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LABOR CONTRACTS AS PARTIAL GIFT EXCHANGE*

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This paper explains involuntary unemployment in terms of the response of firms to workers' group behavior. Workers' effort depends upon the norms determining a fair day's work. In order to affect those norms, firms may pay more than the market-clearing wage. Industries that pay consistently more than the market-clearing wage are primary, and those that pay only the market-clearing wage are secondary. Thus, this paper also gives a theory for division of labor markets between primary and secondary.

I. INTRODUCTION

In a study of social relations among workers at a utility company in the eastern United States, George Homans [1953, 1954] observed that a small group of young women (doing a job called "cash posting") exceeded the minimum work standards of the firm by a significant margin (i.e., on average by 15 percent). Most of these women neither desired nor expected promotion in the firm in return for their troubles. Why did they do it?

Section II shows that the standard neoclassical model cannot simultaneously explain both the behavior of the firm and the behavior of the cash posters. But, as shown in Section III, application of a standard sociological model does explain the behavior of both the young women and their employer. According to this model, in their interaction workers acquire sentiment for each other and also for the firm. As a consequence of sentiment for the firm, the workers acquire

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utility for an exchange of "gifts" with the firm—the amount of utility depending upon the so-called "norms" of gift exchange. On the worker's side, the "gift" given is work in excess of the minimum work standard; and on the firm's side the "gift" given is wages in excess of what these women could receive if they left their current jobs. As a consequence of worker sentiment for one another, the firm cannot deal with each worker individually, but rather must at least to some extent treat the group of workers with the same norms, collectively.

Norm–gift-exchange models have been used in many sociological studies to explain the behavior of workers. And these explanations are simple; properly understood, they are in tune with everyone's personal experiences of human behavior, so that they can be taken to have considerable generality. For that reason I feel confident in extrapolating such behavior beyond the narrow and particular instance of the "cash posters" to concern wage bargains and work conditions in some generality. Sections IV and V verbally explore the consequences of such behavior for wage determination; Sections VI and VII build formal mathematical models; and Section VIII gives conclusions.

This model of the microeconomics of the labor market is used to explain two phenomena that have not been successfully analyzed by more conventional economic theory. First, in most other analyses of unemployment, such as that of search theory [Phelps *et al.*, 1970], all unemployment is voluntary. In my analysis there are primary labor markets in which unemployed workers are unable to obtain jobs at the prevailing market wages. Second, the theory of dual labor markets [Doeringer and Piore, 1971] brings up the question as to which markets will be primary and which markets secondary. In the formal models developed in this paper, it is endogenously determined whether a market will be primary or secondary. Primary markets are those in which the gift component of labor input and wages is sizeable, and therefore wages are not market-clearing. Secondary labor markets are those in which wages are market-clearing.

The major feature of the usual model of implicit contracts due to Azariadis [1975] and Baily [1974] is risk-sharing agreements by the contracting agents over a span of time. These models have been taken as a vehicle for Okun's [1981, p. 133] description of labor and customer markets. This paper offers an alternative microfoundation for implicit contracts. Its emphasis is sociological. It focuses on the gift-exchange nature of employment arrangements, where the exchange is based partially on norms of behavior that are endogenously determined. This dependence of implicit contracts on *norms* of behavior (rather

than on risk sharing) captures important aspects of Okun's description [1975, 1981] that have not been analyzed in the Azariadis-Baily framework.

According to this paper, norms of work effort are a major determinant of output. In emphasizing effort, it carries further the work of Leibenstein [1976] on X-efficiency. The focus on effort could also be expressed in Marxian terminology via the distinction between *labor power* and *labor* as in Edwards' recent book [1979] on the inevitable conflict between labor and management over the use of labor power.[1] In Edwards' terms this paper gives equilibrium models of the resolution of this conflict. Finally, it should be mentioned, Hirschman's concepts of *Exit*, *Voice*, and *Loyalty* [1970] can be expressed in terms of norms and gift exchange.

II. The Nonneoclassical Behavior of the Cash Posters or of the Eastern Utilities Co.

Economists usually assume that labor is hired as a factor of production and is put to work like capital. There is, however, one fundamental difference between labor and capital that is ignored by this assumption. Once a capitalist has hired capital, he is, over a fairly wide latitude, free to use it (or abuse it) as he wishes. However, having hired a laborer, management faces considerable restriction on how it can use its labor. Not only are there legal restrictions (such as OSHA regulations, child labor laws, etc.), but the willing cooperation of labor itself must usually be obtained for the firm to make the best use of the labor services.

Of course, standard economic theory does describe the nature of contracts when there are many possible standards of performance. According to standard theory, when a firm hires a laborer, there is an understanding by both parties that certain minimum standards of performance must be met. Furthermore, the contract may be *implicit* in the sense that workers need not be currently rewarded for their current performance but may earn chances for promotion with higher pay in the future in return for good performance in their current jobs. If this is the case, the firm need not have tight rules regarding work and compensation that very carefully specify the *quid pro quo* of pay for work, since injustices in the present can be compensated later. So standard theory can serve as a good approximation to reality even

1. For a review of the Marxian literature on this distinction, also see Edwards [1979].

TABLE I

WORK PERFORMANCE OF INDIVIDUAL CASH POSTERS

	Age in years	Time on job in years-months	Mean cards per hour	Mean errors per hour
Asnault	22	3–5	363	0.57
Burke	26	2–5	306	0.66
Coughlin	20	2–0	342	0.40
Donovan	20	1–9	308	0.79
Granara	21	1–3	438	0.65
Lo Presti	25	–11	317	0.03
Murphy	19	–7	439	0.62
Rourke	17	–4	323	0.82
Shaugnessy	23	–2	333	0.44
Urquhart	18	–2	361	0.49
Average	21.1	1–4	353	0.55

where very specific contracts relating effort or output to compensation would be quite expensive.

Against this background let us consider the study by Homans of "The Cash Posters." In this study a group of ten young women working as cash posters for a utility company in a New England city were interviewed and closely observed over a period of six months. The duty of a cash poster at Eastern Utilities was to record customers' payments on ledger cards at the time of receipt. The company's standard for such cash posting was 300 per hour, and careful records were made of the speed at which individual cash posters variously worked. Anyone who worked below the rate of 300 per hour received a mild rebuke from the supervisor. Table I adapted from Homan's article, "The Cash Posters," shows both the number of cash postings per hour of different workers and their rate of error.

Note from Table I that the average number of cash postings per hour (353) was 17.7 percent greater than the standard set by the company. The simple neoclassical theory of contracts cannot simultaneously explain why the faster persons did not reduce their speed to the standard; or, alternatively, why the firm did not increase the speed expected of its faster workers. The possibility that the faster workers worked harder than the standard for either increased pay or promotion was belied by the uniformity of wage for all cash posters and by the refusal of promotion by two cash posters. When promotion did occur, it was normally to a job considered more responsible than cash posting, but nevertheless paying the same wage. In addition,

voluntary quits among the cash posters were quite frequent (with most of the young women leaving to be married), so that in most cases promotion was not a relevant consideration. Since pay was not dependent on effort and promotion was rarely a consideration, the standard economic model of contract would predict that workers set their work habits to meet the company's minimum standards of performance as long as they have marginal disutility for work at that level. On the other hand, if workers do have positive utility for work at this level, the lack of incentives for effort given by the firm should lead them to choose to work to the point where the marginal disutility of additional effort is just zero. But in that case the firm could increase its profits by increasing work standards for the faster workers. Unless their utility function is discontinuous, they would still prefer their current jobs to what they could obtain elsewhere at somewhat faster speeds of work.

Since output is easily observable, it is at least a bit surprising from the point of view of the neoclassical theory of contracts that workers are not paid wages proportional to their outputs. This constitutes another puzzlement regarding the system of industrial relations among the cash posters at Eastern Utilities, although a potential answer has been suggested by Etzioni [1971]. According to Etzioni, workers find pecuniary incentives, such as piece rates, "alienating."

The mysterious behavior of the cash posters and of Eastern Utilities in terms of neoclassical theory can be posed a bit more formally. Suppose for whatever reason (perhaps Etzioni's) that the firm has decided to pay the same wage $w = \overline{w}$ to all cash posters. Further, suppose that workers have a utility function $u(w,e)$, where w is the wage rate and e is effort. Workers, mindful of the firm's work rules, should choose their effort e to maximize

$$u(w,e), \tag{1}$$

subject to the constraints,

$$w = \overline{w} \tag{2}$$

$$e \geqq e_{\min}, \tag{3}$$

where $\overline{w}$ = \$1.05 per hour, the wage fixed for all cash posters, and $e_{\min}$ is the minimum effort necessary to accomplish the required 300 cash postings per hour.

Solution of this trivial maximization problem yields

$$e = e_{\min} \tag{4}$$

as long as $u_e < 0$ for $e \geqq e_{\min}$. On the assumption that utility is convex, there are two potential types of solutions. Each poses an empirical problem. If $u_e(\overline{w},e_{\min}) < 0$, the question arises—why did the workers not reduce their effort to 300 per hour? On the other hand, if $u_e(\overline{w},e_{\min}) > 0$, so that workers choose $u_e = 0$, why did the firm not raise the minimum standards for different workers above the point where $u_e = 0$? In either case the observation obtained is inconsistent with the neoclassical model.[2]

Of course, each cash poster may have a different utility function, and for some reason the firm may find it optimal to set the same minimum standard for all workers. For example, the rate perhaps cannot be set higher than 300 per hour in deference to the two workers who find the standard a bit onerous (as shown by Burke's and Donovan's performance in Table I, only 2 percent above the 300 minimum). But the question of why the same standard should be set for all workers can be answered only in terms of the interactions of workers among themselves and also with the firm. It is precisely in such terms that the next section poses the solution to the cash poster mystery.

Other potential objections such as the nonobservability of output and risk aversion by workers can be all but ruled out. Workers kept records of their outputs so output was easily observable; and workers did not work faster than the minimum out of fear of being sacked for falling below the minimum; as already mentioned, falling below the minimum occasioned no more than mild rebuke.

An explanation for either the firm's behavior or the workers' behavior must depend either on maximization of something other than profits by the firm or on interaction of the workers with each other and with the firm that alters their utility functions. It is to such a theory that we now turn.

III. Sociological Explanation of Cash Posters'–Eastern Utilities' Behavior

The previous section showed behavior by the cash posters inconsistent with a simple neoclassical theory of worker utility maximization and firm profit maximization. I do not doubt that there is some neoclassical model involving turnover costs or difficulty of ob-

2. The argument is just a bit subtle. If a worker with convex utility and positive marginal product for effort has a positive utility for wage income and zero disutility for added effort, the firm can increase his compensation and force him to work harder, to the advantage of both. If the worker was satisfied with his job before this additional trade, he will be even more satisfied afterwards, and therefore less willing to quit.

servation[3] which can explain the behavior of the firm and the cash posters, but given the failure of the simple model, the adequate model must of necessity be complicated. In contrast, this section presents a simple sociological explanation of the joint behavior of the cash posters and the Eastern Utilities Company.

According to a prominent school of sociological thought, the determinant of workers' effort is the norm of the work group. According to Elton Mayo [1949, p. 70], referring to the famous studies at the Hawthorne plant in the Bank Wiring Observation Room, "the working group as a whole actually determined the output of individual workers by reference to a standard, predetermined but clearly stated, that represented the group's conception of a fair day's work. The standard was rarely, if ever, in accord with the standards of the efficiency engineers."

According to an alternative, but equivalent, view of the cash posters' performance, they give a *gift* to the firm of work in excess of the minimum work required of 300 per hour. Offhand, it may seem absurd to view the worker as giving the firm a gift of any part of his work. Of course, the worker does not strictly give his labor as a gift to the firm; he expects a wage in return and, if not paid, will almost certainly sue in court. Likewise, the firm does not give the wage strictly as a gift. If the worker consistently fails to meet certain minimum standards, he will almost surely be dismissed. But above these minimum standards the worker's performance is freely determined. The norm (or "standard" as Mayo termed it) for the proper work effort is quite like the norm that determines the standards for gift giving at Christmas. Such gift giving is a trading relationship—in the sense that if one side of the exchange does not live up to expectations, the other side is also likely to curtail its activities.

The classic anthropological literature on the gift, particularly the essay by Marcel Mauss [1954], emphasizes this reciprocal nature of gift giving.[4] Mauss points out that, in the two major branches of Western European languages, the root for *poison* is the same as the root for *gift*, since in ancient German the word *gift* means both gift and poison, and the Greek word *δόσις* for poison, which is the root of the English *dose*, has the same root as the Greek word to *give*. The reason for the close association of the words for *gift* and *poison* in these ancient languages comes from the obligatory nature of reci-

3. For an interesting explanation of unemployment due to imperfect information, see Stoft [1980]. Solow [1980] supports the view that involuntary unemployment must be explained by sociological models of behavior.

4. A good, although not recent, review of the anthropology and sociology of gift exchange is Belshaw [1965]. See also Titmuss [1971].

procity of a gift, or, equivalently, the threat of harm that was believed to befall a recipient who failed to reciprocate. Although the magic has gone out of the sanctions behind repayment of most gifts, there are probably few in modern times who have never received a gift they did not want or who have not given a gift they considered to be inadequately appreciated.[5]

Why should there be any portion of labor that is given as a gift by the firm or of treatment of the worker by the firm that can be considered a gift? The answer to this question is at once trivial and profound. Persons who work for an institution (a firm in this case) tend to develop sentiment for their co-workers and for that institution; to a great extent they anthropomorphize these institutions (e.g., "the friendly bank"). For the same reasons that persons (brothers, for example) share gifts as showing sentiment for each other, it is natural that persons have utility for making gifts to institutions for which they have sentiment. Furthermore, if workers have an interest in the welfare of their coworkers, they gain utility if the firm relaxes pressure on the workers who are hard pressed; in return for reducing such pressure, better workers are often willing to work harder.

The giving of gifts is almost always determined by norms of behavior. In most cases the gift given is approximately in the range of what the recipient expects, and he reciprocates in kind. The norms of gift giving are determined by the relationship between the parties; thus, for example, it is expected that an increase in workers' productivity will be rewarded by increased wages to the workers. Much of union wage negotiations concerns the question of what constitutes a *fair* wage. To an economist who believes that wages are market-clearing or only determined by the relative bargaining power of the contractual parties, long discussions about the "fair wage" should have no bearing on the final settlement. But this notion neglects the fact that the average worker works harder than necessary according to the firm's work rules, and in return for this donation of goodwill and effort, he expects a fair wage from the firm.

This view of wages-effort as mutually reciprocal *gifts* leaves several unanswered questions. The firm decides not only work rules but also wages for each and every worker. Why should not Eastern Utilities set high standards of minimum effort and terminate all workers who are not capable of meeting or who are not willing to meet

5. It has been suggested to me by one referee that the analysis of labor contracts as partial gift exchange relates to the Freeman-Medoff argument [1979] on trade unions as collective voice. Reciprocal gift giving induces union formation because discontented workers find it more difficult to quit and find another job with gift giving than without. As in Mauss's analysis it is suggested that reciprocal gift giving i.e., mutual benevolence and dependence, go together with mutual hostility and militancy.

that standard (for example, Burke and Donovan in Table I)? Again there is a simple answer. In working together, workers acquire sentiment for each other. An increase in minimum standards that would put pressure on Burke and Donovan might easily be considered by the group as a whole as failure by the firm to reciprocate the group's collective donation of productivity 17.7 percent in excess of the minimum requirements. Indeed, although the details are unclear in Homans' account, there is indication that such a situation had arisen with respect to the cash posters. As Homans reports, "a couple of years before, when relations between the posters and a former division head were strained, there may have been some restriction on output."

In a different context, that of a soldier in basic training in World War II, it is revealed most clearly why better workers come to the aid of their fellows:

> If one is so favored by nature or training that he gets much more done, or done better, than his neighbor, he shows up that neighbor. The neighbor then gets rebukes or extra work. One cannot do this to any decent fellow who is trying his best, especially when you have to live side by side with him and watch his difficulties and sufferings. Therefore, the superior person—if he has any heart at all and if he is sensitive to the attitudes of his barracks mates—will help his less able neighbor to get along [Stouffer *et al.*, 1949, Vol. 2, p. 414].

Of course the cash posters were working under less extreme conditions. Nevertheless, they undoubtedly could have expressed their own reasons for helping each other in similar terms.

I have indicated the nature of the trade between firms and workers that is exemplified in the case study of the cash posters and that gives a consistent and plausible explanation for the behavior of both the firm and the workers; this explanation tells why workers exceed the minimum standards of work on the one hand, and why the firm does not raise these minimum standards on the other hand. But work standards are only one dimension of the treatment of workers. Another dimension is wages. For reasons similar to why minimum work standards are not necessarily set at the limit that workers will bear before leaving the firm, the optimal contract may not set wages at the minimum acceptable: if part of worker effort is a *gift*, likewise, part of wages paid should be a *gift*.

IV. Reference Groups

With the cash posters (or any other work group whose effort is determined not by the work rules but by the group's norms) the question arises: What does the group receive in return for working more than prescribed by the work rules? In the first place the worker

may receive leniency in the work rules. Even if the worker habitually works at a speed in excess of work rules, he still benefits from leniency in two ways. First, he derives positive utility from the *gift* by the firm of potential leniency should he slacken his pace; second, as already mentioned, if he has sympathy for other members of the work group, he derives utility from the firm's generous treatment of other members of the group for whom the work rules are a binding constraint. Additionally, the firm may give remuneration in excess of that needed to obtain another worker of similar skills. Thus, excess remuneration and leniency of work rules constitute the major gifts by the firm to its workers.

Presumably, the gift of the worker to the firm, effort in excess of the work rules is linked to the gift of the firm to the worker. Following Mauss and others, reciprocity is a major feature of gift exchange (as also of market exchange).

The *quid pro quo* in gift exchange is, however, established at least slightly differently from market exchange. The norms for effort are established according to the conception of a fair day's work. (Note that Mayo described the work standard in precisely those terms.) In return the workers expect to be treated "fairly" by the firm. The conception of fair treatment has been the subject of considerable work by social psychologists and sociologists. For the most part it is not based on absolute standards, but, rather, on comparison of one's own situation with that of other persons.

According to Festinger [1954], persons have an innate psychological need to compare their actions and treatment with those of others. Persons use comparison with others as a guide to how they ought to behave or how they ought to be treated. The point should be clear to any parent with a young child. Consider the young child who has fallen but not hurt himself/herself. Such situations usually produce that momentary pause before the child decides whether s/he should cry. If the surrounding adults act as if the situation calls for crying, the child is likely to behave accordingly; however, if adults act as if s/he should not cry, the child is likely not to do so. In the context of this paper I wish to note that the child's behavior is not determined by the real phenomenon of being hurt, but rather by the social definition of the situation given by the norms of the surrounding adults. In this way the child calibrates his/her actions by the social standards set by others.[6]

6. For this point of view of social interaction, see Coser [1971] on Park, Mead, and Cooley. The idea of the "definition of the situation" is due to William I. Thomas.

How do people decide that they are fairly treated? There is no natural measure (just as there is no natural language). Merton [1957] has constructed a theory of how people determine the fairness of their treatment by reference to the treatment of reference individuals and treatment of reference groups.

In World War II the Research Branch of the Information and Education Division of the U.S. Department of War conducted a large number of surveys of soldiers' attitudes. Some of these attitudes appear paradoxical from a purely individualistic, utilitarian point of view. For example, in the Army Air Force, in which promotion rates were much higher than in the rest of the army, soldiers were much less satisfied with their chances of promotion than elsewhere. Or, as a second example, although all soldiers abroad showed strong desire to return to the United States, noncombat soldiers abroad showed little more dissatisfaction with army life than soldiers stationed in the United States. Merton [1957] explains these seemingly paradoxical findings (as well as many others) with the concept of the reference group. The soldier in the Air Force felt unsatisfied with his chances of promotion precisely because the promotion rate was high in the Air Force, thereby enabling him to compare himself with other personnel who had been promoted (and causing him to feel relatively deprived). Noncombat soldiers abroad felt relatively satisfied given their objective conditions because they compared their lot to that of combat soldiers abroad, whereas the soldiers in the United States felt relatively unsatisfied (relative to their objective conditions) because they compared their lot to that of civilians at home. In each of these cases the seemingly paradoxical behavior is quite natural when the soldiers' attitudes are explained in terms of their deprivation relative to that of the appropriate reference group.

At the same time that *The American Soldier* [1949, Volumes 1 and 2] shows how attitudes toward fairness are formed (e.g., through reference to the relative deprivation of the appropriate reference group), it also contains evidence consistent with our hypothesis that *group norms* determine performance (as we have suggested is the case with respect to the cash posters and had been found earlier in the studies by Mayo [1949] and Roethlisberger and Dickson [1947]). In this regard three specific findings are worthy of particular note.

First, the Research Branch chose to measure performance of combat units by the percentage of *nonbattle casualties.* This statistic is equivalent to the percentage of combat men who became ineffective for reasons other than wounds or other battle injuries. This statistic was chosen as the best proxy for the quality of the unit, since it is al-

most independent of the group's battle environment. It is, as well, unambiguously related to the quality of discipline in the unit: presumably, better organized units would lose smaller fractions of persons outside of battle. An excellent correlation was obtained [Stouffer, 1949, Vol. 2, p. 11] on a company-by-company basis between relatively favorable attitudes toward army life in interviews taken before the Normandy landing and the rate of nonbattle casualties following the Normandy landing in the three tested army divisions. This correlation of performance and attitude is a useful indicator that satisfaction in the job leads to improved job performance, justifying one aspect of our view that the firm will be willing to give a *gift* to the worker to increase his job satisfaction, so as, in turn, to increase his job performance.

There is one other noteworthy statistic from the same study. For one regiment (the Thirty-seventh Regiment of the Ninth Division) a graph was made plotting the percentage of nonbattle casualties of soldiers with and without previous combat experience in the same company. The graph shows a clear relation: in those companies in which the combat veterans had high rates of nonbattle casualties, the new recruits also had high rates (and vice versa). The correlation between the two statistics (taken across companies) was 80 percent [Stouffer, 1949, Vol. 2, p. 27]. This statistic is consistent with the hypothesis that members of a work group tend to take on the *group* norms, the companies with group norms more favorable to army life having fewer casualties among both new recruits and veterans. However, this conclusion follows of necessity only if the Research Branch was correct in its judgment that nonbattle casualties were independent of the environment; otherwise, such a correlation could be obtained because veterans and new recruits respond alike in their nonbattle casualties to changes in the environment.

Finally, there is the study by the Research Branch on the attitudes of soldiers in the Caribbean. It was hypothesized that there would be correlation between dissatisfaction and comfort. Perhaps surprisingly, at least to a very utilitarian view of motivations, the evidence showed at most only weak relation between dissatisfaction and the quality of soldiers' living conditions. This finding is useful in supporting our view that the morale of the working group (and indirectly its norms of work behavior) will depend largely on deprivation relative to that of reference individuals and reference groups, rather than depending on objective conditions alone.

This behavior of the American soldier is exactly consistent with our hypotheses concerning the behavior of the cash posters. We hy-

pothesized (1) that the cash posters worked harder than required because of favorable work attitudes; (2) these attitudes, following Mayo *et al.*, were not just individual but also attitudes of the work group; (3) these attitudes depended in part upon workers' sense of fair treatment, where fairness was measured by comparison with persons similarly situated. In exact parallel *The American Soldier* shows (1) favorable attitudes were correlated with lower percentages of nonbattle casualties, both on a group-by-group basis and also on an individual basis. (2) The company-by-company correlation between performances of recruits and combat veterans demonstrates that performances were not randomly distributed over individuals but in fact varied systematically over groups. (There is considerable research in social psychology that shows how such patterns occur.) (3) Finally, attitudes of groups of soldiers toward the army can be systematically explained under the hypothesis that soldiers form their attitudes by comparing their situations to that of reference individuals or reference groups. I take the fact that the same model seems to apply to both the cash posters and the American soldier to be an indication of its universality.

V. The Fair Wage

The gift of the firm to the worker (in return for the worker's gift of hard work for the firm) consists in part of a wage that is fair in terms of the norms of this gift giving. Using reference-individual–reference-group theory, the fairness of this wage depends on how other persons in the worker's reference set are similarly treated. Although, persons do sometimes have reference groups, or reference individuals who are dissimilar [Hyman, 1942], in matters of fairness it is probably safe to suppose that most persons compare themselves to persons who are *similar*. In that case one argument of the perceived fairness of the wage will be the wages received by other similar workers. Such workers, of course, include workers who are employed; but, in addition, it includes workers in the reference set who are unemployed. While empirically unemployment at any moment is a fairly small fraction of the labor force, flows in and out of unemployment are large, and most workers have many friends and close relatives. The probability that a whole reference set be free of unemployment for a significant period (say a year) is not large for most persons.

There is one other argument to the reference wage. To the psychologist or sociologist, to say that persons compare their own behavior or treatment with that in the past is probably neither useful

nor profound. But persons certainly do that, and some economic theory (for example, the Modigliani-Duesenberry peak income hypothesis) does depend on such behavior. Thus, one additional argument to the reference wage, in addition to the remuneration of similar employed and unemployed persons and their respective weights in the reference set, is past wages.

Consistent with this observation is the role of past wages in all labor negotiations. Labor disputes often concern the level of past wages, which are the benchmark for current negotiations. To cite a case in point, consider the General Motors strike of 1970. In the 1967–1970 contract wages were indexed, but an eight-cent-per-hour limit was placed on raises due to increases in the cost of living. The cost of living increased relative to wages by considerably more than eight cents per hour with a resultant level of wages twenty-six cents below the fully indexed level [Pearlstine, 1970]. The union claimed that the corporation had already received a windfall gain for the three years of the contract during which period wages were not fully indexed, and the negotiations should concern growth of the real wage from the fully indexed level; the company claimed negotiations should concern growth from the actual 1970 level. This matter was the most contentious issue in the settlement of a long strike.

Summing up all our discussion of the fair wage, the fair wage received by the worker depends on the effort he expends in excess of the work rules, the work rules themselves, the wages of other workers, the benefits of unemployed workers, as well as the number of such workers, and the worker's wages received in previous periods. Our theory of reference-group behavior thus yields a fair wage that looks very much like the wage paid in a Phillips curve:

$$w^f_{i,t+1} = f(w_{i,t}, w_0, b_u, u, e_i, e_0) \tag{5}$$

where

$w^f_{i,t+1}$ is the perceived fair wage of individual i at $t + 1$
$w_{i,t}$ is the actual wage of individual i in previous period(s)
w_0 is the wage paid of others in the individual's reference set in current and previous periods
b_u is unemployment benefits of individuals in the reference set in current and previous periods
u is the number of unemployed in the reference set in current and previous periods
e_i is the individual's work rules in current and previous periods

e_0 is the work rules of persons in the individual's reference set in current and previous periods.

Equation (5) is, of course, the basis for a Phillips curve of the traditional sort. It is important to note, however, that contrary to the Phillips relations obtained from search theory [Phelps *et al.*, 1970], (5) is not derived from market-clearing considerations. In general, there can be workers willing to enter gift relations with a firm, but no firms willing to enter gift relations with the workers. The next two sections model this occurrence. Our models are based upon the preceding discussion of reference groups and of the cash posters.

VI. A Model

This section and the next develop formal models that capture to some degree of accuracy most of the gift-giving idea in wage contracts. The ingredients of this model are spelled out in this section as follows.

1. *Norms* of effort on the part of workers in the work group. These norms depend on the work rules of the firm, the average wage paid by the firm, the incentive system of the firm (in terms of the different wages paid for different levels of output or effort), and the utility of co-workers in the firm who are part of the work group and for whom each worker has sympathy. All of these variables are endogenous to the firm. Exogenous to the firm, the norms depend on the returns to other persons in the workers' reference sets. In terms of our model these variables can be summarized by wages received by workers at other firms, the unemployment rate, and unemployment benefits. The model is considerably simplified by assuming only one time period. I do not see that this assumption takes anything away from the argument; it can be easily modified.

We thus summarize norms by the equation,

$$e_n = e_n(\{w(e,\epsilon)\}, e_{\min}, u_1, \ldots, u_J; w_0, u, b_u), \tag{6}$$

where

$\{w(e,\epsilon)\}$ is the function that relates wages of a worker of type ϵ to his effort; this is the remuneration system of the firm
$e_{\min}$ is the work rules
u_j is the utility of the jth worker in the firm
w_0 is the wage paid by other firms (perhaps a vector)
u is the unemployment rate
b_u is the unemployment benefit.

2. *Workers.* Each worker has a utility function. A worker who has been offered employment must decide on his level of effort and whether or not to accept employment at the terms offered. The utility of each worker depends on the norms for effort, the effort itself, and the wage rate if employed; it depends on the unemployment benefit if unemployed. A worker makes two choices. If offered employment (i.e., if the firm offers to "exchange gifts"), he must decide whether or not to accept the offer, and, if accepted, he must decide the size of the reciprocal gift. Thus, a worker of trait ϵ has a utility of working for the firm of

$$u(e_n,e,w,\epsilon), \tag{7}$$

and if not working for the firm, of

$$u(b_u,\epsilon).$$

If working for the firm, the worker chooses the level of effort e, which maximizes utility u, subject to the condition necessary to maintain his employment, that effort should exceed the firm's minimum requirement, $e \geqq e_{\min}$. Accordingly, the worker chooses a job, if offered, in preference to unemployment accordingly as

$$\max_{e \geqq e_{\min}} u(e_n,e,w,\epsilon) \tag{8}$$

is greater than or less than

$$u(b_u,\epsilon). \tag{9}$$

If a worker has more than one offer from different firms, he chooses the offer that maximizes his utility.

Across workers there is a distribution of tastes ϵ; we call this distribution function $f(\epsilon)$.

3. *Firms.* We are, finally, left with firm behavior. Firms have an output that depends on the work effort of the workers. This output q is

$$q = f(e_1,e_2,\ldots,e_J), \tag{10}$$

where J is the number of workers hired. e_j is the effort of worker j.

Firms pay wages in general according to type of worker ϵ and effort, so that $w = w(e,\epsilon)$.

Thus, wage cost is, accordingly,

$$\sum_{j=1}^{J} w(e_j,\epsilon_j),$$

where e_j is the effort of worker j and ϵ_j is the tastes of worker j.

The firm chooses the wage function $w(e,\epsilon)$, work rules, $e_{\min}$, and the number of workers it wishes to hire to maximize profits, which are

$$pf(e_1, \ldots, e_J) - \sum_{j=1}^{J} w(e_j,\epsilon_j), \tag{11}$$

where p is the price of output. The firm's behavior is subject to the constraint that a worker chooses whether or not to join the firm according to whether or not the firm is making the worker his best offer (including unemployment as an alternative); the firm also views e_n as endogenously determined.

Models may differ regarding the firm's knowledge of workers' tastes ϵ; in the models of the next section, where this is relevant, we assume that the probability that it chooses a worker of given tastes ϵ from the unemployment pool is random. That assumption, while convenient, could be modified.

The general model just described of norms-workers-firms is enough taken across all workers and firms to describe aggregate supply for a whole economy. Two such examples are explored in some detail in the next section. These examples describe major features of models with such norm-determined firm-worker interaction.

VII. Two Examples

According to the standard neoclassical model of the labor market, the firm purchases labor services in an optimal amount, *given the market wage*. This statement does not completely describe the firm's choice set, although in the *neoclassical* model the inaccuracy is of no importance. The neoclassical firm can purchase all the labor services it wishes if it pays a wage *at least as great as* the market wage. The firm chooses the wage and its purchases of labor services subject to this constraint. If the firm chooses a wage below the market-clearing level, it receives no labor. As far as its choice is concerned, it would be making the same decision if it demanded no labor and paid the market wage; and there is no advantage to choosing a wage in excess of the market rate. The firm's choice of wage therefore is always at the boundary: it will choose the optimal quantity of labor at the market-clearing wage.

However, once labor contracts are viewed in the context of gift exchange, it is not necessarily true that the firm will always choose wages on the boundary. In gift exchange the usual norm is that gifts should be more than the minimum required to keep the other party in the exchange relationship. In terms of the labor market this means

that the worker who does no more than necessary to keep his job is the subject of at least some slight loss of reputation; reciprocally, the firm that pays its workers no more than the minimum necessary to retain them will also lose some reputation. In the neoclassical model the firm *never* chooses to pay more than the market-clearing wage because there is no advantage to doing so. In the gift-exchange model, however, the interior solution, in which the firm finds it advantageous to pay a wage in excess of the one at which it can acquire labor, may occur because there are some benefits (as well as costs) from paying a higher wage. Doubtless, this interior solution need not occur. Where it does occur, the labor market is primary. A worker entering the labor market will not automatically find work at the wage received by equally qualified employed persons. If the boundary solution occurs, in contrast, the labor market clears; the market is secondary, and a person in that market can readily obtain work at the wage received by current employees of similar qualifications.

The purpose of this section is to demonstrate by two specific examples the characteristics of the labor market in which gift exchange occurs in the sense that the workers' norm for effort depends upon their treatment by the firm. One example assumes that the firm's work rules are fixed, and with this assumption the equilibrium wage and unemployment are derived. The second example assumes that the real wage is fixed and demonstrates that work rules do not equilibrate supply and demand for labor in the sociological model (with norms) as they do in the neoclassical model. This model is specifically constructed with the behavior of the cash posters in mind.

Example I. Wages

Rather than present a model and show that there will be equilibrium unemployment, we work in reverse. All the parameters and functions of the model are chosen with the exception of the size of the labor force. It is then shown that appropriate particular choice of the size of the labor force will yield an equilibrium with unemployment rate u_0.

Let $\bar{l}$ workers per firm be the supply of labor. $\bar{l}$ will later be chosen to have a particular value to conform to the unemployment rate u_0, but that choice is at the end, not at the beginning of the story.

Let output q be a function of effort e and labor n according to the production function,

$$q = (en)^{\alpha}. \tag{12}$$

Let effort e of all workers be at the norm e_n. And let all workers be the same so that

$$e = e_n. \tag{13}$$

Let the effort norm be a function of the wage of the firm relative to the reference wage as

$$e_n = -a + b(w/w_r)^\gamma, \qquad \gamma < 1. \tag{14}$$

(Two considerations explain the particular choice of $e_n - w$ function (14). First, the firm chooses w to maximize the number of labor efficiency units per dollar spent. Solow [1979] has shown that such an internal maximum occurs where the elasticity of w with respect to e is equal to unity. And to insure that this choice of w yields the maximum effort per dollar of expenditure, the $e_n - w$ elasticity must be declining. The function (14) has been chosen accordingly with a declining $e_n - w$ elasticity. A second consideration is responsible for the negative intercept of $-a$. If positive effort is obtained at a 0 wage, a 0 wage [with infinite effort per dollar] is optimal.)

Let the reference wage w_r be the geometric mean,

$$w_r = w_0^{1-u}\, b_u^u, \tag{15}$$

where

u is the unemployment rate,
w_0 is the wage paid by other firms, and
b_u is the level of unemployment benefits.

Since the firm in question is the typical firm, it also follows that the employment by the firm n is the average number of employed persons per firm, or

$$n = (1 - u)\bar{l}. \tag{16}$$

Furthermore, again because the firm in question is the typical firm, its wage is the same as the wage of other firms, or

$$w = w_0. \tag{17}$$

Suppose that u is u_0. It will be shown that with appropriate choice of the parameter $\bar{l} = l_0$, the profit-maximizing firm will choose to hire an amount of labor $n = (1 - u_0)\bar{l}$ if its wage w is the same as the wage of other firms w_0. Consequently, u_0 is an equilibrium rate of unemployment with labor supply l_0.

The firm behaves in the following fashion. With unemployment

at $u_0 > 0$, it can obtain all the workers it wants at any wage. Consequently, it chooses n and w to maximize profits, or

$$\Pi = (en)^{\alpha} - wn \tag{18}$$

subject to the constraints

$$e = e_n \tag{19}$$

$$e_n = -a + b(w/w_r)^{\gamma} \tag{20}$$

$$w_r = w_0^{1-u}\, b_u^u. \tag{21}$$

This maximization problem together with the condition $w = w_0$ yields the demand for labor n^d as a function of the unemployment rate u_0:

$$n^d = \left(\alpha^{-1} b_u \left(\frac{a\gamma}{1-\gamma}\right)^{-\alpha} \left(\frac{a}{b(1-\gamma)}\right)^{1/\gamma u_0}\right)^{1/(\alpha-1)}. \tag{22}$$

If n^d is consistent with the unemployment rate, then the supply of labor, which is as yet an unchosen parameter of our model, must be

$$\bar{l} = l_0 = \frac{n^d}{1-u_0} = (1-u_0)^{-1} \left(\alpha^{-1} b_u \left(\frac{a\gamma}{1-\gamma}\right)^{-\alpha} \times \left(\frac{a}{b(1-\gamma)}\right)^{1/\gamma u_0}\right)^{1/(\alpha-1)}. \tag{23}$$

With $\bar{l}$ chosen in this fashion according to the right-hand side of (23), our model has an equilibrium at the rate of unemployment u_0, where $0 < u_0 < 1$. Note that the unemployed would be willing to work at the wage paid employed workers, but firms will be unwilling to hire them at that wage, or one which is lower.

Moreover, it is also easy to construct an example in which the firm's choice of w is not interior. After all, if the coefficient $b = 0$ and $a < 0$, the example exactly corresponds to the neoclassical model verbally analyzed at the beginning of this section in which all markets cleared. In our analysis the property, whether or not markets clear, or, alternatively stated, whether labor markets are secondary or primary is endogenous.[7]

Example 2. Work Standards

The first example illustrated the possibility (and the accompanying discussion partially characterized that possibility) that the

7. Just because some markets clear does not mean that there is no unemployment. Unemployed workers may be waiting for an opportunity to take a primary sector job. See Hall [1975].

relation between work norms and wages will cause an economy-wide (or labor-market-wide) equilibrium with nonmarket-clearing prices because firms themselves find it advantageous to set wages above the minimum at which they can freely obtain labor.

Our discussion of the cash posters, however, was not concerned with wages but rather with work rules. According to the standard neoclassical model, even if for some reason wages are not fixed at market-clearing levels, still firms should adjust work rules to the point where supply and demand for labor are equal (*even at a nonequilibrial wage*). This section gives an example, in which the work rules will not equilibrate labor supply and demand. It is not the simplest example—partly because of our desire to make the model a faithful representation of the cash posters, and partially also because the reaction of workers to norms inherently involves a great deal of behavior that cannot easily be represented by simple linear functions.

Because in the standard neoclassical model work standards would equate demand and supply for labor even at a fixed nonequilibrating wage rate, we start with the assumption that the wage rate $\overline{w}$ is fixed. Although artificial, we could assume that the government has controlled wages. Certainly this occasionally happens when the government imposes certain forms of incomes policy.

Recall that among the cash posters some workers worked much above the work standard set by the firm (45 percent for Granara and Murphy) while some workers were quite close to the margin (only 2 percent above for Burke and Donovan).

To represent a model in which some workers are above the margin while other workers are at the margin, it is necessary to have at least two types of workers. For that reason our model has two groups of workers with different tastes. Poor workers form a fraction p of the work force. Good workers form a fraction $1 - p$.

In the story behind our model the firm is capable of identifying the tastes of workers only after they have joined the firm, but not before. In terms of the cash posters, who could have predicted that the almost equally outgoing and gregarious Murphy and Burke would have work records which were polar opposites? Homans hints that this difference may have occurred in part because Burke socialized primarily with a group of "ledger posters," while the rest of the cash posters socialized mainly among themselves. Certainly no personnel officer could have predicted such an occurrence.

Although the firm can measure performance easily once workers are hired, it is assumed that it cannot fire them without a reduction in the work norms. As a result, in the model constructed labor effort is observable ex post but not predictable ex ante.

Worker Behavior

Among the two types of workers, good workers who work for the firm have utility, denoted U^+, where

$$U^+ = A - B(e - (e_n + \epsilon))^2. \tag{24}$$

The parameter A depends on wages, but since they are assumed fixed, we have suppressed that dependency. Poor workers who work for the firm have utility, denoted U^-, where

$$U^- = A - B(e - (e_n - \epsilon))^2. \tag{25}$$

The parameters A and B are both positive, e_n is the norm of work effort, e is actual effort by the individual worker, and ϵ is a parameter reflecting the type of worker. U^+ and U^- are the utilities of good workers and bad workers, respectively, when working for the firm. Workers have the option of working for the firm with effort e and also the option of quitting and being unemployed. In that case their utility is assumed to be 0.

A worker who works for a firm maximizes his utility subject to abiding by the work rules of the firm. Thus, a good worker with utility function U^+ chooses e to maximize

$$A - B(e - (e_n + \epsilon))^2, \tag{26}$$

subject to the constraint

$$e \geqq e^+_{\min}, \tag{27}$$

where $e^+_{\min}$ is the minimum work standard set by the firm for good workers. Accordingly, for such a worker if U^+ working for the firm is positive, the worker chooses to work with effort e^+:

$$e^+ = \max(e^+_{\min}, e_n + \epsilon). \tag{28}$$

Similarly, if U^- working for the firm is positive, a poor worker chooses to work with effort e^-:

$$e^- = \max(e^-_{\min}, e_n - \epsilon). \tag{29}$$

Norms

The norms of behavior depend upon the work rules,

$$e_n = e_n(e^-_{\min}, e^+_{\min}). \tag{30}$$

Later it will be assumed that $e^-_{\min}$ and $e^+_{\min}$ have an effect on norms only insofar as they are a binding constraint on workers' effort.

Firm Behavior

On its side, the firm takes into account the reaction of the workers' effort to the norms and the reaction of the norms to work rules. In the case of excess supply of labor, where labor is freely available as long as U^+ and U^- are positive, the firm chooses $e^+_{\min}, e^-_{\min}$, and n to maximize profits, or

$$(\bar{e}(e^-_{\min}, e^+_{\min})n)^\alpha - \bar{w}n, \tag{31}$$

where $\bar{e}(\,)$ is the function combining (28), (29), and (30) with the appropriate weights to account for the dependence of average effort on work rules.

Accordingly, at an interior maximum the firm that can obtain all the labor it wishes will choose $e^-_{\min}$ and $e^+_{\min}$ to maximize $\bar{e}(e^-_{\min}, e^+_{\min})$, and its demand for labor according to the marginal product condition,

$$\alpha\bar{e}(e^{-*}_{\min}, e^{+*}_{\min})^\alpha n^{\alpha-1} = \bar{w}. \tag{32}$$

As long as n so chosen by the typical firm is less than $\bar{l}$, the demand for labor is less than the supply, and the assumption that the firm can obtain all the labor it wishes is justified.

Problems with obtaining an interior maximum. The question, however, arises, how there can be an interior maximum for $e^+_{\min}$ or $e^-_{\min}$. After all, why should the firm not increase $e^+_{\min}$ just up to the point where all good workers are on the verge of quitting? (In so doing, it also may have the added dividend of screening out the poorer workers.) In the real world workers usually apply sanctions against such behavior by the firm. For example, in the case of the cash posters, remember that Homans recorded a work slowdown in a previous dispute with a supervisor. In our model this is represented by the fact that as the work rules force workers to work sufficiently in excess of the norms, they quit.

Let the fraction p of poor workers be $\frac{1}{2}$. Let the tastes parameter ϵ be 1. And let the parameters A and B in (24) and (25) be 2 and $\frac{1}{2}$, respectively, so that

$$U^+ = 2 - \tfrac{1}{2}(e - (e_n + \epsilon))^2 \tag{33}$$

$$U^- = 2 - \tfrac{1}{2}(e - (e_n - \epsilon))^2. \tag{34}$$

Good workers, who maximize U^+, will choose

$$e = e_n + \epsilon \tag{35}$$

as long as they are unconstrained by the work rules. Similarly, if unconstrained, poor workers, who maximize U^-, will choose

$$e = e_n - \epsilon. \tag{36}$$

We assume that the work rules have an effect on the effort norm if and only if they are binding. Accordingly, the norm depends on $\max(e^+_{\min} - (e_n + \epsilon),0)$ and $\max(e^-_{\min} - (e_n - \epsilon),0)$. Furthermore, it is assumed that the norms are egalitarian in that a difference between the work rules for the two types of workers will have a negative effect on the norms.

Accordingly, the norm in this example follows the formula,

$$e_n = 6 - 0.8 \max(e^+_{\min} - (e_n + \epsilon), e^-_{\min} - (e_n - \epsilon),0) - 20|e^+_{\min} - e^-_{\min}|. \tag{37}$$

The second term of (37) reflects the decline in the norm of effort as the work rules become increasingly binding on the workers' choice of effort. The third term reflects the effect on the norm of an inequality in the treatment of the two types of workers.

It is easy to check that the firm which wishes to maximize $\bar{e}$ will choose

$$e^+_{\min} = e^-_{\min} \leqq 5, \tag{38}$$

and at this maximum $\bar{e} = 6$.

I will sketch the proof. First, inequality in $e^+_{\min}$ and $e^-_{\min}$ causes such a large reduction in e_n (the coefficient of the last term of (37) being 20) that the firm always finds it advantageous to set $e^+_{\min} = e^-_{\min}$. In that case the formula for e_n (37) can be simplified to

$$e_n = 6 - 0.8 \max(e_{\min} - (e_n - \epsilon),0). \tag{39}$$

A bit of algebra shows that with $\epsilon = 1$ (39) can be rewritten as

$$e_n = 6 \qquad e_{\min} \leqq 5 \tag{40A}$$

$$e_n = 30 - 4e_{\min} - 4 \qquad e_{\min} \geqq 5. \tag{40B}$$

It is easy to check using (34), (40A), (40B) and the value of $\epsilon = 1$ that U^- is positive if $e_{\min} < 5.4$ and negative if $e_{\min} > 5.4$. Similarly, U^+ is positive if $e_{\min} < 5.8$ and is negative for $e_{\min} > 5.8$.

Thus, in the range $0 \leqq e_{\min} < 5.4$ both good and bad workers are working. For $0 \leqq e_{\min} \leqq 5$ work rules are binding on neither good nor bad workers, and therefore

$$\bar{e} = \tfrac{1}{2}(e_n + \epsilon) + \tfrac{1}{2}(e_n - \epsilon) = e_n = 6, \qquad 0 \leqq e_{\min} \leqq 5. \tag{41}$$

For $5 < e_{\min} < 5.4$ work rules are binding on poor workers but not on good workers. U^- and U^+ are both positive so both good and bad workers are at work. Hence

$$\bar{e} = \tfrac{1}{2}(e_n + \epsilon) + \tfrac{1}{2}e_{\min} \qquad 5 < e_{\min} < 5.4 \tag{42}$$

$$= 13.5 - 1.5e_{\min} < 6 \qquad 5 < e_{\min} < 5.4. \tag{43}$$

By design of the example, for $e_{\min} > 5.4$ U^- is negative; also by (40B) for $e_{\min} > 5.4$, $e_n + \epsilon < e_{\min}$, so work rules are binding on good workers. U^+ is positive for $e_{\min} < 5.8$. Consequently, in the range $5.4 < e_{\min} < 5.8$ only good workers are at work, and since their effort is constrained by work rules,

$$\bar{e} = e_{\min} \qquad 5.4 < e_{\min} < 5.8. \tag{44}$$

For $e_{\min} > 5.8$ $\bar{e}$ is indeterminate, since U^+ and U^- are both negative. The number of workers willing to work is, however, 0. Hence $\bar{e}$ is maximized according to (41), (43), and (44) at $\bar{e} = 6$ with $e^+_{\min} = e^-_{\min} \leqq 5$.

To obtain an example with unemployment rate u_0, it is only necessary to choose $\bar{l} = l_0$ consistent with u_0 and the marginal productivity condition for labor demand so that

$$\bar{l} = l_0 = (1 - u_0)^{-1}(\alpha^{-1}6^{-\alpha}\bar{w})^{1/(\alpha-1)}. \tag{45}$$

Remark. This example corresponds exactly to cash poster behavior. The firm paid the same wage to all workers. One group of workers (a minority) worked at the work standard, or very close to it. Other workers worked above that standard. For reasons unspecified by Homans, but which are consistent with our model, the firm did not raise standards on either good workers or poor workers. At the equilibrium unemployment is involuntary.

VIII. Conclusion

This paper has explored the idea that labor contracts are partial gift exchanges. According to this idea, at least in part, wages are determined by, and in turn also influence, the norms of workers' effort; similarly, workers' effort is determined, at least in part, by these norms. A relation between the terms of exchange and norms is in our view what differentiates gift exchange from pure market exchange.

Indeed, while the norms may be greatly influenced by the same things as market prices, there is still a major difference between pure market exchange and gift exchange. In pure market exchange the

maximum price at which a buyer is willing to purchase a commodity or factor service is the minimum at which the respective commodity or factor service is obtainable. Obversely, the minimum price at which a seller is willing to sell a commodity or factor service is the maximum at which the respective commodity or factor service can be sold. In gift exchange buyers may be willing to pay more than the minimum at which they can purchase a commodity or factor service because of the effect of the terms of exchange on the norms. Similarly, sellers may be willing to accept less than the maximum at which they can sell a commodity or factor service because of the effects of the terms of exchange on the norms. It has been shown that due to this behavior with gift exchange markets need not clear. Thus, the gift-exchange economy and the neoclassical economy differ in at least one fundamental respect. Future papers will explore further differences between the two models of exchange.

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