class exams and an assigned essay on a particular theoretical topic, such as “What is Sraffa’s criticism of the neoclassical supply curve under long period competitive conditions and how did this criticism lead to the emergence of the theory of imperfect competition?”. Finally, because the objective of the course is to provide students with a critical (and technical) understanding of neoclassical microeconomics, the test questions are primarily concerned with issues of theory as opposed to application. For example, a question on a technical exam is,

Given the following utility function:  $U = 4y_1y_2 + 17$  answer the following questions:

- a Is it a homogeneous utility function?
- b Is it a homothetic utility function? What happens to utility when  $y_1$  and  $y_2$  are doubled?
- c Derive the demand curve for  $y_1$  associated with the utility function. Can  $y_1^e$  be expressed as a linear function of income?
- d Derive the Engle curve associated with the utility function and graph it.
- e Derive the income-consumption path associated with the utility function and graph it.
- f Derive the income elasticity of demand.
- g Derive the cost function and determine what happens to utility when money income is doubled.

And the complementing question on the theoretical exam is:

“Under what conditions can individual consumer demand curves be aggregated to give a market demand curve that would behave as if it represented the decisions of a single maximizing consumer. What does this imply about the generality of neoclassical demand theory?”

Together the questions address substantive theoretical issues in neoclassical demand theory; and the student’s answer to the questions will indicate whether she/he has both the technical and theoretical knowledge to understand neoclassical microeconomics.

#### **4 Course organisation and content**

To be a critical historical-theoretic story of neoclassical microeconomic theory, the course needs to be organised so that the theoretical and technical delineation of the contemporary theory does not overwhelm the historical and critical components. This is achieved four ways: first, the historical material leads to the theoretical and technical material on demand, production and costs, perfect competition, factor input market, and general equilibrium; second, the theoretical and technical material on imperfectly competitive markets is presented as a historical sub-story, starting with monopolistic competition and ending with game theory; and third, the critical material is partially included with the historical discussion when it accounts for particular directions taken in the theoretical and technical material as well as being a separate analysis after the theoretical and technical discussion. Finally, Marshall’s *Principles* is used to contrast contemporary microeconomics with respect to methodology, demand, production and costs, competition and the firm, and distribution. Because the latter is generationally but not familial different from Marshall, the contrast will provide the student with a picture of how neoclassical microeconomics has changed over time. In addition, because Marshall and his generation of neoclassical economists had to argue for their supply and demand theory of markets, they had to differentiate and defend it from the remnants of classical political economy, from Marxian political economy, and from the historical school approach. Thus, critical issues to the formation of microeconomic theory that are forgotten into today’s textbooks can be highlighted and explored, such as ‘why should there be a relationship between costs and quantity produced?’<sup>9</sup>

##### *4.1 Historical background to neoclassical microeconomics*

Since the course is on neoclassical microeconomic theory, its organisation follows the general format found in many texts, with sections three through eight on demand, production and costs, perfect competition, monopoly and imperfect competition, factor input markets and distribution, and general equilibrium and welfare economics respectfully. However, it is necessary to place this central material within a historical context; that is a starting point for the story is needed, which is classical political economy followed by the rise to dominance of neoclassical economics. Since students have had a history of economic thought course introducing them to classical political economy and even Marxian economics, the former need involve only a brief survey that highlights the surplus approach, nature of price determination, origin and distribution of rents, profits, and wages, and the long period method.



Because of its possible unfamiliar material, the rise of supply and demand theories necessitates a slightly longer presentation covering the shift to supply and demand theories in general and particularly the transition from John Stuart Mill through William Thornton to Alfred Marshall covering the period from 1850 to 1890. Theoretical issues such as the foundations to supply and demand curves, stability, the role of scarcity, and long period positions versus equilibrium are examined; and in addition, the ideological objective embedded in neoclassical theory is discussed. Readings designed to illuminate the historical and theoretical issues that constitute this background include:

- 1 Bharadwaj, K. (1986) *Classical Political Economy and Rise to Dominance of Supply and Demand Theories*, Longman Orient, Calcutta.
- 2 Eatwell, J. (1982) in I. Bradley and M. Howard (Eds.): *Competition. In Classical and Marxian Political Economy*, pp.203–228, The Macmillan Press Ltd., London.
- 3 Marshall, A. (1975) in J.K. Whitaker (Ed.): *The Early Economic Writings of Alfred Marshall, 1867–1890*, Vols. 1 and 2, The Macmillan Press Ltd., London.
- 4 Walsh, V. and Gram, H. (1980) *Classical and Neoclassical Theories of General Equilibrium: Historical Origins and Mathematical Structure*, Oxford University Press, New York.
- 5 Roncaglia, A. (2005) *The Wealth of Ideas: A History of Economic Thought*, Cambridge University Press, Cambridge.

#### 4.2 *Neoclassical methodology and models*

Students have, in their undergraduate economic courses, been told rather uncritically what economics is and what the method of doing scientific research is; thus when they enter graduate school, it is generally assumed that they have been completely indoctrinated so that no further discussion is needed. However, the neoclassical definition of economics and its methods of doing scientific research can be and are contested. Thus, in the second section of the course a historical and critical approach is utilised to draw out the many differentiated issues embedded in the topics. Therefore one aim is to delineate the historical transformation of the definition of economics from Marshall's 'economics is a study of human kind in the ordinary business of life' to Lionel Robbin's 'economics is the study of the allocation of scarce resources among competing ends' and its widespread adoption in textbooks.

A second aim is the delineation and critical examination of the methodology underpinning the theorising of neoclassical microeconomics. The use of deductive methods (as opposed to empirical evidence) qua models to create theory and the role of positivism in defending and testing theory is examined and their place in the training of economists discussed. Particular attention is also paid to the changing understanding of equilibrium and the role of mathematics in theorising. Finally, it is argued that the methodology that has evolved over time in microeconomics has generated a theory articulated via models in which knowledge is generated internal to the model by working out its mathematical qua theoretical properties and outcomes. Therefore the models hence theories are conceptually and logically (not empirically) grounded and best articulated with mathematics that is grounded in the logic of the model. Thus students are presented with the methodological question of whether models and their mathematics that are not

empirically grounded constitute any knowledge at all; and if the answer is negative, then is it possible for neoclassical microeconomics to constitute knowledge about the real world?<sup>10</sup> Readings designed to illuminate the methodological issues include:

- 1 Friedman, M. (1953) 'The methodology of positive economics', *Essays in Positive Economics*, pp.3–43, The University of Chicago Press, Chicago.
- 2 Lawson, T. (1997) *Economics and Reality*, Routledge, London, Part II.
- 3 Robbins, L. (1932) *An Essay on the Nature and Significance of Economic Science*, Macmillan and Co., London.
- 4 Weintraub, E.R. (2002) *How Economics Became a Mathematical Science*, Duke University Press, Durham.
- 5 Backhouse, R.E. And Medema, S.G. (2009) 'Defining economics: the long road to acceptance of the robbins definition', *Economica*, October, Vol. 76, pp.805–820.

## 5 Theoretical core of neoclassical microeconomic theory

With the historical background and methodology finished, the presentation of 'real' economics can commence. Graduate neoclassical microeconomic texts typically start with something like the following:

"A distinctive feature of microeconomic theory is that it aims to model activity as an interaction of economic agents pursuing their private interests."  
[Mas-Colell et al., (1995), p.3]

Or

"The simplest and most common way to describe the technology of a firm is the *production function*, which is generally studied in intermediate courses."  
[Varian, (1992), p.1]

Because the graduate texts start with theory assumed to be accepted without question, graduate students are not provided with the historical and methodological tools to critically evaluate what they are being taught. Therefore it is questionable to say that economics is a social science that is open to critical and reflexive thinking. Rather the context in which graduate students are taught microeconomics is more akin to novices being introduced to faith-based texts that are unquestionable. However, in the approach advocated in this article, students are provided these capabilities and hence can critically evaluate the economics that they are confronted with in the classroom and hence can engage in 'real' economics, that is, economics as a contestable social science.

### 5.1 Demand, production and costs

The third and fourth sections of the course – the theory of consumer behaviour and demand and the theory of production and costs, have the same format of presentation. First Marshall's theories are presented and the criticisms of them discussed. Then the contemporary theories are presented in their conventional theoretical-mathematical form and contrasted with Marshall's theories and some special topics covered that are germane to understanding them, such as homothetic utility and production functions, revealed

preference, and fixed proportions production and cost theory. Finally, criticisms of the theories are presented especially regarding conception of the utility and production function, social wants, aggregate demand curves, scarcity, cost curves, and partial equilibrium for production and cost theory. The aim of the historical-theoretic story is to make students aware that various kinds of theoretical weaknesses have plagued neoclassical microeconomics since its inception which is more or less ignored by mainstream economists today. Readings designed to illuminate the material include:

- 1 Davis, J.B. (2003) *The Theory of the Individual in Economics: Identity and Value*, Routledge, London.
- 2 Deaton, A. and Muellbauer, J. (1980) *Economics and Consumer Behaviour*, Cambridge University Press, Cambridge.
- 3 Ferguson, C.E. (1969) *The Neoclassical Theory of Production and Distribution*, Cambridge University Press, Cambridge.
- 4 Keen, S. (2001) *Debunking Economics*, Ch. 2, St. Martin's Press, New York City.
- 5 Veblen, T. (1909) 'The limitations of marginal utility', *Journal of Political Economy*, November, Vol. 17, pp.620–636.

## 5.2 *Perfect competition and imperfect competition*

Instead of simply presenting perfect competition as in the textbooks, it is presented in section five of the course as a historically evolved concept, first starting with Marshall's representative firm and free competition followed by the years of turmoil during the period 1920–1933. The aim is to make students aware that perfect competition with the equilibrium firm as an analytical concept did not always exist but was pieced together in response to various theoretical problems with Marshall's supply and demand theory of prices. Then perfect competition is delineated but with special attention directed towards its problematical areas, such as the formation of the aggregate market demand curve, the incoherent relationship between the market demand curve and the horizontal firm demand curve which is supposedly derived from the former, the problematical nature of an upward sloping long period market supply curve, and the lack of a long period supply and demand explanation of prices and quantities similar to that for the short period. An observation revealed in this section is the duplicitous nature of the presentation of this same material found in undergraduate and graduate microeconomic texts. For example, undergraduate texts state that market demand curves are derived by adding up individual demand curves. However, unless homothetic utility functions are assumed for all individuals, it is not possible to get an aggregate market demand curve with the same properties of a nice downward sloping demand curve. But this problem, discussed in demand theory is not transferred to perfect competition. Hence analysis of a perfectly competitive market is carried out with nice market demand curves even though it is known that the market demand curve is problematical.<sup>11</sup> Readings designed to illuminate the material include:

- 1 Aslanbeigui, N. and Naples, M.I. (1996) 'Scissors or horizon: neoclassical debates about returns to scale, costs, and long-run supply, 1926–1942', *Southern Economic Journal*, Vol. 64, No. 2, pp.517–530.

- 2 Hart, N. (2003) 'Marshall's dilemma: equilibrium versus evolution', *Journal of Economic Issues*, December, Vol. 37, pp.1139–1160.
- 3 Panico, C. (1991) 'Some notes on Marshallian supply functions', *The Economic Journal*, May, Vol. 101, pp.557–569.
- 4 Sraffa, P. (1925) 'On the relation between cost and quantity produced', in L. L. Pasinetti (Ed.): *Italian Economic Papers*, Vol. 3, pp.323–363, Oxford University Press, 1998.

Contrasting the presentation of perfect competition, Section 6 presents imperfect competition as a historical story, starting with monopoly and then proceeding from A. Cournot, to monopolistic/imperfect competition, oligopoly, behavioural and managerial theories of the firm, and ending with game theory. There are five issues addressed via this story. First, the importance of interdependent behaviour among firms which has destructive consequences for the existence of a firm demand curve. Second, the non-existence of the firm supply curve and hence the undermining of the supply price and the market price as indexes of scarcity. Third, the social construction of firm behaviour and objectives which undermines the assumed naturalness of profit maximisation or maximisation of any sort. Fourth, game theory is more of old wine in a new bottle and hence with all the problems concerning interdependent behaviour of the older theories of oligopoly. Finally, the empirical and theoretical critique of marginalism that flourished during the period 1946 to 1955 is still applicable today. Readings designed to illuminate the material include:

- 1 Hall, R.L. and Hitch, C.J. (1939) 'Price theory and business behavior', *Oxford Economic Papers*, May, Vol. 2, pp.12–45.
- 2 Machlup, F. (1967) 'Theories of the firm: marginalist, behavioral, managerial', *The American Economic Review*, March, Vol. 57, pp.1–33.
- 3 Rizvi, S.A.T. (1994b) 'Game theory to the rescue?', *Contributions to Political Economy*, Vol. 13, pp.1–28.
- 4 Robinson, J. (1938) *The Economics of Imperfect Competition*, Macmillan and Co., Ltd., London.

### 5.3 *Factor input markets, distribution, general equilibrium and welfare*

The last two sections of the course are arranged much like the section on imperfect competition. Concentrating on general equilibrium, it first reviews the concept of equilibrium and its associated mathematics, followed with an examination of Walras's and the contemporary presentation of the pure exchange model. The general equilibrium model is then extended to include produced inputs and circular production, starting with Bohm-Barwek and Wicksell, proceeding to Clark, and ending with a general discussion in the context of the capital controversy of the problem with produced inputs and retaining the concept of scarcity and prices as indexes of scarcity. Since general equilibrium and the neoclassical vision of the market cannot be sustained when there are produced inputs, the possibility they can be saved if production occurs with non-produced hence relatively scarce inputs is explored. The end result of this historical-theoretic story is that general equilibrium is not only highly problematical but

also a dead end since it cannot accomplish its original purpose. There is also a sub-plot to the story which is the changing notion of equilibrium that is told. The aim of the story of general equilibrium is to introduce graduate students to the secret that undergraduate textbooks do not tell – that general equilibrium is incoherent, to show how problematical the concept of scarcity is once produced inputs are introduced, and to situate the importance of the capital controversies which played an important part in the rise of heterodox economics since 1970. Readings designed to illuminate the material include:

- 1 Ackerman, F. and Nadal, A. (2004) *The Flawed Foundations of General Equilibrium: Critical Essays on Economic Theory*, Routledge, London.
- 2 Ingrao, B. and Israel, G. (1990) *The Invisible Hand: Economic Equilibrium in the History of Science*, The MIT Press, Cambridge.
- 3 Michl, T.R. (1987) 'Is there evidence for a marginalist demand for labor', *Cambridge Journal of Economics*, December, Vol. 11, pp.361–373.
- 4 Weintraub, E.R. (2002) *How Economics Became a Mathematical Science*, Duke University Press, Durham.

## **6 Conclusions**

What are the benefits for students in heterodox graduate programs from having their microeconomic theory taught in the above manner? First they are provided with significant training in the theory qua mathematics and therefore know neoclassical microeconomics sufficiently well to teach it in most graduate programs. But they have also been given the capabilities to engage with the theory critically so that they can make their own decisions whether it is coherent or not; that is whether the course's narrative is sensible or not. This benefits students since they will not be taught neoclassical microeconomics as the truth that is not open to question. Second, if the theory is acknowledged as incoherent, graduate students will realise that such incoherence pervades its entirety instead of being isolated to one small part of it.

Moreover, because the approach is concerned with the way the theory qua model is constructed without empirical grounding, it is also possible to conclude that the incoherent theory also contains no knowledge – and as a result of this course graduate students are capable to evaluate the sensibleness of the claim. In this manner, they will not be taken in without reflection by the claim that neoclassical microeconomics lends itself to practical or common-sense analysis of economic problems. For example, some introductory microeconomic texts (Caldwell, 2002; Stiglitz and Walsh, 2002) give a supply and demand diagrammatic analysis or story of rent control in New York City. The theoretical story goes as follows:

Rent control laws limit the rents apartment owners may charge. If rents are held down below the market clearing level, there will be excess demand for apartments. In the long period the supply of rental housing is more elastic, since landlords can refuse to build new apartment buildings, or they can sell existing apartments as condominiums. The price ceiling eventually leads to the quantity supplied being even farther below the quantity demanded.

But if the theoretical concepts are not coherent and there is a *ceteris paribus* error as in the case of the long period supply curve or in terms of externalities affecting the demand curve (see Bernstein, 2004), then the graduate students have the capability to realise that the theoretical story told is not coherent and hence basic economic reasoning based on them cannot provide insight into the real world issues or events.

The final benefit of this approach to teaching neoclassical microeconomics is that it makes clear to graduate students that heterodox microeconomics will be quite different. For example, if the role of scarcity and demand-determined prices are problematical concepts that perhaps should not be used, this can be extended to other concepts such as demand and supply curves and their derivative concepts and problems such as starting theorising with the asocial individual and the aggregation from the individual upward to a macro entity. Thus, graduate students will understand why a theory of prices, the existence and theorising about the business enterprise in interdependent contexts, the role of the surplus and circular production, and the connection between investment, profit mark up, and aggregate economic activity (that is the connection between the micro and the macro-business cycle) are important components of heterodox microeconomic theory; and therefore why heterodox microeconomics is quite incompatible with the entire corpus of theory of its neoclassical brethren.<sup>12</sup> In short, heterodox students will gain sufficient knowledge to progress microeconomics forward, to develop a heterodox microeconomics that is clear, coherent, and empirically grounded. Such a heterodox microeconomics will effectively help us to understand our economy and help solve our pressing problems.

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## Notes

- 1 See Lawson (1997), Keen (2001), and Lee and Keen (2004) and their citations.
- 2 This argument is used by mainstream economists to legitimise their decision not to have various heterodox approaches taught to their students.
- 3 The wording is derived from an 'academic bill of rights' [Aby, (2007), pp.175–177].
- 4 This approach also elucidates how neoclassical economists arrange and teach material constituting neoclassical microeconomics.
- 5 Post-1950 and particularly post-1970, the content of neoclassical microeconomic theory textbooks around the world are the same as in the US textbooks. This is in part based on my experience of attending graduate school both in Scotland and the USA from 1977 to 1981,

teaching microeconomics in US universities from 1981 to 1990, and teaching microeconomics in British universities from 1990 to 2000. Prior to 1950, there may have been some variation, but even during this period, US textbooks were used in British universities while British textbooks were used in US universities – an example of the former is Henry Seager’s *Principles of Economics* and example of the latter is Alfred Marshall’s *Principles of Economics*.

- 6 There is a popular claim that the 1920–1940 interwar period was characterised by pluralism, but there is little evidence for this [Lee, (2009a), Chs. 1–2].
- 7 Thus, within the hierarchically-structure neoclassical microeconomic theory, knowledge about imperfections constitutes knowledge of second-order importance and significance. This implies that it is not really necessary in an overview course to examine all possible imperfections to adequately understand neoclassical microeconomic theory.
- 8 This suggests that the undergraduate major in economics should require more than economics courses and some mathematics courses.
- 9 One outcome of using an historical approach in the teaching of neoclassical microeconomic theory is that the history of economic thought has a direct role in the education of an economist. Thus, instead of having to justify its relevance to economists, those who reject its relevance have to justify their position. That is, the implication of my approach is that an individual without an historical-theoretical understanding of neoclassical economic theory is an ill-trained economist.
- 10 This suggests that, given the methodological foundations of neoclassical microeconomics, it is not possible for textbooks to use real data to illuminate the models qua theories. While heterodox economists complain about this (and the complaint is accurate), they miss the methodological point since it is not methodologically possible for textbooks to utilise real data to illustrate the theory being presented. This is a different point from using empirical evidence, such as provided by econometrics, to test the theory. (Guerrien, 2002a, 2004; Benicourt, 2004; Benicourt and Guerrien, 2008]
- 11 Another example is that in a system of production with produced inputs with circular production, a change in a factor input price generates collateral effects that invalidates the *ceteris paribus*, partial equilibrium methodology underpinning the derivation of the slope of the constant output factor input demand function. This not only makes the function meaningless, it also undermines partial equilibrium analysis. However, this well-known point is simply ignored.
- 12 For further discussion of what heterodox microeconomics looks like and hence its feasibility, see Lee (2009b, 2010).

## Appendix I

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## Appendix II

### *Advanced microeconomic analysis*

#### *Spring 2010*

Required texts	<p>Nicholson, W. and Snyder, C. <i>Microeconomic Theory: Basic Principles and Extension</i>, 10th ed.</p> <p>Silberberg, E. and Suen, W., <i>The Structure of Economics</i>.</p> <p>Marshall, A. <i>Principles of Economics</i>, available at <a href="http://www.econlib.org/library/Marshall/marP.html">http://www.econlib.org/library/Marshall/marP.html</a>.</p>
Optional text	<p>Varian, H.R., <i>Microeconomic Analysis</i>.</p> <p>Jehle, G.A. and Reny, P.J. <i>Advanced Microeconomic Theory</i>, 2nd ed.</p> <p>Lawson, T. <i>Reorienting Economics</i>.</p>
Support material	<p>Lee, F. <i>Neoclassical Microeconomics: A Mathematical Approach Made Simple</i> available at <a href="http://cas.umkc.edu/econ/economics/faculty/Lee/courses/502/Math.pdf">http://cas.umkc.edu/econ/economics/faculty/Lee/courses/502/Math.pdf</a>.</p>
Assessment	<p>Take home exam handed out on February 10, 2010 and returned on February 17, 2010 – worth 15% of your final grade.</p> <p>In-class Exam I covers parts I–III, neoclassical microeconomics (March 3, 2010) – worth 30% of your final grade.</p> <p>Take home exam handed out on April 7, 2008 and returned on April 14, 2010 – worth 15% of your final grade.</p> <p>A set essay of 2,500–3,000 words, typed. It is due on April 28, 2010. It is worth 10% of your grade.</p> <p>Final exam covers parts IV–VI, heterodox microeconomics (May 5, 2010 from 8:00 p.m.–10:00 p.m.) – worth 30% of your final grade.</p>
Problem sets	<p>Problem sets will be e-mailed to you.</p>
Course description	<p>The course provides a critical survey of neoclassical microeconomic theory, including methodology, demand theory, production and costs theory, theory of competitive and non-competitive markets, distribution, welfare, and general equilibrium.</p>

*Course outline and reading list*

“Well, in *our* country, “said Alice, still panting a little, “you’d generally get somewhere else—if you ran very fast for a long time....” “A slow sort of country!” said the Queen. “Now *here*, you see, it takes all the running *you* can do to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!”

*Through the Looking-Glass*

*I Historical background to neoclassical microeconomics*

A Brief survey of classical political economy

- 1 Bharadwaj, K. (1989) *Themes in Value and Distribution: Classical Theory Reappraised*, Chs. 3, 4 and 5, Unwin Hyman, London.
- 2 Bharadwaj, K. (1986) *Classical Political Economy and Rise to Dominance of Supply and Demand Theories*, Longman Orient, Calcutta.
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## II *Neoclassical methodology and models*

“In our country,” she remarked, “there’s only one day at a time.” The Red Queen said “That’s a poor thin way of doing things. Now here, we mostly have days and nights two or three at a time....”

*Through the Looking-Glass*

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## III Theory of consumer behaviour and demand

"Living backwards!" Alice repeated in great astonishment. "I never heard of such a thing!" "—but there's one great advantage in it, that one's memory works both ways." "I'm sure *mine* only works one way," Alice remarked. "I can't remember things before they happen." "It's a poor sort of memory that only works backwards," the Queen remarked. "What sort of things do you remember best?" Alice ventured to ask. "Oh, things that happened the week after next," the Queen replied in a careless tone.

*Through the Looking-Glass*

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#### *IV Theory of production and costs*

"There's no use trying," she said: "one *ca'n't* believe impossible things." I daresay you haven't had much practice," said the Queen. "When I was your age, I always did it for half-an-hour a day. Why, sometimes I've believed as many as six impossible things before breakfast."

*Through the Looking-Glass*

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## V Price theory: perfect competition

"Mr. Robertson's remedy is to discard mathematics, and he suggests that my remedy is to discard the facts; perhaps I ought to have explained that, in the circumstances, I think it is Marshall's theory that should be discarded."  
(P. Sraffa, 1930)

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## VI *Price theory: imperfect competition and the firm*

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VII *Factor input markets and distribution*

A Demand and supply of factor inputs under competitive conditions

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VIII *General equilibrium and welfare economics*

A General equilibrium

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*IX Neoclassical microeconomics: is it a science?*

“What we cannot speak about we must pass over in silence.”

*Tractatus Logico-Philosophicus*

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