

ANDREW YOUNG SCHOOL
OF POLICY STUDIES

The Non-existence of the Labor Demand/Supply Diagram, and Other Theorems of
Institutional Economics

Bruce E. Kaufman

Department of Economics

Georgia State University

Atlanta GA 30307

April 1, 2007

bkaufman@gsu.edu

The Non-existence of the Labor Demand/Supply Diagram, and Other Theorems of Institutional Economics

Abstract: The most famous and influential diagram in modern (neoclassical) labor economics is the model of wage determination by supply and demand. Using concepts and ideas from institutional economics, I argue that the theory of a perfectly competitive labor market is logically contradictory and, hence, the demand/supply diagram cannot exist on the plane of pure theory. Four other fundamental theorems concerning labor markets are also derived, as are implications about the theoretical foundation of the field of industrial relations and the economic evaluation of labor and employment policy.

In this article I accomplish four things of significance. The first is to demonstrate that the core diagram of neoclassical labor economics – the diagram of wage determination by demand and supply (D/S) – does not have logical coherence and thus has no existence on the plane of pure theory. The second is to deduce this conclusion using a core concept of institutional economics (i.e., transaction cost), thus demonstrating that the institutional approach to labor economics has theoretical explanatory power. The third is to use the transaction cost idea to also deduce four fundamental theorems concerning labor markets and wage determination. The fourth is to identify the core theoretical foundation of the field of industrial relations. This discussion also yields important implications for the economic evaluation of labor and employment policy, as well as interesting insights on the history of thought in labor economics.

The D/S Diagram and the Neoclassical/Institutional Debate

The foundation of neoclassical labor economics is the model of wage/employment determination by demand and supply in a competitive labor market. Consistent with this viewpoint, Kniesner and Goldsmith (1987:1241) state: “The auction-market analysis of prices and quantities is the core of neoclassical economics.”

The competitive model gives rise to what is undoubtedly the most famous and important diagram in modern labor economics. This diagram, depicted in Figure 1, shows how the combination of the labor demand curve D and supply curve S determine the equilibrium wage W and quantity of labor L in the labor market. This diagram, and the model of perfect competition that underlies it, also gives rise to two other theoretical conclusions that are fundamental to the neoclassical paradigm. The first is that labor market outcomes are efficient, the second is that labor markets are self-regulating.

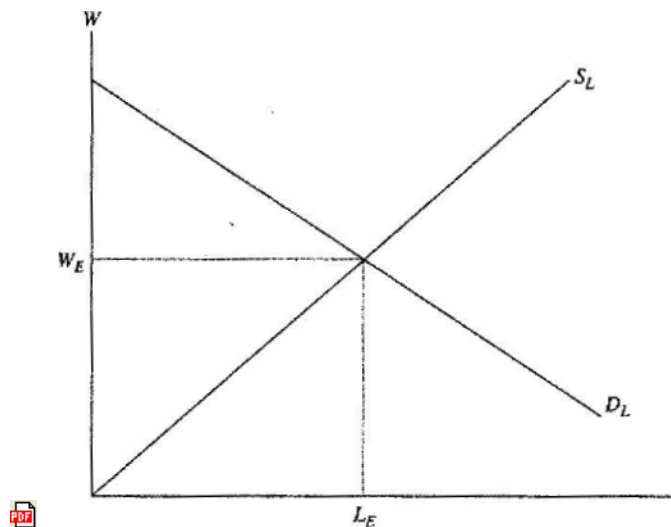


Figure 1: Wage/Employment Determination in a Competitive Labor Market

Of course, all of these conclusions are not asserted as literal statements of fact, but they are asserted by proponents as first approximations of reality and statements of central tendency. According to Melvin Reder (1982), for example, the paradigm of the Chicago School (the home of the most ardent and influential proponents of competitive neoclassical economics) rests on four propositions: prices [including wages] are parametric to individual agents; observed prices are market-clearing; exchange takes place with the economically optimal information; and observed relative prices are not systematically disturbed by non-market institutions. He then declares “None of the above assumptions is – or ever was – believed to hold exactly, but only as a ‘first approximation’.” As he goes on to observe, a belief in the competitive nature of the economy predisposes Chicago and like-minded economists to take a skeptical-to hostile stance toward institutional interventions in labor markets, such as minimum wage laws and trade unions, for they are regarded as instruments of protectionism and redistribution that interfere with equilibrium outcomes and harm allocative efficiency.

It is unquestionably true that the D/S diagram is now a core part of modern labor economics. It is not only the first diagram featured in nearly every labor textbook, it is also the baseline model that most economists use to predict the wage/employment effect of exogenous market shocks and institutional interventions. But, interestingly, this was not always the case. Although Chicago exerted the dominant influence in the development of labor economics in the last half of the twentieth century, in the first half Wisconsin played this role (Kaufman, 2006, 2007a). The core of Wisconsin labor economics rests on the theory and method of institutional economics, as most thoroughly and deeply developed by John Commons in the 1920s and early 1930s. The institutional

approach to labor gradually coalesced into the field of industrial relations. The “golden age” of industrial relations, in turn, was the period 1945-1960 and its epicenter of intellectual activity was the writings of various neo-institutional labor economists, such as John Dunlop, Clark Kerr, Richard Lester, Lloyd Reynolds and Arthur Ross (Kaufman, 1988).

The original Wisconsin institutionalists and post-war neo-institutionalists were different in a number of specific respects. On one central and integrating point, however, they were united. This point is rejection of the competitive D/S model as a useful theoretical construct for understanding and explaining many (but not all) aspects of employment relationships and wage/employment determination, most particularly in the short-run and without substantial theoretical modification. On certain issues, particularly of a long-run nature involving distinctly different types of labor and/or large changes in exogenous variables, the institutionalists accepted that the D/S model gives largely correct and insightful answers. In the short-medium run, however, where frictions, imperfections, and the “human element” in labor markets bulk larger (often quite large), the institutionalists believed that the competitive D/S model frequently gives answers and explanations that are incorrect, misleading, or unduly narrow and simplistic.

The position of the institutionalists on the competitive D/S model is well captured by Commons (1919) when he states “The commodity [competitive] theory of labor... is not false, it is incomplete” (p. 17). He thus allows that for certain applications the model is useful, but also asserts that in many others the model is too narrowly and unrealistically constructed and thus needs substantial modification to better explain the facts. A corollary to this proposition is that Commons nowhere rejects *in toto*

mathematics, rational behavior, marginalism or equilibrium (indeed, he praises the contributions of mathematical and neoclassical economics) but, rather, maintains that these methods/tools are appropriate in only a certain range of situations and applications (Kaufman, 2007b). A similar tone is struck by Pierson (1957) in his summary account of the neo-institutional perspective on wage determination. On one hand, he allows that, “The competitive hypothesis is useful in explaining general, long-term trends in wage relationships” (p. 19), but on the other also asserts that with respect to most aspects of wage/employment determination in the short-run “competitive theory seems completely out of touch with the world of actuality” (p. 18).

The “world of actuality,” in turn, is one of fundamental and wide-spread imperfect competition. Richard Lester (1941) notes, for example, that “Economics is the study of market processes” (p. 37) but goes on to observe that “Some of our most imperfect markets are labor markets” (p. 43) He goes on to say “Labor markets are often more imperfect than commodity markets. Generally, it is easier for buyers [firms] to dominate the labor market and control the price of labor than it is for them to control the markets and prices of standard commodities. Control of labor markets is, indeed, the normal thing.” Because labor markets are substantially imperfect and employers typically have some market power, wage rates are to varying degrees administered prices, the terms and conditions of employment are on net tipped in favor of employers, labor market outcomes are generally not efficient, and labor markets are incapable of self-regulation. For this reason, Lester concludes that there is an economically valid argument for labor unions and labor legislation. In this spirit, he asserts, “It is because of these limitations and imperfections of the market that the state legislatures and Congress pass

labor legislation. It is because the market either does not settle many vital issues or is dominated by employers that workers organize for collective bargaining” (p. 45). The imperfect nature of labor markets also contributes to long-lasting unemployment and the need for active government macroeconomic stabilization. Full employment in institutional economics is thus not an automatic market equilibrium outcome but a human engineered outcome called by Commons (1934: 120) a “managed equilibrium.”

Given this perspective on labor markets, it is not surprising that the institutionalists were not keen on the competitive D/S diagram; indeed, they used it quite sparingly, if at all, and surrounded it with qualifications and disclaimers. A telling example is the treatment given it by Lloyd Reynolds in his best-selling labor textbook *Labor Economics and Labor Relations*. First published in 1949, through successive editions up to 1970 the book did not include a single D/S diagram, even though three hundred pages (2nd ed, 1954) were devoted to “The Economics of the Labor Market,” including an individual chapter on “Nonunion Wage Determination.” Was Reynolds simply untutored in the analytics of demand and supply, or perhaps unduly wedded to a descriptive approach? The answer is certainly No. Reynolds published research monographs and articles in leading journals on wage determination and the firm’s labor supply curve, so he well understood neoclassical competitive theory. Rather, he did not include the D/S diagram in his textbook because he thought it fundamentally misrepresents how wages and employment are determined in most situations. He tells readers (p. 549, emphasis in original), “Only in theory, then, does the ‘competitive labor market’ provide an alternative to wage determination through collective bargaining. The practical alternative is collective bargaining *versus* wage setting by employers with rather

weak competitive checks.” That is, the D/S diagram suggests that wages are impersonally and competitively set by demand and supply in labor markets when, in reality, wages in most nonunion situations are administered prices set by firms with a modicum of market power and for which demand and supply provide only upper and lower bounds of varying degrees of breadth and elasticity.

The institutional perspective on labor economics dominated the field into the 1960s but then gave way under the pressure of severe criticism and new theoretical developments. The locus of both the criticism and new theoretical developments was the University of Chicago and, in particular, economists such as Friedman, Stigler, Becker and Lewis (Reder, 1982; Boyer and Smith, 2001; Kaufman, 2007a). These economists were strong devotees of neoclassical price theory and the heart of this theory is the model of competitive markets. Illustrative of this bent is the title Stigler gave to the first edition of his microeconomics textbook: *The Theory of Competitive Price* (1942); also illustrative is Stigler’s (1946) unflinching and unqualified use of the competitive labor market model to critique the minimum wage. Stigler and Friedman portrayed the institutionalists as muddled-headed fact-gatherers, while they systematically sought to discredit all theories of imperfect competition, including not only the institutionalist’s model of labor markets but Edward Chamberlin’s theory of monopolistic competition and Gardner Mean’s theory of administered prices. At the same time, Becker, Stigler and Lewis used and extended neoclassical price theory to develop a host of new insights about labor markets, particularly regarding labor supply, human capital, and job search. Besides suggesting that neoclassical theory is the more powerful theoretical tool, many of the Chicago theories also suggested that the troublesome market imperfections and

deviant observations stressed by the institutionalists are largely benign and efficient responses to scarcity and incentives (Kaufman, 1994). For example, Stigler (1962) argued that wage dispersion is an efficient outcome of imperfect information and job search; Becker (1964) claimed that specific on-the-job training provides an efficiency-based explanation for why workers may be paid a wage less than their marginal product; and Lucas (Lucas and Rapping, 1969) explained that unemployment is an efficient substitution of leisure for work in a depressed job market. Labor markets can thus be considered “as if” they are competitive, even though on the surface they appear to have significant non-competitive elements and outcomes.

Starting in the early 1970s, the D/S diagram – riding on the intellectual rising tide from Chicago -- began to make a strong come-back. This trend was most obvious in labor textbooks. A new genre of neoclassical-inspired labor texts appeared, exemplified by Fleisher’s *Labor Economics* (1970), Rees’ *Economics of Work and Pay* (1973), and Addison and Siebert’s *Market for Labor* (1979). These texts unabashedly made competitive demand and supply the cornerstone of labor economics. Fleisher (a Chicago graduate) sets the tone when he tells readers (pp. iv-v), “The analytical backbone of the text is neoclassical economic theory...[and] ‘the’ theory referred to is the theory of competition.” A central postulate of competitive theory, he states, is that “both households and firms view all prices [including wages] as parameters” (p. v). He suggests that the alternative to competitive theory (with selective modifications, such as imperfect information) is a “hodgepodge of often conflicting hypotheses” (p. vi). Addison and Siebert position their text in much the same way. They claim that the distinguishing feature of modern labor economics is that it embeds the study of labor in

the framework of neoclassical microeconomic theory and, in particular, the “basically competitive model” in which “[d]emand and supply are then combined to indicate the equilibrium wage and level of employment, occupation by occupation” (p. 4). They describe the neoclassical approach as “analytical,” while the institutional approach is “an almost exclusively descriptive approach” that, among other things, claims “wages are not determined by demand and supply; rather, contemporary wage determination can only be understood as the product of social, political, and institutional forces” (pp. 4-5).

What is the situation regarding the labor D/S model today? A fair assessment, I believe, is contained in this two part proposition: first, the competitive D/S model remains the core theoretical construct in modern labor economics but, second, labor economists are increasingly in agreement that many aspects of labor markets are not well understood by the simple D/S model. So far, however, the theoretical revisions needed to square the competitive model with reality have been, for the most part, interpreted as extensions and qualifications to the competitive/invisible hand story rather than an outright rejection of this story and creation of alternative theories explicitly based on the economics of imperfect competition. This point of view is well expressed by Alan Manning (2003: 11), who recently remarked, “Currently, labor economics consists of the competitive model with bits bolted onto it when necessary to explain away anomalies.” This two-part proposition is also found in the recent labor textbook by Cahuc and Zylberberg (2004). In the introduction they tell readers that they use the competitive model as “an operational approximation of the actual functioning of markets” (p. xxiii), yet a few pages later observe that “developments in the analysis of different forms of

imperfect competition have altered, indeed overturned, the traditional framework of labor economics” (p. xxvi).

Something of the same two-part trend is found in treatment of institutions and institutional economics. The “old” institutional tradition of the Wisconsin/industrial relations variety continues to have a presence in labor economics, even if much diminished (Champlin and Knoedler, 2004; Kaufman, 2004a). But most mainstream labor economists associate industrial relations with the study of unions, not a neo-institutional theory of imperfect labor markets, and most likewise follow the negative indictment of Addison and Siebert and continue to equate “institutional economics” with “descriptive economics” (e.g., Boyer and Smith, 2001). Yet, on the other hand, modern labor economics has seen a flowering of theoretical work that in various ways seeks to incorporate concepts and ideas that were central to the institutional research program, such as property rights, incomplete contracts, strategic bargaining and social elements. In places this new labor theory also draws on ideas and concepts from the “new institutional economics” of Coase, Williamson and North. This reorientation and “re-institutionalization” of labor economics has proceeded sufficiently far, in fact, that Jacobsen and Skillman (2004: 11) were recently led to conclude, “In one sense, then, the discipline of labor economics has come full circle since its inception over 65 years ago, with its renewed emphasis on institutions and practices idiosyncratic to labor market exchange.”

The Nonexistence of the D/S Diagram, and Related Theorems

The conventional interpretation of the institutional critique of the neoclassical competitive D/S model is that it sprang from a misconceived attack on the model's realism of assumptions (Addison and Siebert, 1979; Boyer and Smith, 2001). Institutionalists, it is claimed, rejected the D/S model because workers do not have perfect information about alternative jobs, employers cannot make all the assumed calculations regarding marginal product and marginal cost, wages are not completely flexible, etc., etc. Institutionalists are then lectured on the methodological proposition, most famously and influentially put forward by Friedman (1953), that theory cannot be descriptively accurate but, instead, must drastically abstract and simplify in order to isolate the most important cause-effect relationships. The conclusion is that realism of assumptions is not an appropriate criterion for evaluating a theory – only predictive ability is -- and thus the institutional critique of D/S theory is null and void.

It is true that part of the reason institutional economists reject the D/S model is because it fails the “realism of assumptions” test. However, no institutional economist I am aware of has ever claimed that a theory should be *descriptively* realistic; rather, the methodological position of institutional economics is that theoretical explanation, understanding and prediction (not prediction alone) is improved when assumptions are *substantively* realistic (Champlin and Knoedler, 2004). Substantively realistic means that the abstraction or assumption is broadly in accord with, or does not violate, the core facts of human and physical existence and the fundamental findings of empirical research. A basic fact of real life, for example, is that resources are scarce and thus have alternative uses and opportunity costs and, indeed, the purpose of economic science is to explicate how an economy optimally solves the problem of scarcity. Yet the competitive model

purports to answer this problem by assuming away the very facts that motivate the exercise; that is, it assumes decision-making, information, mobility, and exchange are not scarce resources and thus take place with zero cost! The position of institutionalists is that this exercise, while admittedly promoting theoretical tractability and yielding certain fundamental if sometimes rarified insights (as in general equilibrium theory), cannot possibly provide accurate answers to many aspects of economic behavior because the assumptions are in direct contradiction of core facts of human existence. It is this contradiction that caused institutionalist Douglas North (1984: 7) to remark that neoclassical economics “ignores the costs of trade” and thus “is only half a theory;” it likewise moved Ronald Coase (1984: 231) to argue that fruitful theorizing must “start with man as he is.”

These methodological lacunas and quotations from Nobel winners notwithstanding, it seems a fair statement to assert that the institutional critique of the assumptions of the competitive labor market model has not been successful, per the model’s continued popularity and widespread use in labor economics. Thus, an institutional economist, or other heterodox critic of the competitive model, must perforce find an alternative line of attack. Among these, one is to question the inner logic and consistency of the D/S theory; that is, to show that the theory contains a hitherto unrecognized and possibly fatal contradiction or inconsistency that calls into question its logical coherence. Without logical coherence and consistency, a “theory” rapidly loses its claim to scientific status and passes into the realm of the heuristic or *ad hoc*.

Perhaps not surprisingly, this is the tact taken in the remainder of this paper. My claim is that on closer examination the labor demand/supply diagram, and the theory of a

competitive labor market from which it is derived, are both logical impossibilities and cannot exist on the plane of pure theory. Stated another way, the model of a perfectly competitive labor market contains an internal contradiction that precludes the existence of the very object it seeks to theorize. The result: the D/S diagram disappears, at least as an internally consistent logical construct. What is more, the theoretical deconstruction of the labor D/S diagram turns on one of the central analytical concepts in institutional economics.

This central analytic concept from institutional economics is the *transaction* and the corollary concept of *transaction cost*. These two concepts are among the most important intellectual bridges connecting the original and new institutional economics. The concept of the transaction was originally developed by Commons (1934). He defines it as the “legal transfer of property rights” (p. 55). His key observation is that what are nominally traded in markets are quantities of various goods and services, but what are really traded are the *property rights* to these goods and services. Thus, conventional practice is to write L on the horizontal axis of the labor D/S diagram, as in Figure 1, where L stands for the quantity of labor in the form of units of workers (persons) or work hours. When the labor exchange is consummated, however, what are really traded is the worker’s property right to his/her labor and the employer’s property right to his/her money wage (W).

The hallmark of a competitive market is that the equilibrium outcomes are efficient. To obtain efficiency, a well-known requirement is that every margin on a good or service must be priced; otherwise an externality results. Efficient economic exchange, therefore, requires *complete contracts*. According to Cahuc and Zylberberg (2004: 308,

emphasis in original), a contract is complete “when it is possible, at the *moment of signing*, to foresee all circumstances that could arise while it is in effect, and to set out *verifiable* clauses for each of them.” For labor exchange to be efficient, therefore, employment contracts must also be complete for then and only then will the W/L agreed to by the employer and employee *ex ante* to the start of work equal in every respect what is delivered *ex post*.

Now enters the transaction and transaction cost. Although Commons invented the transaction concept, he did not explicitly discuss the derivative notion of transaction cost. This fell to Coase (1937). If a transaction is a legal transfer of property rights, then logic suggests that transaction cost is the real resource cost of effectuating this transfer. Two aspects of transaction cost are widely recognized. The first is that the neoclassical competitive model implicitly assumes that transaction cost is zero (Dow, 1997; Reder, 1999), which is to say that market exchange takes place at zero cost (is “frictionless”). The zero transaction cost feature of perfect competition arises, in turn, because of the model’s assumptions of perfect rationality, decision-making, information, and delineated and enforced property rights. The second well-recognized aspect of transaction cost is that zero transaction cost is a prerequisite for complete contracts (Jacobsen and Skillman, 2004: 222). With any degree of positive transaction cost, economic agents find it uneconomic (or technically impossible) to write and enforce contract terms covering every margin of trade.

The great insight of Coase is realization that in a world of zero transaction cost there is no economic rationale for multi-person firms. He (1988: 14) states in this regard, “in the absence of transaction costs, there is no economic basis for the existence of the

firm.” Applying this insight, Demsetz (1991) notes that the model of perfect competition, if carried to its logical conclusion, is better called a model of “perfect decentralization” because the structure of economic organization vertically dis-integrates into its lowest (most decentralized) form in which all production takes place in single person firms (sole proprietorships, family farms, independent contractors, etc.).

A multi-person firm, at least of the usual capitalist variety, obtains labor by hiring employees from a labor market. This necessarily involves negotiating an employment contract. The virtue of an employment contract is that it is relatively open-ended and gives the employer the legal right to direct the work performance of the employees – a valuable feature in a world where production is subject to many uncertainties, unpredictabilities, and interdependencies (Camacho, 1996). Inside the firm, therefore, the coordination and allocation of labor resources is performed, not by the market and demand/supply, but by management command and administration (an “internal labor market”). Evidently, the basis for multi-person firms and employment contracts is positive transaction cost, and if transaction cost is reduced to zero then both constructs have no economic value and disappear. That is, with zero transaction cost the labor market coordinates/allocates labor at zero resource cost, implying that management coordination/allocation inside a firm must of necessity be a higher cost and thus inefficient method. Firms vertically dis-integrate, therefore, until all firms are single-person producers who obtain labor services, not from employees in a labor (factor) market, but from “workers” selling their labor services through product markets as independent contractors, consultants, sole proprietorships, and so forth. In this zero transaction cost world, the Ford Motor Company still exists and produces millions of

cars, but it comprises only one person – Henry Ford – who buys needed labor services from (and rents portions of the capital stock to) several hundred thousand sole proprietors and independent contractors doing business as “John Jones Windshield Installation, Inc.” and “Sue Smith Auto Marketing Services, Corp.”

The logical contradiction in the model of a perfectly competitive labor market is now well in sight. A “labor market,” as conventionally defined, presumes an employment relationship; that is, the firms’ demand for labor is a demand for employees who work in these companies and follow the employers’ directions, while the supply of labor comes from persons willing to work as employees and take orders in return for a money wage per time period. Illustrative of this presumption, Hamermesh in his book *Labor Demand* (1993, p. 3, emphasis in original) states, “the demand for labor is any decision made *by an employer* regarding the company’s workers – their employment, their compensation, and their training.” In a similar vein, Milgrom and Roberts (1992, p. 327, emphasis added) state, “The study of *labor markets, employment, and wages* is a major element of standard neoclassical economics.” But in a world of zero transaction cost, no employment relationship exists and thus no labor market exists (Kaufman, 2007c). And, if no labor market exists, the labor demand/supply diagram pictured in Figure 1 also cannot exist. In perfect competition, the logic of the theory implies that the labor D/S diagram disappears! In its place appears a different D/S diagram with Price and Quantity on the axes and where labor services in the form of intermediate goods are exchanged in a competitive product market. The perfectly competitive economy still generates the Pareto optimal level of goods and services, but it does so without the institutions called a labor market and employment relationship.

The converse situation is equally revealing. A labor market and employment relationship can only exist in a world of positive transaction cost. But this world is characterized by imperfect (bounded) rationality and decision-making, imperfect information, and imperfectly delineated and enforced property rights. As a result, employment contracts are also incomplete, giving rise to sources of inefficiency such as principal-agent problems, moral hazard and strategic bargaining.¹ Hence, institutional theory gives rise to this fundamental theorem: *labor markets are inherently and always and everywhere imperfectly competitive*. A corollary implication concerns the theoretical foundation of the field of industrial relations. When originally founded in the 1920s, the field of industrial relations was defined as “the study of the employment relationship” (Kaufman, 2004: 95-95). Since an employment relationship only exists with positive transaction cost, one can say that *industrial relations is the labor economics of positive transaction cost* (ibid., p. 105).

The focus on imperfect competition brings us back to the core proposition of this paper – that the competitive labor D/S diagram has no theoretical existence. In a world of zero transaction cost, the diagram disappears because the economy has no labor market or employment relationship. In a world of positive transaction cost, the diagram also disappears because the labor demand curve becomes ill-defined. It does so in this case, not because of an internal logical contradiction, but because modeling human agents with substantive realism (“as they really are”) creates conditions of bounded rationality, imperfect information and fundamental uncertainty that give rise to positive transaction cost, imperfect competition, and theoretical inability to generate a well-defined (monotonic, deterministic) labor demand curve.²

An essential condition for deriving the D/S diagram is that labor is homogeneous (like a commodity). But this condition is inevitably violated with an employment relationship. The reason stems from the impossibility of separating the supply of labor services from the seller (a form of indivisibility); that is, the employer and the employee necessarily have a personal relationship at the point of production. This fact, coupled with search and mobility costs due to imperfect information, makes incumbent employees preferable to job candidates in the external labor market and, accordingly, causes the labor supply curve of firms to slope upward (Manning, 2003). An upward sloping labor supply curve creates a condition of imperfect competition in labor markets akin to monopsony (broadly defined to include any source of costly/impaired mobility). Standard theory shows, in turn, that in a monopsony labor market the firm has a well-defined marginal revenue product schedule but not a well-defined labor demand curve (because the level of employment at every W is also determined by the firm's rising marginal cost of labor schedule), just as a monopolist in the product market has a well-defined marginal cost curve but not a well-defined market supply curve (Fleischer and Kniesner, 1980: 198). Thus, without a well-defined labor demand curve the competitive D/S diagram in Figure 1 again disappears (or is half-empty).

This conclusion leads to additional theorems and implications. In the positive transaction cost world of institutional economics, labor markets are always and everywhere imperfectly competitive. Wage rates, therefore, are market influenced but not market determined. An alternative institutional process, therefore, sets wage rates and the other terms and conditions of employment. In nonunion labor markets, employers have a modicum of market power and administratively set the wage rate, perhaps complemented

by an element of bilateral negotiation for employees with scarce/valuable knowledge and skills; in organized labor markets wage rates are bilaterally set through collective bargaining or some method of joint determination. Accordingly, the second fundamental theorem of institutional labor economics is: *wage rates are always and everywhere an administered and/or bargained price*. The third is: *in nonunion labor markets bargaining power in wage determination tends to be tipped in favor of employers*. In an earlier era this idea went under the rubric “labor’s inequality of bargaining power” (Kaufman, 1989). The fourth is: *wage rates are incapable of self-equilibrating labor markets, particularly in a condition of excess supply*. This fourth theorem establishes the close theoretical link between institutional economics and Keynesian economics. This theorem arises not only because wage rates lack the requisite flexibility to re-balance labor demand and supply in the face of negative exogenous shocks but also because a cut in money wages typically does not make labor cheaper since work effort and productivity fall commensurately (Slichter, 1929; Bewley, 1999; Fehr and Falk, 1999). This consideration is omitted from the neoclassical competitive model since it treats labor as a commodity and the worker’s marginal product as a technologically determined datum.

If labor markets are inherently imperfect, certain revisionist implications also arise concerning the economic effects of institutional interventions such as trade unions and protective labor law (e.g., a minimum wage). The neoclassical approach to evaluating these institutions is to begin with “assume a competitive labor market” and then use Figure 1 to work out the economic effects and welfare implications. Not surprisingly, the verdict is negative and, indeed, such is foreordained by the assumptions of the theory. If one starts with a model of a perfect (frictionless) economy, demand and supply have

already efficiently allocated resources and any institutional intervention such as a trade union or minimum wage law must necessarily work harm. Obviously, if labor markets are substantively imperfect and the Figure 1 model of competitive demand and supply is replaced by another figure with (say) a monopsony model, one may well derive different conclusions about both the economic effects and welfare benefits of these institutions (e.g., Mitchell and Erickson, 2007; Kaufman, 2007d).³ It is thus no wonder that institutional economists and industrial relationists have long found a stronger public interest rationale for unions and protective labor law since they start the analysis with the presumption that labor markets are imperfect. Illustratively, John Dunlop recently declared “I reject out of hand any argument that the economy would be better off without unions. Unions do not come into the picture and distort some ‘perfect’ wage structure, because there is no such thing. In the real world there are all kinds of distortions and inequities built into the wage structure, as any person who sets wages knows” (quoted in Kaufman, 2002: 338).

Conclusion

A theory can be evaluated by two standards: its internal logical consistency and its ability to explain and predict empirically observed facts. A good theory passes both tests. In this paper I have examined how well the neoclassical competitive labor D/S model passes the first test. I claim to show that it fails. It fails the test of logical consistency because its assumptions lead to the contradictory conclusion that a competitive labor market cannot exist in any possible state of the world. This conclusion means, in turn, that the most

famous and influential diagram in modern (neoclassical) labor economics – the model of wage determination by demand and supply – does not have a solid microeconomic foundation. In one state of the world (zero transaction cost), the diagram disappears altogether; in the second state (positive transaction cost) one-half of the diagram disappears due to lack of a well-defined labor demand curve.

This finding, I believe, is noteworthy. So too is the way it is derived. Institutional economics has long been derided for lacking theory. Unarguably institutional economics lacks the same well-developed body of formal (analytic) theory as possessed by neoclassical economics, partly due to its insistence on staying closer to reality. One can debate the fruitfulness of this methodological position; what I have endeavored to establish is the lower-order proposition that institutional economics does have theoretical concepts and content and these concepts can be used to derive interesting and meaningful insights and hypotheses. In this paper I have used the institutional concept of the transaction and corollary concept of transaction cost. By so doing, I claim to show that the competitive labor market model and D/S diagram are logical impossibilities. But these concepts yield a much richer harvest than just this. In the world of reality (positive transaction cost), institutional economics leads to four fundamental theorems about labor markets and employment relationships: (1) labor markets are always and everywhere imperfect; (2) wage rates are always and everywhere administered and/or bargained prices; (3) in nonunion labor markets bargaining power in wage determination tends to be tipped in favor of employers; and (4) wage rates are incapable of self-equilibrating labor markets and restoring full employment after a significant negative demand shock.

I have argued elsewhere (Kaufman, 2004b, 2006) that industrial relations is essentially the labor (Wisconsin) branch of institutional economics. Not coincidentally, the academic father of both is Commons. Industrial relations, like institutional economics, has lacked much in the way of theory and, in recent years, even a firm conviction on exactly what intellectual territory it encompasses (Strauss and Whitfield, 1998). It has not been the purpose of this paper to examine this issue at length, but an important implication emerges that is worth stating. As envisioned by Commons and other early participants in the field, industrial relations is the study of the employment relationship and the labor problems that grow out of this relationship. With this in mind, one way to view industrial relations is that it is the labor economics of positive transaction cost. Only with positive transaction cost, after all, does an employment relationship exist and only with positive transaction cost are there imperfect labor markets and attendant labor problems. So viewed, neoclassical economics, or at least the competitive version championed by Chicago, is necessarily the mortal enemy of industrial relations for by its very assumptions it eliminates as substantively interesting phenomena the labor problems and employment relationship that form the core of industrial relations and provide the field with its intellectual and practical *raison d'être*.

I wish to end on a note of moderation and pragmatism. It is firmly my conviction that the labor D/S diagram is a useful teaching and research tool for understanding how labor markets work, particularly at an “Econ 101” level or for purposes of long-run analysis of major demand/supply shifts. Certainly our science would be poorer without it. In this regard, I think I am largely hewing to the position taken by earlier generations of institutional economists and industrial relationists. None have taken the position that the

diagram is useless, and many believe it provides real insight. I am definitely in the latter camp. Nonetheless, it is also my position that the competitive labor model has been too uncritically accepted by mainstream labor economists and its hegemonic use in evaluating labor and employment policy has led to overly narrow and conservatively biased conclusions (Kaufman, 2007d).

In the end, the debate about the competitive labor D/S model likely comes down to an assessment of how well or how badly it fits the facts and explains/predicts important labor market outcomes. This takes us to the second test (the “useful tool” test) of a theory noted above. I do not endeavor to address this question in this paper, so it must wait for another day. My impression, however, is that in many critical respects the competitive model will fail the test, or at least a strong test. But this is conjecture. What is not conjecture is that on purely theoretical grounds the competitive D/S model does not have a strong microeconomic foundation and thus passes from a logical proposition to a heuristic device.

References

- Addison, John, and W. Stanley Siebert. 1979. *The Market for Labor: An Analytical Treatment*. Santa Monica: Goodyear.
- Becker, Gary. 1962. “Irrational Behavior and Economic Theory,” *Journal of Political Economy*, vol. 70 (February): 1-13.
- _____. 1964. *Human Capital*. New York: Columbia University Press.
- Bewley, Truman. 1999. *Why Wages Don't Fall During a Recession*. Cambridge: Harvard University Press.

- Boyer, George, and Robert Smith. 2001. "The Neoclassical Tradition in Labor Economics," *Industrial and Labor Relations Review* 54 (January): 199-223.
- Cahuc, Pierre, and André Zylberberg. 2004. *Labor Economics*. Cambridge: MIT Press.
- Camacho, Antonio. 1996. *Division of Labor, Variability, Coordination, and the Theory of Firms and Markets*. Boston: Kluwer.
- Card, David, and Alan Krueger. 1995. *Myth and Measurement: The New Economics of the Minimum Wage*. Princeton: Princeton University Press.
- Champlin, Dell, and Janet Knoedler. 2004. *The Institutional Tradition in Labor Economics*. Armonk: M.E. Sharpe.
- Coase, Ronald. 1937. "The Nature of the Firm," *Economica* 4 (November): 386-405.
- _____. 1984. "The New Institutional Economics," *Journal of Institutional and Theoretical Economics* 140: 229-31.
- _____. 1988. *The Firm, the Market, and the Law*. Chicago: University of Chicago Press.
- Commons, John. 1919. *Industrial Goodwill*. New York: McGraw-Hill.
- _____. 1934. *Institutional Economics: Its Place in Political Economy*. New York: Macmillan.
- Demsetz, Harold. 1991. "The Theory of the Firm Revisited," in Oliver Williamson and Sidney Winter, eds., *The Nature of the Firm: Origins, Evolution, and Development*. Oxford: Oxford University Press, 159-78.
- Dow, Gregory. 1997. "The New Institutional Economics and Employment Regulation," in B. Kaufman, ed., *Government Regulation of the Employment Relationship*, Madison: Industrial Relations Research Association, 57-90.

Ernst Fehr and Armin Falk. 1999. "Wage Rigidity in a Competitive Incomplete Contract Market," *Journal of Political Economy* 107 (February):106-34.

Fleisher, Belton. 1970. *Labor Economics: Theory and Evidence*. Englewood Cliffs: Prentice-Hall.

_____, and Thomas Kniesner. 1980. *Labor Economics: Theory and Evidence*, 2nd ed. Englewood Cliffs: Prentice-Hall.

Friedman, Milton. 1953. "The Methodology of Positive Economics." In *Essays in Positive Economics*, M. Friedman, ed. Chicago: University of Chicago Press, pp. 3-43.

Hamermesh, Daniel. 1993. *Labour Demand*. Princeton: Princeton University Press.

Jacobsen, Joyce, and Gilbert Skillman. 2004. *Labor Markets and Employment Relationships: A Comprehensive Approach*. Malden: Blackwell.

Kaufman, Bruce. 1988. *How Labor Markets Work: Reflections on Theory and Practice by John Dunlop, Clark Kerr, Richard Lester and Lloyd Reynolds*. Lexington: Lexington Books.

_____. 1989. "Labor's Inequality of Bargaining Power: Changes Over Time and Implications for Public Policy," *Journal of Labor Research* 10 (Summer): 285-98.

_____. 1994. "The Evolution of Thought on the Competitive Nature of Labor Markets." In C. Kerr and P. Staudohar, eds., *Labor Economics and Industrial Relations: Markets and Institutions*. Cambridge: Harvard University Press, pp. 145-88.

_____. 2002. "Reflections on Six Decades in Industrial Relations: An Interview with John Dunlop," *Industrial and Labor Relations Review* 55 (January): 324-48.

- _____. 2004a. "The Institutional and Neoclassical Schools in Labor Economics." In Champlin, D. and Knoedler, J. (eds) *The Institutional Tradition in Labor Economics*, Armonk, M.E. Sharpe, pp. 13-38.
- _____. 2004b. *The Global Evolution of Industrial Relations: Events, Ideas, and the IIRA*. Geneva: International Labour Organization.
- _____. 2004c. "The Institutional and Neoclassical Schools in Labor Economics." In Champlin, D. and Knoedler, J. (eds) *The Institutional Tradition in Labor Economics*, Armonk, M.E. Sharpe, pp. 13-38.
- _____. 2006. "Labor Institutionalism and Industrial Relations: A Century of Boom and Bust," *Labor History* 47 (August), 295-318.
- _____. 2007a. "The Chicago School and the Development of Twentieth Century Labor Economics." In R. Emmett, ed., *The Elgar Companion to the Chicago School of Economics*. Aldershot: Edward Elgar, forthcoming.
- _____. 2007b. "The Institutional Economics of John R. Commons: Complement and Substitute for Neoclassical Economic Theory, *Socio-Economic Review* 5 (1): 3-46.
- _____. 2007c. "The Impossibility of a Perfectly Competitive Labor Market." *Cambridge Journal of Economics*, forthcoming.
- _____. 2007d. "What Unions Do: Insights from Economic Theory." In *What Do Unions Do?: A Twenty Year Perspective*, J. Bennett and B. Kaufman, eds. New Brunswick: Transaction Press, pp. 12-45.
- Keynes, John M. 1936. *The General Theory of Employment, Interest, and Money*. New York: Harcourt Brace.

- Kniesner, Thomas, and Arthur Goldsmith. 1987. "A Survey of Alternative Models of Aggregate U.S. Labor Market," *Journal of Economic Literature* 25 (September): 1241-80.
- Lester, Richard. 1941. *Economics of Labor*. New York: Macmillan.
- Lucas, Robert, and Leonard Rapping. 1969. "Real Wages, Employment, and Inflation," *Journal of Political Economy* 77 (September/October): 721-54.
- Manning, Alan. *Monopsony in Motion*. 2003. Princeton: Princeton University Press.
- Milgrom, Paul, and John Roberts. 1992. *Economics, Organization & Management*. Englewood-Cliffs, NJ: Prentice-Hall.
- Mitchell, Daniel J.B., and Christopher Erickson. 2007. "De-Unionization and Macro Performance: What Freeman and Medoff Didn't Do." In *What Do Unions Do? A Twenty Year Perspective*, J. Bennett and B. Kaufman, eds.. New Brunswick: Transactions Publishers, pp. 373-400.
- Pierson, Frank. 1957. "An Evaluation of Wage Theory." In *New Concepts in Wage Determination*, G. Taylor and F. Pierson, eds. New York: McGraw-Hill, pp. 3-31.
- Reder, Melvin. 1982. "Chicago Economics: Permanence and Change." *Journal of Economic Literature* 20 (March): 1-38.
- _____. 1999. *Economics: The Culture of a Controversial Science*. Chicago: University of Chicago Press.
- Rees, Albert. 1973. *The Economics of Work and Pay*. New York: Harper & Row.
- Reynolds, Lloyd. 1949. *Labor Economics and Labor Relations*, 1st ed. Englewood Cliffs: Prentice-Hall.

Slichter, Sumner. 1929. "The Current Labor Policies of American Industries," *Quarterly Journal of Economics* 43 (May): 393-435.

Stigler, George. 1942. *The Theory of Competitive Price*. New York: Macmillan.

_____. 1946. "The Economics of Minimum Wage Legislation," *American Economic Review* 36 (June): 358-65.

_____. 1962. "Information in the Labor Market," *Journal of Political Economy* 70, Pt. 2 (October): 94-105.

Strauss, George, and Keith Whitfield. 1998. "Research Methods in Industrial Relations." In *Researching the World of Work: Strategies and Methods in Studying Industrial Relations*, K. Whitfield and G. Strauss, eds., 5-30.

Endnotes

¹ This point was early recognized by institutional economists, for Commons (1919: 22-23) remarks, "The labor contract...is a new contract every day and every hour... The laborer is bargaining while he is working."

² Probably if challenged to cite a fundamental prediction of neoclassical labor economics, and one that has empirical verification, most labor economists would cite the law of demand in labor markets and the numerous studies that find an inverse relationship between the wage rate and quantity demanded of labor (*ceteris paribus*). But as Becker (1962) has demonstrated, this law is a fact of scarcity, not a particular theory, and holds with either a model of a rational or irrational economic agent (a distinction suggestively but not literally approximating the division between orthodox and heterodox economics). Thus, the law of demand is generic to economics; the difference between neoclassical and institutional economics is that the former presumes this to be a tight, deterministic inverse relationship and the latter – in part because it embeds labor demand in an environment of imperfect competition -- allows for a modicum of indeterminacy, non-response, and even a positive relationship over a modest range, causing the measured demand elasticity to move closer to zero, or even to take a positive value (as in Card and Krueger, 1995).

³ It is incorrect and far too narrow to identify the institutional theory of imperfect labor markets with monopsony *per se*, although monopsony is certainly one case nested within the institutional framework. Elsewhere (Kaufman, 2004a) I have listed what I consider to be the seven core features of the institutional view of labor markets. The most important of these is a behavioral (psychologically informed) model of the human agent, for such is a theoretical prerequisite for generating positive transaction cost.