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Chicago Economics in the Making, 1926-1940
A Further Look at US Interwar Pluralism

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Abstract - The aim of this paper is to unfold a rich body of archival material that can shed new light on the nature and evolution of interwar Chicago economics. Specifically, this paper is based on a scrutiny of the PhD qualifying exams on Economic Theory at Chicago from 1926 to 1940. The qualifying tests (supplemented by the courses' programs) show the existence of two important turning points in the shaping of Chicago economic training. The first one is in 1927, when John M. Clark, the undisputed leader of the Chicago Department of Economics during the heyday of institutionalism, moved to Columbia, leaving open ground to the restructuring of the courses according to a different and more analytical approach already represented in the Department by Viner and, in a narrower field, by Paul Douglas. The arrival at Chicago of figures such as Knight, Schultz and Simons definitely shifted the balance toward neoclassical theory. A second turning point occurred in 1933 when the qualifying test in Economic Theory was divided into two major fields: price and distribution theory on the one side; money and business cycle on the other. This innovation reveals the importance acquired by monetary theory in economic training at a time that is commonly associated with the nurturing of what was later named as the "Chicago monetary tradition."

Keywords: Chicago School; Institutionalism; Knight, Frank H.; Viner, Jacob.
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> "And I would add that we know little of how traditions get established, while it seems clear that once established, a tradition does not get changed through calling attention to its absurdity, or that of factual assumptions on which it rests" (Frank H. Knight 1955, 271).

1. Introduction

American economics during the interwar years has been defined as inherently pluralistic. Pluralism, Mary Morgan and Malcolm Rutherford (1998, 4) explain, "meant variety, and that variety was evident in beliefs, in ideology, in methods, and in policy advice." Contrary to the traditional "institutionalism versus neoclassicism" narrative, starting from the late 1990s a flow of historiography has documented how the boundaries between the two "schools" – a rather inappropriate term in this connection – were loose and how economists of the time felt at liberty to borrow from each one.[2] In the words of Warren J. Samuels (2000, 141), "heterogeneity, amorphousness, and perhaps, especially, individuation of practice, ruled the day." Pluralism was not just reflected in the coexistence of several (competing and cooperating) approaches within the discipline, but also in an irreducible heterogeneity within each of them. Marginalism found expression in several different variants – Marshallian, Clarkian, Austrian, etc. – while institutionalism, by its own very nature of an "open paradigm," could by no means be portrayed as internally coherent and consistent. Variety was so pervasive and methodological eclecticism so common that, in many respects, institutionalism and neoclassicism formed "two parts of the same fascinating explanatory puzzle" (Rutherford 1997, 192).

Within the general pluralistic framework, the University of Chicago offers a quite interesting case. Chicago was in fact pivotal in the formation and early history of the institutionalist movement prior to 1918 and, under the leading influence of John M. Clark, its department of economics retained a distinct institutionalist character until the mid 1920s. Clark's departure to Columbia in 1926, and the subsequent hiring or promotion to professorship of people like Frank Knight, Jacob Viner, and Henry Simons set the stage for the establishment of the so-called "first" Chicago School of Political Economy. Although its members were certainly less critical toward the functioning of competitive markets and far more neoclassical than Clark and the bulk of institutionalists, the first Chicago school was by no means a monolith. Knight and Viner had different theoretical (as well as personal) styles; institutionalist and "unorthodox" influences lasted well into the 1930s; and even if Simons' pro-market views were undoubtedly influential, it would have been hard to recognize a distinguishing ideological mark among Chicago PhD's of those years. As Melvin Reder has pointed out, throughout the late 1920s and 1930s the Chicago department remained very much a "mixed bag" and its students "were not readily identifiable by their view of economic analysis or of economic policy" (Reder 1982, 5).

The nature of this paper is mostly documentary, i.e., its aim is to unfold a rich body of archival material which can shed new light on the nature and evolution of interwar Chicago economics. Specifically, this paper is based on a scrutiny of the PhD qualifying exams on Economic Theory at Chicago from 1926 to 1940. In the recollections of a direct witness such as Melvin Reder: "These examinations have always been difficult, and the failure rate substantial. As the admissions policy of the Department has traditionally been lenient (i.e., give students of uncertain promise a chance), these examinations have functioned as a screening device for admission to candidacy for the PhD The exam-takers, therefore, have always included a substantial number of uncertain and apprehensive students as well as embryonic winners of the Clark medal" (Reder 1982, 8).

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[1] University of Palermo. Although this paper is a joint effort by the authors, sections 1, 2, and 6 can be attributed to Luca Fiorito, and sections 3, 4, 5, 7 and 8 to Sebastiano Nerozzi, who is also responsible for the editing of the archival material.

[2] The classic references are Rutherford (ed.) (1998); Morgan and Rutherford (eds.) (1998); Yonay (1998); Rutherford (2011).

These documents provide a significant source of information concerning the making of an economist at Chicago since they reveal not just how economics was taught and tested at that university in the interwar years, but also what was then meant by "economic theory" and how this conception evolved over time. The relevant material was found among the Albert G. Papers at the Rare Book and Manuscript Library of Columbia University.[3] Hart had been a graduate student at Chicago from 1931 to 1936, where he completed his dissertation under Knight.[4] Hart's material was complemented by further archival research at the University of Chicago which allowed us to collect other documentary evidences on the evolution of the teaching of economics since mid 1920s.

This paper is organized as follows: the first section discusses institutionalism at Chicago and the role of Clark; the second section documents the changes following Clark's departure, when the teaching of economics was reshaped, under the leadership of Jacob Viner and Frank Knight, around the "core" course of Economics 301; the third section focuses on mathematical economics and Schultz's efforts to complement the Marshallian twist impressed by Viner and Knight; the fourth and fifth sections discuss how such a neoclassical turn in the teaching of economics did not prevent a deep institutional, epistemic and historical attentiveness to survive at Chicago during the 1930s; the sixth section deals with monetary and business cycle theory, the seventh section presents some conclusions.

2. Institutionalism at Chicago: John Maurice Clark

As Rutherford (2010; 2011) has ably documented, in the period up to 1918 the department of economics at Chicago hosted, both as faculty and graduate students, a whole array of individuals directly associated with the foundation of institutionalism: Thorstein B. Veblen, Robert F. Hoxie, Wesley C Mitchell, Walton H. Hamilton, Harold Moulton and John M. Clark.[5] To this list, Rutherford correctly adds other figures – such as Leon C. Marshall, Paul Douglas, James A. Field, Harry A. Millis and Chester Wright – who had a weaker but still significant connection to the movement in its early days. These men, with their teaching, research, and the close network they established, left a clear mark in the department of economics. As Rutherford (2010, 26) tells us, "Chicago […] has a strong claim to be seen as the birthplace of what became known as 'institutional economics.'"

By the early 1920s, many of the institutionalists who had spent significant periods of time at Chicago were not anymore part of the university. Veblen left in 1906, Mitchell in 1899, Hamilton in 1915, Moulton in 1922, while Hoxie had tragically died in 1916. Quite significantly, however, in spite of such a decline in the institutionalist presence, the intellectual influence of the movement continued to persist though most of the decade, shaping the teaching of economics. This was due mainly to the leading position assumed by Clark within the department. Just to give an idea, in 1925 and 1926 – the last two year of his permanence at Chicago – Clark taught graduate courses on Early Development of Economic Thought (Econ. 302), Modern Tendencies in Economics (Econ. 303), along with other

[3] The Hart papers at Columbia University contains a run of economic theory qualifying exams from the University of Chicago covering the period 1926-1940. PhD qualifying exams took place 4 times a year – one for each quarter – and after 1933 the economic theory qualifying was split in two distinct parts, one on Economic Theory (ET) and the other on Monetary and Cycle Theory (MCT). The relevant archival material is composed by the following exams: 1926 (Spring Quarter, Summer Quarter); 1927 (Spring Quarter, Summer Quarter, Autumn Quarter, Winter Quarter); 1928 (Spring Quarter, Summer Quarter, Autumn Quarter); 1929 (Spring Quarter, Summer Quarter, Autumn Quarter); 1930 (Spring Quarter, Summer Quarter, Autumn Quarter); 1931 (Summer Quarter, Spring Quarter); 1932 (Spring Quarter, Summer Quarter, Autumn Quarter); 1933 (Autumn Quarter ET, Autumn Quarter MCT); 1934 (Autumn Quarter ET); 1935 (Spring Quarter ET; Autumn Quarter ET); 1936 (Spring Quarter ET, Summer Quarter ET); 1937 (Summer Quarter ET); 1938 (Summer Quarter ET, Autumn Quarter MCT); 1939 (Spring Quarter, MCT; Autumn Quarter MCT); 1940 (Spring Quarter ET; Spring Quarter MCT).

[4] Interestingly, Hart was himself a product of Chicago interwar pluralism. According to Reder's recollections: "Among graduate students or young instructors of my student years at Chicago (1939-41), some (e.g., Yale Brozen, D. Gale Johnson, H. Gregg Lewis) were Chicago-style economists; others (such as G. L. Bach, Arthur Bloomfield, A. G. Hart, C. E. Lindblom, Jacob Mosak, David Rockefeller) would not usually be thought of as examples of the Chicago genre" (Reder, 1982, 5-6).

[5] Interestingly, Hamilton – the one who introduced the term "institutionalism" into the literature of economics in 1918 (Hamilton 1919) – visited Chicago from Amherst in the summer of 1917 and gave a graduate course on "Current Tendencies in Economic Thought."

courses that clearly reflected his own institutionalist research agenda, such as those on Problems of Overhead Costs (Econ. 304), and Problems in Social Economics (Econ. 305). In addition to these courses, which represented the bulk of the "Economic Theory" training, Clark was also responsible for the graduate seminars on Research in Economic Theory (Econ. 401, 402, 403).[6]

Traditional economic theory was by no means absent from the theoretical requirements, but its position was, so to speak, "subordinate" to a more institutionalist oriented line of attack. In 1922/1923 Viner, who at the time was also in charge of the teaching of International Economic Policies (Econ. 353) and all Government Finance courses (Econ. 360; Econ. 361), began to give a course on Neo-Classical Economics (Econ. 301) which was destined to become the core theoretical course at Chicago. Significantly, the course was presented, in the Course Program, as "a study of the general body of economic thought which centers about the theory of value and distribution and is regarded as 'orthodox theory,'" and it was explicitly intended as "preparatory to a more critical examination of this body of doctrine." The "critical examination" was left to Clark's course on Modern Tendencies in Economics that offered a "critical study of controversial questions in the general body of orthodox theory, and of some modern departures from orthodox theory." In a similar vein, Clark's course on Social Economics was described as an attempt to reach "beyond the self-imposed limitations of static theory, or 'price' theory; and reviewing the economic system from the point of view of its functions in a dynamic world." The topics covered included: "human nature, its desires, needs, and principles of choice; the institutional basis of economic life; the validity of price as an index of welfare; other indexes; demand and supply under dynamic conditions; price and efficiency under dynamic conditions; distribution under dynamic conditions."

Such a prevalent institutionalist character of the Chicago department is well revealed by the first two qualifying exams in Economic Theory collected by Hart – which are entirely reproduced in the Appendix.[7] From 1918 to 1933, the rules governing the final examination for the doctoral degree in economics at Chicago remained substantially stable. Four subjects had to be taken; of these, two were required of all candidates (general economic theory and the field of the thesis), while two others were to be selected from a list of ten. The first refers to the 1926 Spring Quarter and is markedly institutionalist in style:

> (Spring Quarter 1926)
> Answer six.
> 1. Give a list of outstanding dissenters from classical economics who were contemporaries of the classical writers, indicating chief points of dissent.
> 2. Answer one of the following: a. Compare the conception of economic law embodied in W. H. Hamilton's wage theory with some typical previous conception; b. Compare the ideas of the nature of "economic principles" held by the more absolute adherents of the classical school, a typical modern "orthodox" writer, and an "institutional economist"; c. Is it the purpose of Economics to formulate laws? If so, define "economic law" and illustrate. If not, why not, and what is its purpose?
> 3. Discuss the merits of the criticisms of marginal productivity theories of distribution which are based on the charge that these theories make invalid assumptions of perfect competition, perfect divisibility and mobility of the factors and perfect calculations on the part of the entrepreneur.
> 4. How does Taussig's theory of distribution differ, in its general outlines, from that of J. B. Clark.
> 5. "Physical productivity cannot give rise to interest as a percentage rate on capital value without an intervention of the capitalization or discounting of future incomes. Hence capitalization or time-discount is the true basis of interest, not productivity." Discuss.
> 6. Describe and estimate the contribution of one of the following: Karl Marx, T. B. Veblen, Carleton Parker.
> 7. Has modern psychology made the theory of marginal utility obsolete?

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[6] Since his arrival at Chicago Clark gave also regularly a field course on Public Policy and the Railroad (Econ. 363). Clark had in fact originally been hired by James Laurence Laughlin as a railway economist (Rutherford 2010, 26).

[7] In 1926 the list included 1) Statistics and Accounting; 2) Economic History, 3) The Pecuniary and Financial System; 4) Labor as an Agent in Production and as a Claimant of the Product in Industry; 5) Social Direction and Control of Economic Activity; 6) Government Finance; 7) Market Functions and Structures; 8) The Economics of Large-Scale Industry and of Monopoly; 9) Population and the Standard of Living; 10) A Field proposed by the candidate and approved by the department. This list was slightly modified over the years.

8. What difference does it make to economic theory whether institutions are evolving social organisms or not? (Note possibility that some kinds of statements or principles may be more seriously affected than others.)

The second exam, which refers to the summer Quarter 1926, appears to be more equilibrated in content:

(Summer Quarter 1926)
Answer eight questions, including not less than two from Group I, three from Group II, and two from group III.
Group I
1. What are the chief or characteristic contributions of: Say, Petty, Aquinas, St. Simon, Rodbertus, Rae, Böhm-Bawerk, J. B. Clark.
2. "Mercantilism was essentially the application on a national scale of attitudes and policies characteristic of the earlier medieval local economy." Who held this view or something like it? What specific features of mercantilism and of the medieval economy might furnish a basis for the statement? Is it true?
3. If there was a British Classical School, who composed it and what were its unifying characteristics, real or supposed?
4. Outline the main steps in the development of those ideas in international trade which ultimately crystallized into the "Theory of International Trade;" starting just before the more developed form of Mercantilism.
Group II
5. Price is said to be governed by cost of production to the "marginal producer." If the latter be defined as the one who makes no profit (whose cost equals the price) the expression becomes tautological. Can the marginal producer be otherwise defined, or content put into the statement?
6. a. Would interest exist if everyone were so rational as never to prefer a present utility to one of equal or greater degree (assuming equal certainty) in the future? b. What is time discount and what is its relation to interest?
7. What is the relation between the laws of diminishing returns and the law of proportion of factors? Give some valid statements of these laws.
8. What economist is known for having emphasized the proposition that differences in wages are to a large extent such as to equalize the real attractiveness of different occupations? What fact is the theory of non-competing groups used to explain and what is that theory?
Group III
9. State and discuss critically the central idea of Tawney's "Acquisitive Society."
10. State and discuss Veblen's criticism of the theory of marginal utility or some other of his major positions.
11. State and discuss critically Carleton Parker's psychological theory and its economic significance.

Until 1926, therefore, institutionalism was still a decisive part of the training of a young economist at Chicago. In the two tests above, many of the questions – if not the majority – have a distinct institutionalist flavor, deal with institutionalist authors, or show a critical attitude toward received orthodoxy, both classical and neoclassical.

These tests also reveal that monetary theory – "Financial Organization" as it was then called at Chicago – was not included in the mandatory "economic theory" exam. At that time, Lloyd W. Mints, who had just completed his PhD at Chicago, was already the responsible for much of the teaching in the field. For instance, in the 1926–1927 academic years, he had been assigned both the two-semester course Introduction to the Graduate Study of Money and Banking (Econ. 330; Econ. 331) as well as the advanced seminar on Problems in Money and Banking (Econ. 332).

Another interesting aspect of the tests concerns the absolute relevance given to the history of economic thought as an integral part of economic theory – this, however, will remain a distinguishing characteristic of the qualifying tests up to the late 1930s and will be discussed below.

A closer look at the questions, then, confirms the paramount influence of the young Clark in shaping the kind of economics then taught at Chicago. For instance Clark, author of the seminal two-part essay on "Economics and Modern Psychology" (Clark 1918a; 1918b), can be directly indicated as the responsible for question seven of the first test, for that on Veblen's criticism of marginal utility theory, and for the two on Carleton Parker's instinct theory.[8] The Clarkian mark is also evident in the questions relating to the criticism of marginal productivity theory – a central theme in his course on Problems of Overhead Costs. Viner, on the other hand, appears to be the author of the questions strictly pertaining to neoclassical theory, such as those on time-preference and the origins of interest, or those focusing on the history of international trade theory. Interestingly, one of the queries centered on the theoretical differences between the distribution theory of the elder Clark and that of Frank W. Taussig, Viner's own mentor at Harvard.

As a final notation, we would like to point out that it would be erroneous to think about a harsh dualism between the "orthodox" Viner and the "institutionalist" Clark. The two men were personal friends and Clark showed a deep respect for Viner's scholarship. This is also confirmed by a letter that in 1924 John Maurice sent to his father John Bates. At that time Viner was one of the candidates for the position at Columbia that eventually went to John Maurice. In one salient passage the young Clark wrote:

> As to his [Viner's] ability, I have been thinking of him for some time as a man who would occupy one of the most commanding positions in the economic world, and would not have to wait many years to reach it. He is a thoroughly good theorist – not always true nowadays of even the more brilliant students in special fields. If he goes to Columbia, I shall have special cause to mourn, because I have been sounding him for years with a view to take some theory work here, and he has only just seen his way to plan to give a course in the Classical Economists, about whom he has a vastly more detailed knowledge than I shall probably ever attain. He has a knack of very rapid reading, and reads an astonishing amount. His theory is of a classical turn, and would furnish a very valuable complement to my own revisionist tendencies, giving our graduate students something they badly need. No matter how strongly I believe in giving them a thorough understanding of what deductive-static theory really means, I simply can't do it in the amount of time there is left after sketching the historical development of economic thought and going into the modern critical-revisionist movement.[9]

3. **Forging the core: Viner and Knight on price and distribution theory**

Many changes took place after Clark left Chicago for Columbia in 1926. Field retired in 1927, while in 1928 Marshall, then the chair of the department, moved to Johns Hopkins to become professor of law. In 1926 Henry Schultz joined Chicago, and the following year it was the turn of Frank H. Knight and his student Henry C. Simons, both from the University of Iowa. Viner had obtained full professorship in 1925 and Mints in 1929.

These events, which led to the establishment of what is usually referred to as the "first Chicago School," had important consequences in the courses' structure and organization. The major changes – this is what mostly interests us here – concerned the field of Economic Theory. In 1927, in addition to Neo-Classical Economics, Viner took over the two courses left vacant by Clark, History of Economic Thought and Modern Tendencies in Economics. Two years later, the course on Neo-Classical Economics changed its name into Price and Distribution Theory (Econ. 301). Its content was still presented as a study of "orthodox theory," but no mention of a future "critical examination of this body of doctrine" was now included in the course description. Viner and Knight shared the responsibility of Price and Distribution Theory from 1929 until Viner's departure for Princeton in 1946 – at which point Milton Freidman assumed the teaching of the course.[10]

Price and Distribution Theory played a major role in nurturing what was later renown as the "Chicago price theory tradition"; Econ. 301, as some interpreters pointed out (Irving and Medema eds.

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[8] Interestingly, Clark considered his own approach to economic psychology to be complementary to that of Parker. As he put it in a letter to a French colleague: "Professor Parker and myself, working independently, have treated two complementary aspects of human nature: he the innate qualities, I the modifying elements of the environment." John Maurice Clark to Maurice Roche-Agussol, September 14, 1918. In Asso and Fiorito (2004a, 469).

[9] John Maurice Clark to John Bates Clark. Chicago, January 11th, 1924. Joseph Dorfman Papers, Rare Book and Manuscript Library, Columbia University. In Asso and Fiorito (2004b).

[10] Similarly, Viner and Knight taught alternately both History of Economic Thought and Modern Tendencies in Economics.

2013, 1-2), can be regarded as “the hallmark of this inculcation, the core graduate course in price theory that long differentiated the Chicago approach.” The course was a classic exposition of market economics, grounded in Marshallian partial equilibrium analysis, and its application to real-world phenomena. Its distinct theoretical character – which will be discussed in more detail below – is well epitomized by then more analytical queries of the 1932 Summer Quarter qualifying test:

> (Summer Quarter 1932)
> 1. Comment on the following passages:
> (a) “When the production of any commodity obeys the law of diminishing returns, the elasticity of the derived demand for labor – assuming this to be the sole factor of production – would, of course, be greater than that of the demand for the commodity; and conversely with commodities obeying the law of increasing returns.” [Pigou, Arthur C. 1928. A Study in Public Finance. London: Macmillan, 209].
> (b) “Since elasticity measures variations in quantity (demanded or offered) divided by variations in price, the elasticity of the demand for anything will be seven times as large for seven similar demanders as it is for one.” [Pigou, Arthur C. 1928. A Study in Public Finance. London: Macmillan, 207].
> 2. Explain the significance of any point on (a) a positively sloping demand curve; (b) a negatively sloping demand curve; (c) a short-run marginal cost curve for an individual concern; (d) a negatively sloping supply-curve for an industry; (e) a positively sloping supply-curve for an industry; (f) a negatively-sloping supply curve for labor; (g) a particular expense curve.
> 3. Explain: (a) atomistic competition; (b) fixed costs; (c) sunk costs; (d) joint costs; (e) technological coefficients of production; (f) constant elasticity; (g) “an increase in demand;” (h) marginal productivity.
> 4. Explain the adjustments which would take place in the prices of commodities and the prices of the factors if a sudden influx of immigrants were to increase substantially the number of unskilled laborers in the country. Distinguish between short-run and long-run adjustments.
> 5. The same commodity is being sold by only two producers who are competing against each other. Will there be an equilibrium price? How will the price which results compare with (a) the price that would have prevailed if the commodity were produced by a single monopolist; and (b) the price that would have prevailed if there were many competing producers. Discuss.

After being the object of many distinguished recollections, Viner teaching of Econ. 301 has been recently disclosed to the general public by Douglas Irwin and Steve Medema who edited the detailed notes taken in 1930 by Marshall D. Ketchum and put at disposal of other students between the shelves of the Chicago University Library. By this “nearly verbatim transcription” of Viner’s lectures we are guided through the topics and the views he presented on the different authors and streams of thought and on the most debated theoretical or policy issues. The content of Knight’s teaching of Econ. 301 has been unveiled by the publication of lecture notes taken by F. Taylor Ostrander and edited by Warren J. Samuels (Samuels 2005). These documents provide quite a careful account of Knight’s course from which some useful comparison can be drawn.

Aside from their personal relationships, and from their different methodological perspectives[11] Knight and Viner shared a common view on the way economics should be taught. Marshallian “price theory” was at the core of both their Econ 301 courses, though they put different emphasis on the different topics and often held different opinions on single issues or authors. At a first glance it can be said, Knight’s emphasis was more on the theory of distribution, while Viner certainly devoted more time to partial equilibrium analysis of price formation under different conditions of supply and demand.[12]

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[11] According to Reder: “Hostile to Douglas and Henry Schultz, his [Knight’s] relations with Viner were probably ‘correct,’ but there is little evidence of cordiality. What relations they had must at times have been strained by Knight's refusal to cover the fact of disagreement with a fig leaf of politeness. Cause and effect aside, Knight and Viner were not able to co-ordinate their views on research or departmental appointments; so far as I am aware they never tried to do so” (Reder 1982, 7).

[12] According to Patinkin: “Many factors lie behind this long road to understanding and appreciation. First of all, Knight gave little emphasis in his teaching to those things to which the beginning graduate student is normally attracted—namely the technical aspects of the discipline, and the newer the better. In part this was due to the fact that Knight was just not interested in these aspects—and in part because he took this knowledge for granted

Both Viner and Knight gave important contribution to the analysis of long-run costs of production. In his famous "Cost curves and supply curves" (1931) Viner derived the long run average and marginal cost curve from the envelopment of the short run cost curves, both for the firm and the industry as a whole. Knight (1921; 1935) defended the notion of perfect competition and argued for a net separation between static and dynamic analysis. In general terms, Knight conceived the Marshallian treatment of external economies and increasing returns as pertaining to dynamic analysis – and it was therefore logically fallacious to use it, as Marshall and Viner had done, within a static theoretical framework. Whatever the opinions of the two leading Chicago economists, this theoretical and methodological issue was often called on the PhD Candidates, as a few examples may suffice to show:

> Winter Quarter 1927
> 9. State your theory of the relationship between money costs of production and long-run prices, giving consideration to the law of diminishing returns, the "particular expenses curve," economics of large-scale production, quasi-rent, and other factors.
>
> Autumn Quarter 1928
> 5. Explain the relationship between fixed cost and price: (a) in short run; (b) in long run; (c) under monopoly conditions.
>
> Summer Quarter 1931
> 2. Write a brief essay on Cost of Production, touching on the concepts of labor-cost, pain-cost, entrepreneur's money-cost, and alternative or opportunity cost, the relations between them and the conditions under which each wholly or in part "determines" price. Under what circumstances and why will the money-cost curve be respectively one of constant, increasing and decreasing costs? Under what conditions, if at all, is competitive equilibrium possible with decreasing cost?

After 1927, roughly 40% of the questions were related either to a discussion of Marshallian partial equilibrium analysis or to its application to specific market problems. The questions on neoclassic theory of distribution covered another 15%. Both Viner and Knight's devoted a prolonged attention to a careful critical assessment of the different theories of capital and interest provided by the Austrian, on the one hand, and the neoclassical school on the other. In this respect Viner and Knight converged in rejecting the distinction between primary and secondary factors as well as the Austrian notion of "period of production"; they followed John Bates Clark on the simultaneous nature of consumption and production and on Fisher's theory of interest rate as deriving both by the marginal productivity of labour and on subjective time preferences of individuals. The qualifying closely reflected the thorough discussion of the above concepts as undertaken in Econ. 301:

> Autumn Quarter 1927
> 10. State the essential issue between "productivity" and "time-preference" schools of interest theory and indicate your own view of the merits of the controversy.
>
> Autumn Quarter 1928
> 2. Describe the characteristics of the supply curve of capital, with special reference to the doctrines of at least three of the following: Cassel, Taussig, Marshall, Fisher, Wolfe. Outline a method for the statistical verification of any one of these theories.
>
> Summer Quarter 1929
> 3. Answer either (a) or (b).

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and wanted to get at the more fundamental issues that lay behind the assumptions and implications of the analysis. And this was not simply a reflection of the period and of the generation—for my classnotes of Jacob Viner's contemporaneous version of the Economics 301 course show that Viner (in addition to being concerned with the broader issues of analysis and scholarship) gave considerably more emphasis to the technical aspects of the analysis than did Knight. Thus, for example—as might be expected from his famous article on 'Cost Curves and Supply Curves' (1931)—Viner provided a fairly detailed presentation of the properties of these curves under the assumptions of imperfect as well as perfect competition, though (as I shall note later) Knight too discussed the theory of imperfect competition" (Patinkin 1973, 788).

(a) Suppose that Robinson Crusoe could build with thirty days' labor an implement which would increase his general efficiency five per-cent, that it would last five years and require five days labor per year to keep it in condition (during which time, of course, both Crusoe and the tool would be "unproductive"). Find the rate of interest on the investment, showing reasoning. Expand the conditions so as to show the meaning in a Crusoe economy of a supply curve and demand curve for capital and an equilibrium interest rate; show the relation of "productivity" and "time-preference" to these curves.
(b) Write a brief essay on Profit as a distributive share, touching on its definition – in contrast to other shares, its relation to economic dynamics, uncertainty, supply and demand of entrepreneurship, and the conditions fixing the amount of profit in an individual enterprise and in industry at large.

Fall Quarter 1930
2. It is the capital value of an agent of production and not the rate of interest which is affected by a change in the value productivity of the agent." Is this true? Why or why not? If true, does it support the conclusion that productivity is not a factor determining the rate of interest?

Another often requested topic in income distribution was the theory of rent, as presented by Classical Political economist and by the neoclassical ones. Following John Bates Clark (and Fisher) in his symmetrical treatment of all factors of production, Knight thought that the single principle of rent explained all factors of production. Viner, instead, regarded the issue as dependent upon the specific assumptions concerning the supply of land as well as of the other factors of production (Irving and Medema eds. 2013, 138-144). PhD candidates were frequently asked to compare the different theories of rent since the time of classical political economy:

Autumn Quarter 1927
7. Contrast J. B. Clark's view of Rent with the "classical" theory.
Spring Quarter 1930
8. Discuss the legitimacy of the conventional classification of the factors of production into land, labor, capital, and business organization:
(a) As the chief or only classification;
(b) As one classification among others.

Spring Quarter 1936
1. With reference to distribution theory, (a) examine critically the separation of "land" from "capital" as factors of production; (b) discuss the distinction between fixed and circulating capital.

Quite unexpectedly very few questions among the qualifying tests are related to one of Knight's most notable contribution to economic theory, i.e., his celebrated distinction between risk and uncertainty and its ability to provide the rationale for the presence of business' profit.[13] We know that to the theory of profit was devoted some attention not only by Knight but also by Viner who taught his student that "Only two economists have dealt with it in a penetrating manner. One of these is Schumpeter, and the other is Knight" (Irving and Medema eds. 2013, 145).

Wage theory fell under the domain of general theory. In this connection, it is to be recalled that labor economics acquired importance at Chicago during the 1910s thanks to the work of Robert Hoxie, a figure deeply influenced by the work of Veblen. During the 1920s much of this training was entrusted to Harry A. Millis and Paul Douglas (Kaufman 2010: 129-130). Arrived in Chicago in the fall of 1916, Millis became one of the most authoritative expert in industrial relations of the country and, during the New Deal, he was appointed as member and then chairman of the National Labor Relation Board. While Millis formation was mainly institutional in character, Douglas was grounded on the same Marshallian theoretical track as Viner and taught the undergraduate Intermediate Economic theory (Econ. 201) – the course that introduced the young Paul Samuelson to Marshallian analysis

[13] We were able to detect only this single question from the 1939 Summer Quarter qualifying: "5. (a) Write briefly on the nature of the "risk" which confront the business entrepreneur and presumably affect his behavior. (b) Write briefly on the meaning of "profit" as a category in distribution, how it is determined in a competitive free enterprise economy, and under what conditions the total profit in the economy would be expected to be respectively positive, zero, or negative."

(Samuelson 1972, 5). At the graduate level, since his arrival at Chicago in 1920, Douglas gave regularly a course on the Theory of Wages (econ. 306) that combined partial equilibrium analysis with institutionalist concerns, such as those on collective bargaining and minimum wage legislation. His advance skills in theory and statistics, highlighted by the co-development of the Cobb-Douglass function, allowed him to be regarded as "the greatest labor economist in the first 50 years of the century" (Glen, 1979, quoted in Kaufman 2010, 130). Econ. 306 was originally part of the Labor and Personnel Administration field together with Millis' Trade Unions, Collective Bargaining, and Industrial Arbitration (Econ. 340; Econ. 341), but in 1933 became to be listed as an Economic Theory course.

Several questions relating to the labor market and its characteristics are to be found in the qualifying as pertaining to the General Economic Theory section:

> Summer Quarter 1927
> 9. Discuss the causes of variations in wages between different occupations or, discuss the causes of lower wages for women than for men in the same occupation.
>
> Autumn Quarter 1928
> 8. (a) Discuss the argument that there is conflict between the marginal productivity theory of wages and the contention that wages can be raised by collective bargaining. (b) Explain the meaning of the following terms: bargaining power; marginal productivity of labor; supply of labor.
>
> Fall Quarter 1930
> 8. Compare or contrast the effects on the incomes of the different social classes in the United States of
> (a) Immigration of unskilled labor;
> (b) Immigration of skilled labor;
> (c) Exportation of capital.
>
> Autumn Quarter 1932
> 7. State the marginal productivity theory of wages, given the assumption underlying it, and discuss the relation of this theory to the proposition that wages can be raised by collective bargaining.
>
> Summer Quarter 1936
> 7. As a result of persecution, a heavy migration of unskilled labor takes place from country A to country B. Trace the probable effects of this migration on the distribution of income in country B.
> 8. "Laborers will protest much more against a decrease in money wages in the face of constant prices of the things that they buy than they will against continuation of the same money wages in the face of rising prices. Consequently, the supply curve for labor should be drawn in terms of money and not of purchasing power." Comment

Since the heydays of institutionalism labor economics had played a central role in the training of young economists. Yet, as the above questions show, after 1927 partial equilibrium analysis get established as the main perspective through which a young economist in Chicago was expected to examine the complex dynamics of the labor market.

4. Integrating the core: mathematical economics

The Marshallian thrust of the economics imparted by Viner and Knight in Econ. 301 did not preclude Chicago students the possibility to learn other streams of neoclassical thought and to acquire more sophisticated analytical tools.[14] Pluralism, in this connection, was ensured by Schultz's presence in the department. On his arrival at Chicago in 1927, Schultz – who together with Theodor Yntema was

[14] In 1931 Herbert J. Davenport visited the University of Chicago (where he had graduated in 1902) to give a monothematic course on The Marshall Economics (Econ. 305). Davenport was highly critical of Marshall. See especially his posthumously published The Economics of Alfred Marshall (1935).

also in charge of Statistical theory (Econ. 311)[15] – began to teach the newly established Mathematical and Statistical Economics (Econ. 411). In 1929, the course, which was then listed in the Statistics and Accounting section, was split into Statistical Economics (Econ. 411) and Mathematical Economics (412). In 1931 Mathematical Economics was included among the Economic Theory courses and presented as a study of economics "from the point of view of assumptions, range of problems, methods and tools, and validity and utility of results under present conditions." Specific consideration was given to the problem of "circular reasoning" in price theory, to the "advantages and limitations of the mathematical approach," and to the possibility of developing a "statistical complement" to pure theory, while explicit reference was made to the works of Walras, Pareto, and Moore. In 1933, Schultz also began to give a seminar on "The Theory and Measurement of Demand" (Econ. 405), dealing with both the "pure theory of demand" and the "various methods of deriving demand functions from family budget data and from time series of consumption and prices." Schultz's growing influence in the department was reflected in the increasing presence of qualifying queries requiring higher analytical skills. For instance, in 1933 the student was required to derive the combined demand for beef and corn of two economic agents curves under the following conditions:

> (Spring Quarter 1933)
> 4. Answer (a) or (b), but not both.
> (a) The final degree of utility curves of A and B for corn (X) and beef (Y) are as follows, the small letters x and y representing the quantities of X and Y consumed by the person indicated by the subscript.

Person	Commodity	
	X (corn)	Y (beef)
A	$f_a(x_a)= - 3/2x_a + 19/2$	$\varphi_a(y_a) = - 1/2y_a + 6$
B	$f_b(x_b) = - 3/8x_b + 5$	$\varphi_b(y_b) = - y_b + 7$

> The total market supply of corn is
> $x = x_a + x_b = 14$
> and the total market supply of beef is
> $y = y_a + y_b = 8$
> Without performing any numerical computation, explain how to deduce the combined demand curves of A and B for corn in terms of beef and beef in terms of corn.
> (b) Is there an equilibrium price and output when a commodity is produced by two competing monopolists? Discuss this problem, touching on the solutions of Cournot, Edgeworth, Amoroso, and Wicksell.

After Schultz's death in 1938, Oscar Lange was appointed in order to take much of the most advanced economic and statistical training at Chicago. He began in 1938 teaching Correlation and Curve-Fitting (Econ. 311), Statistical Economics (Econ. 411), and Mathematical Economics (Econ. 402) – while the following year he introduced two advanced seminars on Imperfect Competition (Econ. 307) and Business Cycle Theory (Econ. 332).

Mathematical expertise, however necessary, had to be accompanied by an equal level of methodological consciousness. In addition to the kind of exercises reproduced above, the qualifying regularly contained several "open" questions asking for a critical scrutiny of the conditions for both general and partial equilibrium analysis, or for a discussion of the limits and strengths of the two approaches:

> Spring Quarter 1930
> 2. State the conditions necessary for general stable equilibrium in a closed competitive economy, and defend each item included in your list.

> Spring Quarter 1935
> 2. Discuss the advantages of Marshall's method of taking one relation at a time (plane curves) in contrast with the use of the concept of general equilibrium, and of intermediate procedures.

[15] Yntema, who had joined the faculty of the University of Chicago in 1923, made his first appearance as a graduate program teacher in 1927.

Summer Quarter 1938
1. Write critically on the things to be taken as "given" (the "data") in stationary-economic analysis. List such magnitudes; discuss the facts as to the constancy of each in real life; and in so far as any one actually changes, consider whether this is due to economic causality and is explicable in terms of supply-and-demand reasoning, and whether it tends toward a position of equilibrium (a stationary value) in the future. Discuss the usefulness or necessity of this type of economic method.

Chicago students were asked to show a similar epistemic awareness as to the use of statistics applied to economic problems:

Spring Quarter 1930
7. List three of the most notable applications of statistical methods to problems of economic theory (not including the business cycle) and indicate in each case what contribution to economic theory resulted, whether in choice of problem for study, basic method of analysis, preconceptions, conclusions, or in any other respect except the mere use of statistical data.

Spring Quarter 1935
7. Discuss the assumptions underlying and the degree of success obtained by recent attempts to make economic theory more quantitative.

The paternity of these questions is quite difficult to attribute. It may be Schultz's, who had included a discussion of methodology in the course description for Mathematical Economics, or it may well be Knight's, probably the most outspoken critic of the "quantitative approach" to economic theory of his time.[16] Anyhow it is crystal-clear that, despite the Marshallian turn of the post-1927 era, pluralism and open methodological discussion were crucial to the making of a Chicago economist during the 1930s.

5. History as a central part of the core

One of the main characteristics of the qualifying examinations that remained constant throughout the years is the fact that roughly one third of the queries were regularly devoted to the history of economic thought. This should be by no means surprising. The course on History of Economic Thought (Econ. 302) – which, as Samuelson (1972) and Patinkin (1973) recall, represented one of the distinguishing marks of the department – was thought alternatively by Knight and Viner[17]. The course was described as follows:

> The course combines a brief survey of the whole field of economic thought with a more intensive study of the "classical school" of British economists. In the survey part of the course the emphasis is placed on the relation between economic thought and the cultural and economic life of the different peoples and periods. Some of the great contrasts in the character of economic life and in the attitude toward it which mark antiquity, the middle ages, and the successive periods of modern times receive special consideration. The gradual separation of a body of doctrine and pure science of economics or price theory, is made the background of the discussion of the classical school. A considerable fraction of the work of the course is given to a few of the most important classical writers whose doctrines are studied in relation to the problems and discussion of today.

Two elements are highlighted from this brief presentation. History of economic thought was studied at Chicago in the perspective of present day problems. The relevance of each author was ultimately discussed in relation to the main issues of theory and policy of the day. Putting Knight's and

[16] As Reder put it in his recollections "Whatever the cause, Schultz' attempts to disseminate mathematical economics and econometrics at Chicago had to overcome Knight's formidable opposition. Whether this opposition was responsible for the adverse opinion of Schultz held by some Chicago students (of the middle and late 1930s) is hard to say: Knight was not one to hide his views, and his opinions carried weight. Two of the students not favorably impressed by Schultz were Friedman and Stigler; they might have influenced others. However, there were other good students (for example, Martin Bronfenbrenner and Jacob Mosak) who always spoke highly of Schultz as did Lange himself" (Reder 1982, 4).
[17] In 1930 and 1931 Knight and Viner co-taught the course.

Viner's views in a nutshell, we could say that while an economist is always situated in his own time, his doctrines are situated in our own and should be evaluated in light of the present knowledge we have of economic theory. Yet, rather than collapsing the old theories into the new ones, both Viner's and Knight's aimed to assess the validity of any theory on the basis of its internal consistence and practical relevance.

A second point that can be stated is that price theory, depicted above as the very essence of Chicago economics, emerges also as the main focus of the course in history of economic thought. Attending history of economic thought meant being exposed to the narration of how price theory emerged as the "pure science of economics" and how it evolved over time, from the classical to the marginalist and neoclassical school, before being embodied in the teaching of Chicago economics.

The analysis of the qualifying closely reflect the way history of economic thought was taught and conceived: its teaching was meant to help students acquiring a deeper knowledge of the foundations of modern (neoclassical) economics. The past was deemed important insofar as it was related to the present and able to offer a critical foundation for assessing contemporary theoretical and policy problems. A few examples may suffice:

> Spring Quarter 1928
> 1. Discuss the scope and method of the English classical school in the light of modern criticism thereof.
>
> Autumn Quarter 1928
> 1. Discuss the position of Adam Smith, Ricardo and J. S. Mill with respect to the relationship between rent and price, and state your own position.
>
> Autumn Quarter 1928
> 7. (a) What were the contributions of the Physiocrats to economic thought? (b) Who were the Physiocrats and what was their relationship to the problems current in their days?
>
> Autumn Quarter 1929
> (a) Give a critical discussion of the doctrine of marginal productivity, with some notice of its history (suggestions: Menger, Wieser, J. B. Clark, Wicksteed, Walras, Pareto).
>
> Spring Quarter 1930
> 6. (a) What are the laissez-faire views of the classical school?
> (b) How would you explain their prevalence at that time?
> (c) What, if anything, was wrong with them?
>
> Fall Quarter 1930
> 6. Discuss carefully the relations between real cost and money cost, the merits of the case and the doctrines of leading writers from Adam Smith to the Austrian.
>
> Summer Quarter 1931
> 3. Give a careful statement of the classical theory or theories of wages with some indication of the development or variations (Smith to Cairnes, incl.) also indicating briefly the contrast between this and modern wage theory.
>
> Spring Quarter 1933
> 2. Trace the development of the demand concept from Adam Smith to the present, touching on the contributions of J. S. Mill, Cournot, Fleeming Jenkin, Walras, Böhm-Bawerk, and the statistical economists.
>
> Spring Quarter 1936
> 3. Sketch in general outlines the history of the capital concept and the theory of interest from Adam Smith to yourself.

Historical contextualization was carefully undertaken. History of economics was presented as a succession of specific "epochs of economic thought" – each characterized by a school of thought and its leading exponents. Moreover, the course was meant to make the students aware on how history of economic thought was affected, in its internal developments, by the complex relationships with culture, religion, policy, economic power and so on. The qualifying show how students were asked to manage the possible causality links between history of facts and history of ideas. A few examples:

> Autumn Quarter 1927
> 1. Assuming that the development of economic thought may be divided into four principal epochs, namely Classical antiquity, the Middle Ages, the Sixteenth to Eighteenth Centuries, and the later Eighteenth and Nineteenth centuries – give a brief general characterization of the ideas and literature of each epoch, particularly with reference to the conception of economic policy, its character, the agency by which it is to be carried out, and something of the underlying reasons for the changes from each epoch to the next.
>
> Summer Quarter 1929
> 4. Answer either (a) or (b).
> (a) Compare and contrast the place of labor cost or general pain cost in the systems of Smith, Ricardo, J. S. Mill, Marx, Jevons, "Austrian School, and Carnes.
> (b). Discuss the issue as to how far the changes in the character of economic thought from the classical-antiquity to the Middle ages, the latter to Mercantilism, and this to the Classical school, were due to changes in "conditions" and how far to independent changes in men's ideas and attitudes. Similarly for the current growth of "realistic" schools (institutional and statistical).
>
> Summer Quarter 1931
> 1. Discuss the nature and historical causality of the following sequence:
> (a) (Medieval) Control of economic life in accord with ethical-religious principles by the church with the aid of the "secular arm."
> (b) (Post-Renaissance) Control by national state in accord with political policy.
> (c) (Nineteenth Century) "Laissez-faire:" relatively little control over individual acting according to self-interest.
> (d) (Twentieth Century) Pronounced tendency to increased control.
>
> Spring Quarter 1931
> 1. State in a brief paragraph for each of the most distinctive features of the following schools or types of economic thought: (a) Greek; (b) Medieval; (c) Mercantilist or Nationalist; (d) British Classical School; (e) 19th Century Historical Schools; (f) Socialism; (g) Institutional Economics; (h) Mathematical Economics; (h) Statistical Economics.
>
> Autumn Quarter 1933
> 6. Briefly characterize and evaluate comparatively what you consider the significant "approaches" or methodologies in economic science. (The following are to be taken as suggestive catchwords: classical, inductive, institutional, deductive, price-theory, sociological, socialistic, control.) Where possible, cite examples of the different tendencies in the history of economic thought from the Greeks to the present.

Notably, historical contextualization was carefully undertaken by Viner – his attentiveness for historical details is proverbial.[18] Knight's attitude in this respect is a little more puzzling. In this connection let us draw again from Patinkin's direct recollections:

> There is one aspect of Knight's treatment of the history of economic thought that continues to puzzle me: despite Knight's broad historical interests—and his 1926 translation of Max Weber's General Economic History—Knight made practically no attempt to relate the development of economic thought to the contemporaneous historical developments. At one point in his 'History of Economic Thought' course—after distinguishing several 'epochs of economic thought'—he went on to say that we 'have to examine the historical contexts of the economic writings of these periods' (Classnotes, Econ. 302, 1945). But Knight himself did little further along these lines—except for some passing remarks in his discussion of Ricardo's work. Instead, Knight's approach to the history of thought was that of providing a purely logical criticism of the nature of the assumption made by the various schools of thought, and the validity of the conclusions that they drew from them; he was

[18] On Viner as historian of economics see Groenewegen (1994) and Winch (1983).

concerned almost solely with the logical consistency of the theories he was examining (Patinkin 1973: 797-798).[19]

Patinkin's reminiscences notwithstanding, the qualifying also allows us to state that students were expected to be aware of the "social" – or even national – construction of economic theory, as a few examples may show:

Summer Quarter 1928
4. Discuss the medieval doctrine of the just-price and the prohibition of usury in their general historical and cultural setting.

Summer Quarter 1929
8. Give a general characterization of German, French, and American economic thought in the nineteenth century, in contrast to England.

Spring Quarter 1936
8. What general features distinguish the economic thought of American writers, from the foundation of the nation to the present, from the doctrines of the British classical school? Illustrate in the case of America by naming important writers and works.

Summer Quarter 1936
6. Compare and contrast the social ideals and objectives to be brought about or contributes to by economic writing and discussion, of (a) the medieval school men (the "Canonists"); and (b) the "mercantilists" as schools of economic thought.

Summer Quarter 1937. Compare and/or contrast the ethical presupposition or axioms (the ultimate axioms of social policy) underlying (a) the canonistic economics of the late Middle Ages; (b) mercantilism; (c) the laissez-faire economics of the nineteenth century; and (d) "The New Deal."

The intermingling of history and theory was not specific to Knight and Viner, or to Chicago alone. In 1938, the year of his arrival at Chicago, Oscar Lange started to teach a course on Ancient and Medieval Economic Thought Relating to Economic Life (Econ. 308).[20] The relevance of the history of economic thought in graduate curricula was widely spread in American Universities: in a 1953 survey for the American Economic Association Howard R. Bowen (1953) reported that history of economic thought – albeit a "declining" field – was still a required or elected course by PhD students at three-

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[19] The broad consensus between Viner and Knight did not prevent these two exceptionally able teachers from offering different if not opposing interpretations on specific topics and authors. According to Patinkin: "In [Knight's] teaching of the 'History of Economic Thought' (Econ. 302), [...] his detailed critique of the Ricardian system [Knight 1935] was the vehicle by which Knight made clear the main features of his own analytical framework. For this reason this history was live and current for us as students. Here too, however, I must admit that part of this liveliness stemmed from our realizing that the evaluation of Ricardo was also the subject of a running debate between Knight and Viner, where in contrast with the analytical genius whom Viner depicted, Knight depicted a Ricardo who represented a retrogression from the achievements of Smith: primarily I think, because of what Knight regarded as Ricardo's greater emphasis on—and formalization of—the labor theory of value. Indeed, Smith—according to Knight—did not believe in the labor theory of value (Classnotes, Econ. 302, 1945)" (Patinkin 1973: 797).[19] Even in the topics they treated there was probably some difference between Viner and Knight. Again, we are informed by Patinkin that: "Knight devoted most of his 'History of Thought' course to the classical school, and in this connection had us read the relevant texts from Smith, Ricardo, Senior, and Mill. He then set us the task of presenting what we had learned about this school in a term paper (which had become a standard feature of the course) on 'The Classical Cost-of-Production Theory of Price.' The remainder of the course was devoted to the Austrian 'subjective-value revolution,' with a few passing remarks added with reference to the institutionalists. As already indicated, there was much overlapping between this course and Knight's theory course proper—though the emphasis of the latter was on the Marshallian synthesis of the classical and Austrian approaches" (Patinkin 1973, 797).

[20] The course was described as: "The economic thought of Greek Philosophy; the Romans; economic doctrines in Roman Law. Early Christianity; the Apostolic Age and the Early Fathers; Augustine; the Thomist system. Christianity and social revolt; the medieval heretics; the Reformation; Anabaptism and the Peasant War. Protestantism and capitalism. The economic doctrines of the Catholic church."

quarters of the reporting institutions and that 12 percent of respondent graduate students considered it of great value – third field after Economic Theory (39%) and Statistics (26%).

6. The persistence of Pluralism

The qualifying exams in economic theory did not concentrate exclusively on theory – strictly convened. As we have seen, questions relating to history and methodology were not infrequent and for the Chicago student often constituted the required complement of analytical exercises. Other queries bypassing the technical core of economics focused on the very foundations of social policy. Several qualifying questions were related to the theoretical arguments about the possibility of a genuine socialism, as well on the efficacy of free trade and the desirability of minimal government involvement in the economy:

> Spring Quarter 1931
> 2. Give a brief discussion of the social advantages and defects of entrepreneur price competition as a method of allocating productive resources among various possible uses.
>
> Spring Quarter 1933
> 3. Give some reasonable objectives for a centrally planned economy in a democratic state; state the grounds of your selection of objectives; indicate and discuss possible lines of procedure for realizing them through price control.
>
> Autumn Quarter 1934
> 2. State in general terms the main assumptions involved in stating that free competition would bring about an ideal allocation of productive services.
>
> Summer Quarter 1938
> 4. Give a brief but careful discussion of the question whether you would expect "cycles" in a collectivistic economy. In so far as they would "tend" to occur, what policies or measures for prevention or for mitigating their ill effects would be available to the collectivistic government which are not available to the government of the United States as constituted at present, without fundamental changes in the laws of property and enterprise.

In this connection, there seem to be no doubts as to Knight's paternity of many of the above questions. In 1928 Knight started to give a course on Critique and Evaluation (Econ. 304), which after two years changed name into Economic Theory and Social Policy (Econ. 304). The course, listed in the Theory field, was described in the university catalogue as "a critical examination of the economic system based on property and competition in which are considered: its strength and weakness as a mechanism for the reconciliation and mutual promotion of individual interests; the type of interest and of personality it tends to develop; the meaning and bearing of social interests, in contrast and possible conflict with those called individual." Knight taught that course from 1930 to at least 1942, although the course was not offered with continuity. In 1940 Knight – together with the philosopher Charner M. Perry – also started a graduate seminar in Economic Theory and Social Control (Econ. 405) devoted to an "investigation of the theoretical assumptions as to the nature and ends of organized economic action, and as to the relation between these and the organization form, in 'free' and 'planned' economic systems."

Another recurrent topic was the possibility of drawing welfare conclusions from the set of assumptions of traditional economics theory:

> Spring Quarter 1930
> 4. (a) Discuss the adequacy of competitive price as a measure of the welfare significance of market phenomena. (b) What means are available, or have been suggested, for modifying pecuniary measures of welfare, and what are their possibilities?
>
> Summer Quarter 1930
> 7. Discuss the problem of finding a satisfactory working concept of economic welfare.

This is a theme that Knight will fully develop in 1944 when he will attack any attempt to base normative prescriptions on the Marshallian notion of "consumer's surplus" (Knight 1944).

Significantly, as it clearly emerges from our archival evidence, queries related to institutionalism (broadly conceived) were frequently included in the core theoretical qualifying tests, instead of being relegated to a special field examination. What follows are some illustrative examples:

> Spring Quarter 1927
> 6. What is meant by "institutional economics"? What are its outstanding doctrines, and its positive achievements?
>
> Summer Quarter 1927
> 6. Discuss the program, the technique of investigation, and the achievements of the institutionalists in the light of previous revolts against the orthodox economics.
>
> Summer Quarter 1928
> 3. Appraise the institutionalist criticism of the Classical and Neo-Classical economics and discuss the possibility of an institutionalistic approach to economic problems as a substitute for the older economics.
>
> Spring Quarter 1929
> 8. List the more important criticisms of the classical type of economic theory Veblen, Hamilton and Mitchell, and appraise them, as to merit and novelty in the history of doctrine.
>
> Autumn Quarter 1932
> 8. Briefly state your conception of the nature of institutional economics, its relation to the price-type theory type of economics, and its value to the student. Comment on the work of Adam Smith, J. S. Mill and Alfred Marshall with regard to the adequacy of the consideration given by them to institutional factors, and discuss the desirability of replacing the standpoint of Marshall by that of any institutionalist or group of institutionalists.
>
> Autumn Quarter 1935
> 8. Indicate briefly the position of the institutional school of economists in America. With what earlier movements in the history of doctrine could it be compared, giving illustrative names in both cases.
>
> Spring Quarter 1936
> 7. Compare the interpretations of economic history of any two: Marx, Sombart, Veblen, Max Weber.
>
> Summer Quarter 1937
> 2. Sketch the relation between the economic doctrines of Marx and Veblen, relating both positions to the problem of an "institutional economics" and to the writings generally representative of this position.

As the above bears witness to, questions related to institutionalism-related themes lasted until the late 1930s – a time in which the movement had already lost much of its influence in American economics. Ironically enough, it was Knight who helped to keep alive the movement's tradition at Chicago long after Clark's departure to Columbia (see also Asso and Fiorito 2013): Knight was probably the most authoritative critic of institutionalism during the 1920s (Asso and Fiorito 2008), and his attacks were often phrased in harsh terms. Still, he considered a thorough knowledge of both the methodological and epistemic basis of institutionalism as an essential portion of the training of a Chicago economist. In this connection, Knight began in 1929 to give a course on Economic History and Economic Theory (Econ. 323), devoted to the critical scrutiny of the "recurrent conflict between two conceptions of economics, the historical or institutional and the deductive system of the classical and mathematical schools." Two years later the course was transformed into a Seminar in Historical and Institutional Economics (Econ. 404), which in 1932 eventually changed its name into Economics from an Institutional Standpoint (Econ 305) – a course that Knight taught until 1942, although it was not offered with continuity.

From Samuels (2005) we learn that while the bulk of the course dealt with institutionalist writers as they were properly understood – such as Thorstein Veblen, Wesley C. Mitchell, Walton H. Hamilton, and others – its reading list encompassed both U.S. and European sources. What is also interesting is that Knight conceived institutionalism as including German Historismus and the analysis of religious beliefs, as determinants of the prevalent socio-economic philosophy of life, provided by Werner Sombart, Max Weber, and Richard Tawney.[21]

Far less apparent than Knight's is the influence of his student Henry C. Simons on the composition of the qualifying. After his arrive at Chicago Simons took over the course on Government Finance (Econ. 360) and Problems in Government Finance (Econ. 361) – both courses were previously taught by Viner[22]. He continued to teach these courses though the 1930s although in 1937 the course changed name into Economics of fiscal Policy. Maybe the following questions could be somewhat related to his teaching.

> Spring Quarter 1936
> 5. Criticize from the standpoint (a) of recovery measures and (b) as measures of social reconstruction, either the general programs of the N.R.A. or that of the A.A.A.
>
> Summer Quarter 1938
> 4. Give a brief but careful discussion of the question whether you would expect "cycles" in a collectivistic economy. In so far as they would "tend" to occur, what policies or measures for prevention or for mitigating their ill effects would be available to the collectivistic government which are not available to the government of the United States as constituted at present, without fundamental changes in the laws of property and enterprise.

Even after the publication of his famous and influential manifesto "A positive program for laissez faire" in 1934, it is not easy to trace questions directly connected to Simons' laissez-faire views. Perhaps the queries related to his courses were relegated in a field examination and not in the general theory tests. While the requirements for PhD candidates geared around a deep and critical knowledge of present and past economic theories, any doctrinal or militant approach to economic ideas and policies was left to student's personal evaluation not to be submitted to any kind of formal scrutiny. This could explain why, as far as the PhD examinations are concerned, the role of Simons in the shaping of "Chicago Economics" appears to be less marked than commonly recognized.

7. Widening the core: money, banking and business cycle

1933 represented a turning point in the way economic training was tested at Chicago: the qualifying in general economic theory was divided into two examinations: one in price theory, one in monetary economics[23]. The fall 1933 qualifying test shows how monetary problems were closely related and almost coincident with business cycle theory or, in more modern terms, macroeconomics:

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21 In a 1937 letter to his friend and institutionalist "rival" Clarence Ayres, Knight himself offers a rather telling (and provocative) description of the aim and contents of the course. The letter reveals the little value that Knight attached to the constructive side of the institutionalist doctrine, particularly as an instrument to understand real economic events: "You probably know that I attempt to give a course on 'Economics from an Institutional Standpoint.' I am taking the liberty of inflicting on you my latest outline and reading list. I would very much appreciate critical comments, and especially suggestions of good short reading. … It is unnecessary to say that I don't place any very high estimate on the constructive value of institutionalist writings as known to me – including those of C. E. Ayres! What I would like to do would be to take the 'challenge' seriously and make some real contribution toward an understanding of institutional development. In this connection, I am convinced that legal philosophy and legal history form the main item which needs emphasis, with religion probably in second place." (Knight to Clarence E. Ayres, 16 February 1937; quoted in Samuels 1977, 305).

22 Econ. 360 was described as: "A survey course examining both the internal financial problems of government and those arising from the relations between different governments and between government and its citizens. A critical analysis will be made of the major principles and practices relating to the financial aspects of the spending, taxing, borrowing, and internal-management activities of government."

23 Still in 1933, the rules governing the final examinations for the doctoral degree in economics at Chicago underwent some changes. The candidate was now required to specialize in only three fields: general economic

B. Criticize the view that industry fails to distribute sufficient purchasing power to buy its product, resulting in economic unbalance.
1. State the classical doctrine of international gold flows and price levels an discuss some recent criticism of this doctrine.
2. "The primary cause of business depression is the rigidities of the price structure."
"Through their alternating contraction and expansion of the circulating medium the banks are responsible for the wide swings in industrial activity."
3. Discuss the theoretical shortcomings involved in a policy on the part of our federal government of progressively bidding up the price of gold in foreign markets.
4. If business recovery came without the assistance of governmental inflation it would be accompanied by an expansion of the circulating medium as a result of the lending operations of the commercial banks. What significant similarities and differences are there between such expansion and (a) government borrowing from the banks in order to finance public works, (b) outright "greenbackism"?
5. It has been argued that insomuch as the demand for capital goods is a derived demand it follows that any voluntary saving will necessarily result in some degree of unemployment. That is to say, the savings will reduce the demand for consumers' goods, thus reducing the demand for capital goods, and consequently not all the savings will be borrowed; hence unemployment. But the commercial banks, through their power to create circulating medium, make it possible for entrepreneurs to obtain the funds with which to create capital goods without the reduction in consumer demand which comes with saving. Hence the banks furnish a means of escape from the dilemma. Discuss.

At Chicago the main graduate courses in money and banking were taught by Lloyd W. Mints[24]. By the 1925–1926 academic year, Mints had been giving the graduate-level money and banking series to teach – a position he held until the mid 40s. From 1925 to 1935 Mints taught the two-semester course on Money and Banking.[25] The course was described as:

> a two-major course having two objectives. The student is expected to make a wide acquaintance with the literature of the field; and to become familiar with those theories and principles in the fields of money and banking which are essential to an intelligent understanding of the problems arising in these fields. The relation of a medium of exchange to the processes by which changes in the price level are brought about are critically examined. Consideration is also given to the principles which should govern the operations of individual commercial banks and of the banking system, and to the relations of these operations to changes in the price level and business conditions.

A reading list preserved in Milton Friedman's archival papers, shows that most of Mints' 1932 course focused on the quantity theory of money as presented by a selection of chapters of the most important research works in the field published during the former two decades by Alfred Marshall, Irving Fisher, Arthur C. Pigou, Ralph Hawtrey and John M. Keynes. The different approaches to business cycle theory was presented following Hansen's book on *Business Cycle Theory* (1927) and the *Treatise on Money* (1930). A deep discussion of the *Treatise on Money* was supported by the reading of the Keynes-Robertson and Keynes-Hayek exchanges together with some of the most important reviews to the book.

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theory (which for the first time expressly included "monetary and cycle theory"), the field of the thesis, and one subject chosen from 1) Statistics; 2) Accounting; 3) Economic History; 4) Financial System and Financial Administration; 5) Government finance; 6) Labor and Personnel Administration; 7) Trusts and Public Utilities; 8) International Economic Relations; 9) some other field proposed by the candidate. These rules remained unaltered until the mid 1940s.

24 Lloyd W. Mints arrived at Chicago in 1922. In 1922 he was hired as Instructor of Political Economy and in 1924 became Assistant Professor of Political Economy. On Mints' life and career see Peterson and Phillips (1991).

25 In 1935-1936 the course was divided into two distinct courses: Money (Econ. 330) and Banking (Econ. 331) Mints taught also the graduate as well the advanced course on Problems in Money and Banking (Econ. 332). Like many of the "Chicago School," Mints was somewhat uncomfortable with this designation, though he identified the birth of the Chicago School as 1933, when he and several colleagues published a tract on Banking and Currency Reform (Simon et al 1933).

Since the onset of the great depression monetary economics had massively grown in importance not only within Chicago teaching, but also in the research agenda of the more representative economists of the Chicago Department of Economics. In June 1931 Keynes was invited to the Harris Foundation Conference in Chicago, significantly devoted to the topic "Unemployment as a world problem." Here Keynes interpretation of the great depression, based on the Treatise on Money, was presented and discussed with some of the leading figures of the Department.[26] The following year the Harris Conference, jointly organized by Jacob Viner and John H. Williams from Harvard, set out a famous manifesto for expansionary monetary and fiscal policy in order to reverse the powerful deflationary tendencies then at work. In 1933 a group of seven Chicago economists, signed a plan urging the establishment of a 100% reserve banking system, in order to prevent the lending activities of commercial banks from affecting and destabilizing the money supply of the country.

These initiatives together with the teaching, the research works and the public speeches of Jacob Viner, Lloyd Mints, Paul Douglas, Charles O. Hardy, Aaron Director and Henry Simons have been frequently held responsible for setting out a specific, consistent and enduring stream of thought, often labeled "Chicago Monetary Tradition." The distinguishing characters of this tradition were highlighted for the first time by Milton Friedman (1956), in the attempt to clarify the principles underpinning his own restatement of the quantity theory of money as a powerful alternative to Keynesian macroeconomics. Since then, the nature, the content and the continuity of this tradition has been the object of quite an intricate debate among economists and historians of economic thought (Leeson ed. 2007; Nerozzi 2009; Ahiakpor 2010; Laidler and Sandilands 2010).

As monetary theory grew in importance in connection with the massive experiments in economic and social policy undertaken under the New Deal, the teaching of money and banking widened: in 1934 Melchior Palyi a German visiting professor, who taught International Finance since 1927 (Econ. 334), was also entrusted with the course of Business Cycle Theory (Econ. 333) and European Banking (334).[27]

Shortly after the publication of the *General Theory* the qualifying reflected the new theoretical issues arisen by Keynes' new theoretical effort. Many questions were related to such topics as involuntary unemployment, monetary illusion, fiscal deficits, and liquidity preference:

> Spring 1936
> 4. Under which conditions can there be a considerable amount of fairly permanent involuntary employment in an economic society? Under what conditions, if any, and by what procedure, if at all, would it be possible to raise the wages of all the labor in an economic society? Under what conditions, if any, and by what procedure, if at all, would it be possible to raise the wages of all the labor in an economic society above the theoretically competitive level (the level determined by "marginal productivity") without bringing about unemployment?
>
> Summer 1936
> 8. "Laborers will protest much more against a decrease in money wages in the face of constant prices of the things that they buy than they will against continuation of the same money wages in the face of rising prices. Consequently, the supply curve for labor should be drawn in terms of money and not of purchasing power." Comment.
>
> Summer 1938

[26] Aside from Viner, then visiting professor in Geneva, "all the Chicago economists were listed as members of the 1931 roundtable group, including Garfield Cox, Aaron Director, Harry Gideonse, Frank Knight, Harry Millis, Samuel Nerlove, Henry Schultz, Chester Wright, Quincy Wright and Theodore Yntema" (Davis 1971, appendix B). Simons and Mints also took part in the conference and Mints asked Keynes several questions related to different methods of monetary expansion.

[27] In 1927, Palyi first came to the United States as a visiting professor at the University of Chicago. 1928 saw Palyi as an economist at the Deutsche Bank. Until 1931, Palyi was also a Professor of Finance at the Graduate School of Commerce in Berlin. For the next three years he held two posts important in the financial reconstruction of the German economy: he was the principal economic advisor to the Reichsbank and the Managing Director of the Institute for Currency Research, Berlin. By 1933, Palyi had immigrated to the United States. He became a visiting professor and research economist at the University of Chicago and the University of Wisconsin.

> Argue in detail the effect on the rate of interest, (a) in the short run, (b) in the long run, to be expected from a general change in the desire to hold cash. State carefully the assumptions you make at every stage of the argument.
>
> Autumn 1938
> 4. Explain J. M. Clark acceleration of derived demand. Does it hold always or are there certain qualifications necessary? If so, what are they? What bearing has it upon the statistical verification of the under-consumption theories of the business cycle?
>
> Autumn 1939
> It is Keynes's contention that an increased liquidity preference will raise the rate of interest and thus reduce investment, employment and income, and that a contraction of consumption will come only after the reduction of income. State an alternative position as to the manner in which an increased liquidity preference would tend to reduce investment and employment. Consider both positions critically and state your conclusions.

While the above questions offer a further testimony of the quick reception of Keynes's master piece in the United States, the terminology employed betrays the tendency to translate Keynes's approach in the language that was common usage in the American monetary debate. The *General Theory* was widely intended as a contribution to business cycle analysis and to public policy, rather than the foundation of a new discipline or theoretical approach. As such it was integrated with some of the landmarks in dynamic monetary analysis offered by J.M. Clark, Dennis Robertson, Ragnar Frish. Moreover Keynes contribution was generally held to be of little help or even damaging to a serious understanding of the working of the monetary system and of its ability to affect general business conditions. While the Treatise on Money was widely appreciated in Chicago (and contributed to shape its teaching), the General Theory was not. Aside from Viner's mainly positive review (Viner 1936), the other leading figures of the Chicago Department of Economics welcomed Keynes' *General Theory* with bitter criticisms (Knight 1937 a and b, Simons 1936, etc.).

This critical stance toward Keynesian policies enacted under the New deal, especially after the 1937-1938 recession, was reflected in some of the questions of the qualifying:

> Summer 1938
> 2. Discuss and evaluate "pump priming" as a business cycle policy. In particular, answer the following questions:
> a. Should a policy of "pump priming" in recession be complemented d by a policy of deflation in prosperity?
> b. What bearing does it have on the principle that governmental budgets should be balanced without borrowing or printing money?
> c. In what way (or ways) could it be brought in accord with the requirement of a balanced budget? Do you know of countries which have adopted ways of doing this?
> d. If "pump priming" involves an indefinite increase of the public debt, must this lead to a catastrophe?
>
> Autumn quarter 1939
> In regard to the probable effect on employment of a once-for-all reduction of money wage rates it is Keynes's contention, (a) that product prices will decline correspondingly; with the result that there will be no improvement in cost-price relationships, and (b) that such influence in the direction of increased employment as there may be will come from a decline in the rate of interest as a consequence of the wage reduction. A more orthodox position would be to the effect that, (a) there would be little or no tendency for product prices to decline immediately after a wage reduction, and that very shortly income would so increase, as a consequence of increased employment, as to avoid the necessity of any, or at least any commensurate, decline in product prices, and (b) a wage reduction would not affect the rate of interest, but would raise the marginal productivity of capital. Comment.
> State the case for the thesis that an appropriate monetary policy would control or at any rate greatly reduce, fluctuations in employment. How likely is it that monetary measures alone would be adequate to achieve this end?

Autumn quarter 1940
3. How do you account for the failure of the "reflationary" program of the last seven years to restore full employment?
4. "The boom is a period in which we exploit to the full all the available new developments which the progress of science and technology, together with the growth of population, have up to that point made economically possible. Once all factories have installed the new machines, once a city has been equipped with the municipal utilities which technology has so far made available, once the construction of houses, apartments, office buildings, hotels, school buildings and the like have caught up with the growth of the population, there remains little that can profitably be done except to maintain the capital plant already constructed. When this point is reached, the boom dies a natural death. (Hansen, TNEC, 3501). Indicate why you think this is or is not (a) a wholly, (b) a substantially, correct explanation.

8. Conclusions

As far as the existence of a peculiar "Chicago School of political economy" can be retraced in the interwar period, its origins have to be looked for in the establishment of a discernible oral tradition within the teaching and the public speeches of Chicago economists. This tradition have been so far looked for through the published or unpublished lecture notes of courses given at Chicago, from the recollection of former Chicago students, together with the writings of the most authoritative economists of the Department. When read in the context of the above mention sources, the archival materials presented in this paper may help understand which kind of knowledge and theoretical skills a Chicago economist was expected to be equipped with. Specifically a wide set of qualifying text, retraced in Albert G. Hart papers preserved at Columbia, show how the standards required to access PhD training were set at Chicago during the 1920s and how they evolved over time, revealing which topics and fields of research were offered to graduate students and how they were presented, discussed and tested.

A set of concluding remarks can briefly summarize the main evidences and tendencies emerging in the light of our previous analysis. First of all the qualifying tests (supplemented by the courses' programs) show the existence of two important turning points in the shaping of Chicago economic training. The first one is in 1927, when John M. Clark, the undisputed leader of the Chicago Department of Economics during the heyday of institutionalism, moved to Columbia, leaving open ground to the restructuring of the courses according to a different and more analytical approach already represented in the Department by Viner and, in a narrower field, by Paul Douglas. The arrival at Chicago of figures such as Knight, Schultz and Simons definitely shifted the balance toward neoclassical theory. The qualifying test patently testify this massive shift: questions broadly reflecting the institutionalist approach to economics declined from their 32% of the total qualifying test in 1926 to less than 15% in 1927 and to roughly 5% in the following three years; at the same time neoclassical price and distribution theory picked to almost 50% of the question on average. Thus in the late 1920s Marshallian partial equilibrium analysis took over the throne and was firmly established as the ruling approach that any student at Chicago should be able to master if she/he wanted to aspire to the higher degrees in economics.

A second turning point occurred in 1933 when the qualifying test in Economic Theory was divided into two major fields: price and distribution theory on the one side; money and business cycle on the other. This innovation reveals the importance acquired by monetary theory in economic training at a time that is commonly associated with the nurturing of what was later named as the "Chicago monetary tradition." Though the tests related to the monetary field preserved in Hart's papers are seriously incomplete (indeed, they provide no hint for 1934 and 1935), the queries we did found contain many references to the quantity theory of money, its relations with prices and aggregate demand, together with a critical discussion of the most important concepts laid down by Keynes and other, more orthodox, monetary economists. While this material cannot neither prove or disprove the existence, the nature and the originality of a monetary tradition specific to Chicago, yet it provide a further testimony of the importance and the breadth that monetary economics gained in this university during the 1930s.

The above mentioned turning points certainly help figuring out the way and the time of the changes that allowed the Chicago Department of economics to be listed among the most advanced and most prestigious of the country. Yet the documentary evidences that we could draw from the qualifying tests launch a warning against the temptation of depicting a unidirectional and monotonic evolution from institutionalism to neoclassical theory.

If Marshallian partial equilibrium analysis was firmly established at the core of Chicago training in economics since the late 1920s, the way it was taught and complemented by other approaches testify a persistent methodological pluralism and the respectful examination of many different approaches, such as the Austrian school, mathematical economics, institutionalism.

First of all the questions on institutionalism did not ceased to be posed to the student. Indeed, institutionalism (or "institutionalism-related" topics) continued to be taught by many Chicago economists such as Harry Millis, Paul Douglas and, above all, Frank Knight. Secondly the way price and distribution theory (as well as labor economics) were taught, maintained that the different assumptions and hypothesis underpinning the analysis were always to be taken in careful consideration by the student. Thus, deep methodological awareness was among the fundamental ability that a Chicago trained economist was expected to have. As a third point, history of economic thought was always the object of careful scrutiny in the qualifying tests, both with an eye to precise historical contextualization and to the analytical comparison with modern neoclassical theory.

In the end, we could state that the qualifying tests reveal how far Chicago economics cannot not be considered, at least in the interwar period, neither a set of theoretical postulates, concerning an alleged true economic doctrine, nor an ideological commitment to the defense of market economy; rather, Chicago economics manifested itself as an open, pluralistic but highly demanding method to discuss any kind of economic idea with reference both to its declared or hidden assumptions and to its remote historical roots.

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