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**WAGE RIGIDITY AND THE FIRM ALTERNATIVE APPROACHES**

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DOCUMENTO DE TRABAJO

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WAGE DETERMINATION AND THE THEORY OF THE FIRM  
A SURVEY OF ALTERNATIVE APPROACHES

I. Introduction

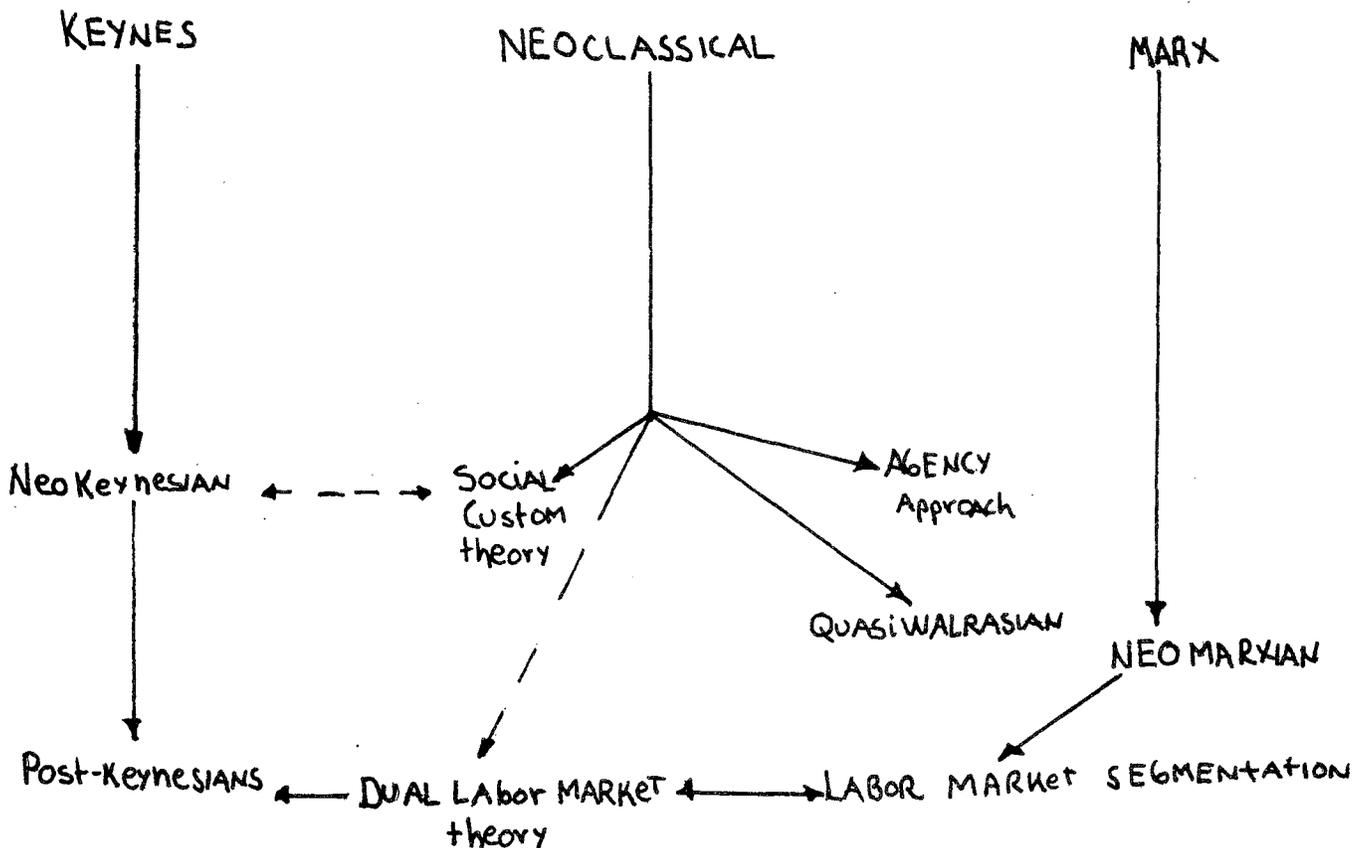
The experience of the major industrialized countries during the interwar period (1920-1939) characterized by substantial price deflation, rigid or slowly declining money wages and persistent unemployment proved to be a major blow to orthodox economic theory. Keynes' General Theory was an important element in the attempt to explain the events of that period as well as to provide an alternative to the conventional economic theory represented by Marshall and Pigou.

The General Theory proved to be one of the most influential and controversial books in economics. It is a book that sets up complex and controversial discussions in many aspects of economic theory from the method that should be used in analyzing economic problems to questions relevant to policymaking, the role of the state in the economy, etc. One of the main issues raised by the General Theory was the downward inflexibility of money wages and its relation to the existence of involuntary unemployment and their implications for the macroeconomic process and the causal relations among the main economic variables.

As McDonald and Solow (37) argue, the stickiness of money wages as well as the constancy of real wages during the business cycle are one of the perennial problems in current macroeconomic research.

The original objective of this paper was to make a survey of the different theoretical explanations that have been given for the stickiness of nominal wages and the role (if any) that the internal organization of the firm plays in it. As my research progressed, I realized that, Keynes apart, there has not been a serious attempt to explain rigid nominal wages as most of the approaches under review provide an explanation of rigid real wages and, from my point of view, only address the questions raised by Keynes tangentially if at all. The reason for this may be due, as Weintraub (53) states, to the fact that we lack a theory of nominal wages.

Underlying the fact that the wage rate does not rise or fall to clear the labor market lies the implicit idea that the labor market is unlike any other market in the sense that its "equilibrium" is determined by non-economic factors as well as by the wage rate. It is very difficult to make a clear delineation of the different approaches that have addressed the question of wage determination since there are some overlapping elements among the different theories, but a crude taxonomy of these theories would follow these lines:



In Section II of the paper we attempt to provide a view of Keynes' ideas on the labor market and a sketch (in my opinion it is not possible to do anything else) of a post-Keynesian theory of the labor market. The object of this section is to contrast what Keynes said with orthodox theory. Section III analyzes the four different offsprings of neoclassical theory. Our conclusion regarding these distinct developments from neoclassical theory is that the implicit contracts theory and the Quasiwalrasian or Hobbesian theory (see Bowles (12)) do not provide an explanation of why business cycles have been characterized by constant real wages and substantial fluctuations in employment. On the other hand the labor market stratification approach and what we have

labelled as social custom theory explain wage rigidity but do not provide a theory of wage determination and from my point of view lose much of their neoclassical elements in the process. Section IV analyzes the Neo-Marxian approach. Finally, Section V attempts to draw some conclusions and highlights the overlapping elements and differences among the different theories.

## II. Keynes and the Labor Market

One of the prevailing misunderstandings related to Keynes' theory of employment is that the existence of involuntary unemployment is due to the fact that Keynes assumes sticky wages. As Chick (18) forcefully argues, sticky wages are a prediction of Keynes' model and not an assumption. Keynes' main criticism was directed to the application of conventional supply-demand analysis to the labor market. It seems to me very important to delineate very carefully Keynes' line of thought and its differences with classical theory (represented by contemporary neoclassical theory). In this respect, Chick's (18) explanation of the General Theory is fundamental to achieve a correct understanding of what Keynes really meant. The elements of Keynes' arguments are the following:

- a) the labor supply of classical theory is open to challenge

- b) it is inappropriate to use a partial equilibrium framework in analyzing the labor market.

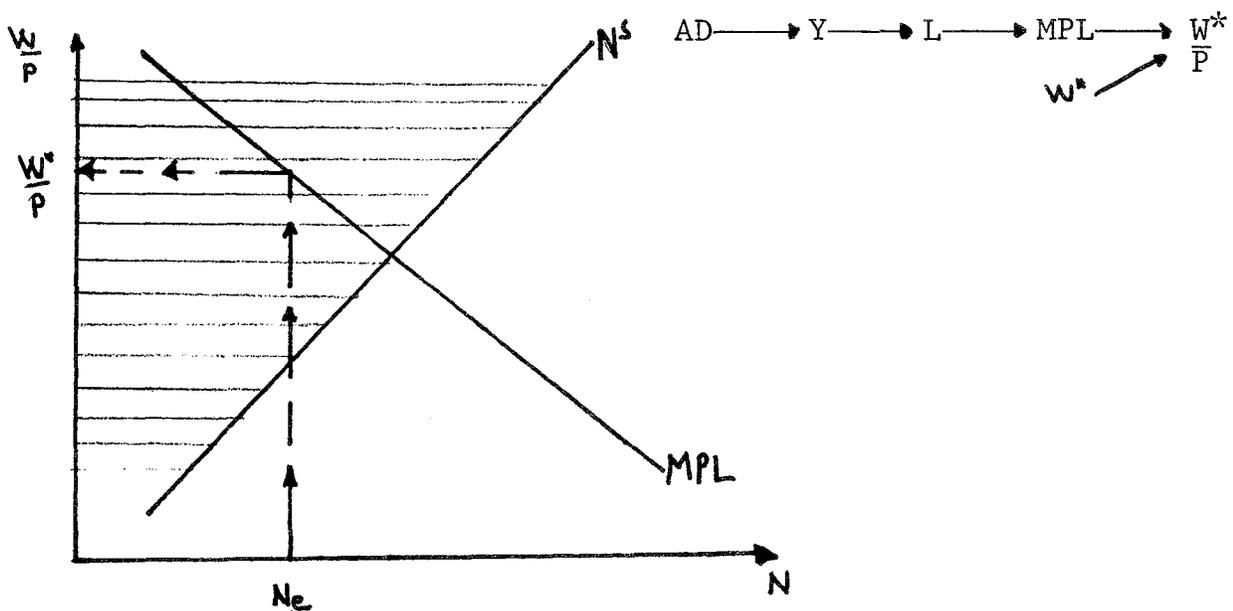
In the classical framework wages and employment are simultaneously determined by the intersection of labor demand and labor supply. If it is further assumed that the labor market is competitive, the classical approach to the labor market can be synthesized by what Keynes (32) called the two classical postulates:

- 1) the wage is equal to the marginal product of labor (labor demand determined by profit maximizing firms)
- 2) the utility of the wage when a given volume of labor is employed is equal to the marginal disutility of that amount of employment (labor supply determined by utility maximizing households).

If one accepts these postulates and real wages are flexible, the only unemployment that can be observed is frictional or voluntary unemployment and their cause can be linked to an unusually high real wage. It must be taken into account that the labor demand and labor supply schedules refer to planned or "desired" magnitudes derived from behavioral relations and are not necessarily the actual magnitudes that will be observed. Chick criticizes Keynes for failing to make clear this distinction. However, if one accepts both

postulates of the classical theory no confusion will arise since the real wage will adjust to clear the labor market.

Keynes accepted the first postulate but not the second. However, it is important to distinguish the causality between employment and real wages considered by Keynes. Davidson (20) explains clearly that in the Keynesian scheme the real wage is determined in the goods market. As Keynes argues: "In assuming that the wage bargain determines the real wage the classical school have slipt in an illicit assumption" (32). The explanation put forth by Davidson is the following: the level of employment ( $N_e$ ) is determined by effective demand, i.e., by the points of intersection between aggregate demand and planned sales by firms. This level of employment determines through the marginal productivity schedule (MPL) the real wage so the causality is



This causality scheme is also considered by Marglin (35) in a steady growth context where for a given money wage the real wage is determined through the price level that clears the goods market.

Keynes, as argued above, rejected the second postulate of classical theory. Labor supply represents the maximum total hours that people are willing to work for any given wage. To the left of the curve the utility of the wage exceeds the disutility of work. As Chick and Marglin argue, the supply of labor schedule should be thought of as a frontier: "all positions to the left of it are acceptable to workers lucky enough to get a job, while positions to the right are unacceptable. Willing supply of labor at each wage is indicated by horizontal lines, in principle infinitely dense, ceasing at  $N^s$ " (Chick (18)). Regarding the labor demand schedule (MPL) it should be remembered that the points on it represent profit maximizing choices made by firms given the demand (and hence the price) they expect. This implies that changes in aggregate demand will shift the MPL schedule.

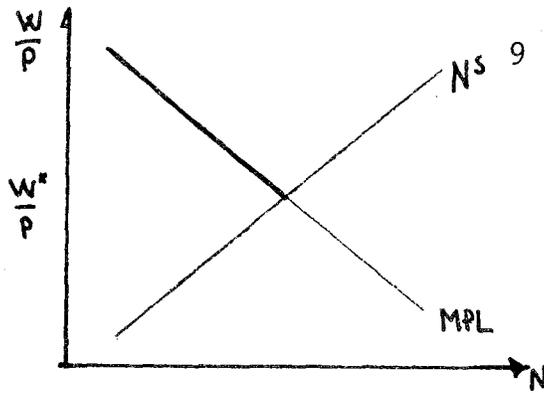
Keynes objected to the postulate that the disutility of labor determines the real wage on two accounts:

- a) 'the first relates to the attitudes of workers towards real and money wages respectively and is not theoretically fundamental' (Keynes (32)).

- b) Keynes rejects the presumption that labor is able to determine the real wage for which it works or the amount of work it performs.

The wage bargain determines the nominal wage but the real wage depends on the outcome of the production process and for this distinction it is fundamental to take into account the emphasis that Keynes gave to time involved in production in contrast to the Walrasian model where time is collapsed to a single point by arguing that no transactions (including production) take place until the equilibrium price vector (where the wage rate is one of these prices) is arrived at. In the Walrasian model the wage bargain can be settled in real terms.

Chick also argues that the actual number of jobs offered are given by effective demand but that this intersection between aggregate demand and planned sales is contingent on the wage estimated by firms. If the market clearing wage is given by the intersection of labor supply and labor demand, the acceptance of the first postulate implies that potential positions of observed employment will be given by points on the MPL schedule truncated at the market clearing wage since for points below this wage rate firms will be able to bid up the wage they offer when they cannot get all the labor they need.



The acceptance of the equality between the marginal productivity of labor and the real wage only give potential combinations of the wage rate and the employment level that may be observed but does not explain how they are determined.

For classical theory there will be a unique combination of employment and wage rate that will be observed, the combination given by the intersection of labor supply and labor demand (full employment). Since classical theory accepts downward (rejected by Keynes) and upward (accepted by Keynes) flexibility of the wage rate any deviation from full employment will be transitory.

To understand Keynes' rejection of the downward flexibility of the money wage it is important to provide an explanation of why it is not in the interests of the labor force or firms to accept or offer employment at a lower money wage.

The main argument advanced by Keynes is that workers are concerned about their relative wages:

Though the struggle over money wages between individuals and groups is often believed to determine the general level of real wages, it is in fact, concerned with a different object. Since

there is imperfect mobility of labor, and wages do not tend to an exact equality of net advantage in different occupations, any individual or group of individuals, who consent to a reduction of money wages relatively to others, will suffer a relative reduction in real wages, which is sufficient justification for them to resist it. On the other hand it would be impracticable to resist every reduction of real wages, due to changes in the purchasing power of money will affect all workers alike, . . ." (Keynes (32, p. 14))

From this assertion by Keynes there have been derived different explanations within the neoclassical tradition to account for rigid wages. Based on the idea that workers will not accept a decrease in their relative wage, Solow (50), Akerlof (1, 2, 3), Okun (38) and in some sense Hicks (31) have introduced a notion of fairness of a wage bargain sanctioned by "social custom" to explain wage rigidity. On the other hand as Amadeo (6) correctly states, the imperfect mobility of labor in Keynes' analysis gives the reason of why the wage structure in the economy is so important for Keynes. Both Amadeo (6) and Weintraub (53) argue that the immobility of labor implies that the labor force is in some sense heterogeneous and that this factor partly explains the exogeneity of the money wage. This combination of heterogeneous labor and an exogenous money wage rate is an element that will reappear on the labor market stratification or segmentation theories where, as it will be argued, the wage rate is only one and not necessarily the most important element of the wage bargain.

Amadeo (6) in a critique of Phelps' "island model" of the Phillips curve asserts that Phelps' labor supply is really neo-Walrasian since it only abandons the assumption of perfect information prevalent in Walrasian models. However, he accepts the fact that Phelps' labor supply still conserves some Keynesian elements since it is a function of relative wages but correctly argues that the strictly Keynesian function is one where the average wage rate and not the labor supply is the dependent variable as Phelps and Trevithick (52) consider.

$$1) \quad \bar{W} = F(W_i/W_j) \quad \text{Keynes} \quad i \neq j$$

$$2) \quad L^s = F(W_i/W_j) \quad \text{Phelps - Trevithick}$$

where  $\bar{W}$  = average wage rate and  $W_i/W_j$  is the structure of relative wages.

Chick gives some additional explanations along Keynes' lines as to why firms and workers (or unions) would be unwilling to accept a cut in money wages. It is important to distinguish between the employed for whom the utility of the wage rate exceeds the disutility of work and the unemployed who are the ones who really have a stake on a decrease in the money wage rate. The unemployed are really competing against other unemployed workers and their probability of getting a job may not improve significantly if the nominal wage is cut. Furthermore, the unemployed may not

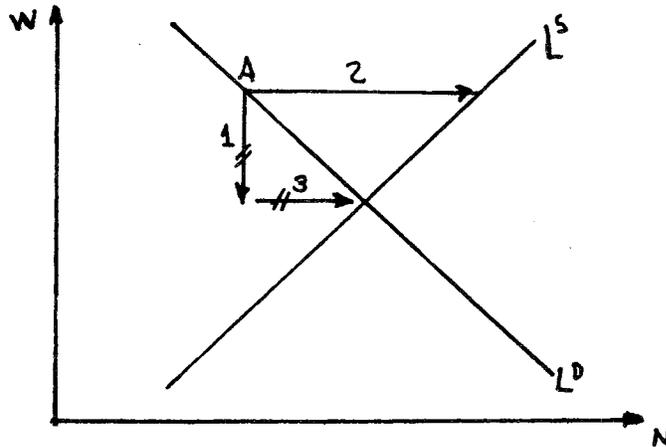
accept a lower money wage because it affects their self-image or it may affect negatively their bargaining position versus the employer. These reasons provide a further explanation of why workers may be concerned with relative and not real wages. Chick states that even if unemployed workers may be willing to accept a lower money wage there is no institutional mechanism by which their "willingness" to work may exert a downward pressure on the nominal wage.

Nor is it in the interest of the firm to contract additional workers at a lower wage when it has struck a contract with its employed laborers at a uniform wage. As Hicks says: "So it is necessary for efficiency that the wage contract should be felt, by both parties but especially by the worker, to be FAIR" (Hicks (31)). Besides, by accepting the first classical postulate firms are "on their demand curves." Only if demand for output is expected to rise will firms consider hiring additional people. As Chick says: "the implications are disturbing, for the supply curve - that is, the desires and decisions of households, may have no influence in the determination of wages and employment. Below  $W^*/P$  supply factors determined the extent to which wages must be bid up, given demand. Above  $W^*/P$ , the supply curve is quite redundant, serving only as a measure of the extent of discontent, a discontent unemployed workers are quite powerless to alleviate" (Chick (18, p. 148)).

Classical (or neoclassical) theory on the other hand does not have a problem with a real wage above  $W^*/P$  since workers are able to lower their wages and so get an increase in employment. The implicit assumption underlying this framework is that the question underlying the demands curve for labor 'given your existing capital equipment, how much labor would you hire if the wage were so, or so, or so?' is not a question about a response to the opportunity of changing the wage offered, where some arrangement must be made with the already employed workers. The answer reflects firms' response to different wages in otherwise equivalent situations--firms start always with no workers on hand.

Keynes' reasoning leads to the conclusion that observed employment need not conform with the maximum labor would like to offer, i.e., workers are "off" their supply curve. If we accept this, the possibility of an increase in employment at a lower real wage is explained while the classical theory that assumes workers are on their supply curve finds this situation impossible.

Keynes' arguments against the classical theory can be understood through the following graph (Chick (18))



At A we have unemployment. The downward pressure indicated by arrow 1 does not obtain because it is not an interest of the workers nor firms to see a fall in the real wage through a cut in nominal wages. The only force that may lead to full employment defined as a state where everybody who wants a job finds one (workers are on their supply curve) is indicated by arrow 2 which requires an increase in the demand for labor due to an increase in effective demand. Arrow 3 requires the effect of arrow 1 and although classical theory accepts both, Keynes rejects 1 and arrow 3 is denied on further grounds since the employment creating potential of a nominal wage cut may not leave aggregate demand unchanged, i.e., the nominal wage affects both aggregate demand and aggregate supply (Weintraub (53)).

Without wanting to extend this already large reflection on what Keynes said we only want to warn the reader against the outright acceptance of the first classical postulate. Keynes' rejection of the second postulate implies there is no

unique relation between employment and nominal wage. As Chick (18) and Davidson (20) argue, the first postulate may not hold in general and if we trace a locus relating observed levels of employment to the real wage (employment function) we may get points that are off the MPL schedule. As Chick concludes:

- 1) Wages and employment are not uniquely related
- 2) the employment function is not reversible
- 3) the employment function is given by the interaction of demand and supply forces with history: it matters whether demand is contracting or expanding-- it matters where one has been.

As we have stated before, we do not consider that there exists a "Post-Keynesian" theory of the labor market. The contributions by Appelbaum (7) and Eichner (23) are really a hybrid marriage of a Keynesian labor demand determined by effective demand and a labor supply independent of the real wage. In Appelbaum's analysis the labor supply is taken from the labor market stratification theory that will be analyzed later and Eichner resembles Dunlop's (22) theory of job clusters and wage contours. The "Post-Keynesian" theory is really a juxtaposition of the above mentioned labor demand and labor supply without any further elaboration.

Begg (11) is an ingenious defense of Keynesian theory against the rational expectation school. In the process

Begg keeps some Keynesian elements that are not really fundamental and forgets other elements that should not be forgotten. His model is a multi-period overlapping wage contract with a single wage for the duration of the contract. The labor force is divided into two cohorts that are specific to firms that otherwise produce a homogeneous good, i.e., there is perfect labor immobility between firms. Begg's workers care about relative wages due to the intertemporal structure of the model. The real wage is determined in the goods market since the contract between firms and their respective cohort only specifies the nominal wage. Firms are on their notional labor demand and supply of output but, contrary to Keynes, labor demand is a function of the real wage and not of effective demand. What Begg identifies as his truly Keynesian assumption is that while wages are flexible the price of output is more flexible.

Firms and workers are assumed to have optimizing behavior but with an inelastic labor supply and no explicit utility function it is not clear what workers are really optimizing. Firms and workers choose an intertemporal path for wages and employment. The structure of the model implies that if there is an exogenous shock to aggregate demand of the rational expectations kind neither cohort can maintain full employment continuously. We get involuntary unemployment in an equilibrium solution that is eliminated very slowly.

It persists long after contracts have been renegotiated until eventually, full employment is restored. The truly useful result of Begg's model is that involuntary unemployment may be an optimal solution for the different cohorts depending on the intertemporal preferences of workers between unemployment now or later and these preferences will determine which wage setting rule will be adopted and so the pattern of unemployment.

After going in detail through Begg's model I got the impression that it is more an indictment of the Lucas' supply function microfoundations of full market clearing due to optimizing behavior by firms and workers than a marriage of Keynesian theory and rational expectations. One only wonders if Keynes would not have said after Begg's "revival" of Keynesian theory: "with friends like this, one does not really need enemies."

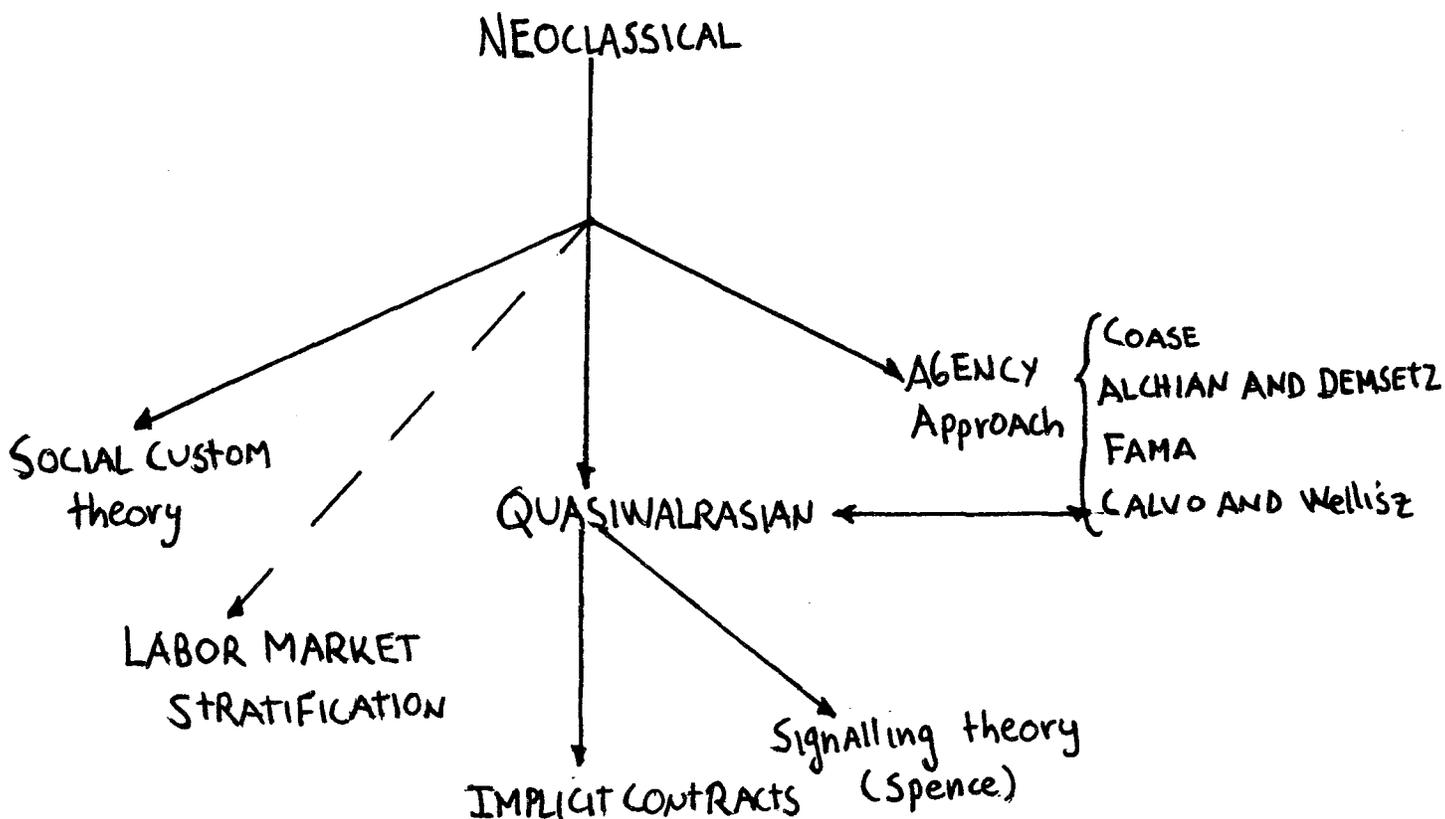
### III. Neoclassical Theory

The original purpose of this paper was to "conclude" that to explain wage stickiness we would require a theory of the firm, i.e., we would need to take explicit account of the internal organization of the firm to explain the "unresponsiveness" of wages to employment. However, we can only say that we failed to get to this conclusion. This point will

be further elaborated in Section V but we brought it here for the following reason: In Keynes the firm as an organization plays no role in the determination of the wage rate. In some sense, at least in regards to our topic of research, the firm is still the neoclassical black box it has always been. The only departure in Keynes' theory from the firm imbedded in an Arrow-Debreu model is that the firm in Keynes does not have perfect certainty as to what the demand for its product will be or at what price it will sell its output. This uncertainty is due to the explicit recognition of a time lag in the production process, i.e., production is not instantaneous. The "active" agent in the Keynesian scheme is the capitalist and any link between the capitalist and the firm is not even hinted.

The Neo-Marxian approach notwithstanding, it is in the neoclassical ground where we find the first attempts to explain why firms exist. Coase (19) is the first one to engage in this endeavor and the line of thought derived from his research has been labeled Neohobbesian by Bowles (12) because the social organization of the firm is understood in terms of malfeasance, i.e., the firm is really a configuration of persons with different objectives and the object of the hierarchical organization with the firm is to avoid the possibility of shirking by different groups or individuals. The incentive of people to shirk is to be taken as given and no explanation is provided for it.

The only other derivative that springs from the neo-classical approach that looks inside the organization of the firm to explain wage rigidity is the labor market stratification approach represented by Piore (39, 41, 42). However, the only true neoclassical element that I found in this theory is its intellectual origin since it is really a formalization of Galbraith's technostructure. The other offsprings of the neoclassical approach explain wage determination in terms of atomistic workers and firms and wage rigidity is due either to social constraints Akerlof (1, 2, 3), Solow (48, 49, 50), Okun (38) or uncertainty about the state of nature--Implicit contract theory. A more detailed view of the neoclassical branch would be



The orthodox neoclassical approach is simply a refinement of the classical theory that Keynes attacked. Labor supply and labor demand are functions of the real wage which otherwise is perfectly flexible. There is no recognition of Keynes' assertion that although labor supply is a function of the real wage, the nominal wage and the price level play asymmetrical roles. Labor supply decisions are embedded within a utility maximization framework and as some of the exponents within this approach say: "we shall refer to these models as neoclassical, a name we use to label the assumption of linear budget constraints with fixed known prices" (Deaton and Muellbauer (21)). The more advanced elaboration of this theory takes account of nonlinear budget constraints and the participation decision of the household. Labor demand has not undergone significant changes and, what is more important; the real wage is perfectly flexible and there is a unique level of full employment associated with the intersection of labor supply and labor demand.

#### A. Agency Approach to the Firm

The theory of the firm developed by Coase (19) and further elaborated by Alchian and Demsetz (5), Fama (26) and Calvo and Wellisz (16, 17) is a transaction costs approach. In Coase's original formulation the firm exists only because it provides a means of performing certain transactions more

efficiently than through the market and the price mechanism. There are costs in using the price mechanism which would require a full set of contracts among all the factors involved in the production process. With the firm all factors contract with a sole factor that is the residual claimant to the profits of the firm and it is no longer necessary to have bilateral contracts among all the factors of production. The firm results to be an efficient way of saving on marketing and administrative costs. The entrepreneur is the residual claimant and manager of the production process. However, although the firm exists by reasons of efficiency not all transactions that could be done through the market are absorbed by the firm since there are diminishing returns to this activity and so the firm will not grow without bound. Coase's explanation of the existence of a firm is suitable for characterizing a firm organized along the inside contracts system but from my point of view does not explain the hierarchial structure of modern corporations.

The next step within the transaction costs approach is undertaken by Alchian and Demsetz (5) who, from my point of view, are the ones who really lay the foundation for the Hobbesian level applied by Bowles (12). Although the basis of their explanation depends on workers' incentive to shirk no author explains why it is in the workers' interest to shirk. The possible cause may be the fact that work causes disutility

and there are incentives for on the job leisure. The firm in their analysis arises because of the efficiency of team production which is characterized by:

- a) several types of resources are used
- b) the product is not a sum of separable outputs of each cooperating resource
- c) not all resources belong to the same person

Team production is used because it enhances productivity. The joint production aspect involved in a team "organization" is the difficulty to measure the marginal output of the cooperating inputs and makes nearly impossible the control of shirking through market contracts. By organizing production within a firm with a party common to all contracts who holds the residual claim to the firm it is possible to "observe" marginal productivity through input behavior.

In Coase's and Alchian and Demsetz's work there is no distinction between owners and managers since the entrepreneur performs both functions. Once account is taken of the separation of ownership and control there must be an explanation of why managers do not shirk. Fama (26) takes the notion of the firm as a set of contracts to an extreme point. Management and risk bearing are only two different functions within the set of contracts. The separation of ownership and control, however, creates incentive problems and someone has to monitor the managers. Fama attributes the primary

disciplining device in this context to the "managerial" labor market that continuously provides a "revaluation" of managers' human capital.

None of the authors who argue that the firm is an efficient device to match productivity to costs of inputs and reduce shirking provide a sound explanation of the hierarchical structure inside a firm and the existence of wage differentials along this hierarchy. Calvo (15) and Calvo and Wellisz (16, 17) elaborate a model based on imperfect information about workers' characteristics that address this issue. Due to lack of information supervision is costly and as a consequence it pays to punish shirking identified with substandard performance. Their models explain the hierarchical structure within the firm to prevent shirking. The hierarchical structure consists of  $m$  levels of which only the bottom level consists of production workers. The role of each level is to supervise employees in the level directly below. Workers are assumed to be risk neutral (in contrast to the implicit contracts approach as will be discussed shortly) and differ in quality. They attempt to provide an "endogenous explanation of the hierarchic differentials in worker quality, wages and degree of supervision" (Calvo and Wellisz (17)). The hierarchical firm acts like a monopolist although the labor market is competitive. Since supervision is not costless, wages paid at different levels will be above the employees' opportunity cost which is assumed to be a convex and

increasing function of quality,  $h=H(\beta)$   $h' > 0$   $h'' > 0$  and  $\beta$  is an index of quality. The authors make the further assumption that the relative efficiency of workers remains constant across levels. This assumption and the fact that workers' opportunity cost is increasing in quality will explain both that more efficient workers are assigned to the top hierarchy levels and the firm will have workers of different qualities. Wages increase with the hierarchy levels based on a "team effect," i.e., higher wages prevent shirking in top levels of hierarchy and the wage ladder is increasing because if a manager shirks, it will affect the performance of workers under his supervision. The worker decides at the beginning of the production period whether to shirk or not. The "effort" of worker is a function of the probability of being caught shirking. This probability is a function of the effective supervisor/supervisee ratio

$$3 \quad P_i = \text{Min} \left[ \frac{\beta_{i+1} M_{i+1}}{M_i}, 1 \right]$$

where  $M_i$  = number of the  $i$ -th layer employees.

If the worker is caught shirking, he is fired and one of the reasons of paying a wage above the opportunity cost of the worker is that it increases the cost of being fired to the worker (this is an idea that appears in a different context in Bowles (12) and Gintis and Ishikawa (28)). If employees

do not have information about when they are being watched, there is no incentive to shirk. The problem in this case as Calvo and Weillisz (16) emphasize is that there is no limit to the growth of the firm since profits will increase if the number of hierarchical levels increase. To limit the size of the firm it is necessary to have some possibility of loss of control or, what amounts to the same thing, given employees an incentive to shirk. As Calvo (15) argues, this type of Quasiwalrasian or imperfect information models are suitable for explaining why the wage is above its full employment level and is consistent with the existence of layoffs. The problem is that it takes for granted that a hierarchical structure is the best way to reduce shirking. In this sense, the Calvo and Wellisz model deviates from Williamson's (54) explanation that the optimal type of firm will depend on the "type" of imperfect information and transaction costs a firm faces. Nothing in the arguments put forth by Calvo and Wellisz imply that shirking cannot be reduced by having a cooperative firm where all workers have a stake in the optimal performance of the firm.

Another type of Quasiwalrasian model is the signalling models exemplified by Spence (51). In this model the labor market is atomistic but firms offer a wage above the equilibrium or market clearing wage because the wage affects the worker's characteristics. The hiring process of the

firm is really an investment under uncertainty. The employer is uncertain about the productive capacity of a person applying for a job and by hiring an applicant he is really buying a lottery. The employer will offer a wage that depends on his perception of the applicant's productivity. The applicant, however, can affect the employer's conditional probability through what Spence calls indices and signals. Both are observable characteristics of the applicant but while indices are fixed (e.g., race, sex, etc.), signals are alterable. Both indices and signals are parameters that affect the employer's assessment of the applicant's productivity that will, in turn, affect the wage offer. For the signals to be produced the costs of signalling (e.g., acquiring and education) have to be respectively correlated with productivity that on the other hand is positively correlated with the wage rate. Signals have an informational effect on productivity and the wage while indices are a sort of externality. An "equilibrium" is reached when employers have self-confirming beliefs. One of the important points made by this type of model is the possibility of what Akerlof (1) calls low level equilibrium trap where indicators (indices and signal) of social origin (determined by economic agents) lead to a "Pareto inefficient" equilibrium and agents do not have incentive to change a signal. The example provided by Akerlof is where a social convention (a race is

prejudiced to be unqualified for a job) based on a caste system fails to provide incentives for the discriminated group to become qualified.

#### B. Implicit Contracts

The third type of Quasi-walrasian models is the Implicit Contracts Model first elaborated by Asaradis (8) and Baily (10). In this model firms and/or workers have imperfect information about the state of nature. These models will be analyzed in some detail because they were believed to provide good microfoundations for the existence of involuntary unemployment and sticky wages.

The main result derived from the earlier formulations of implicit contracts is that sticky (rigid) wages are due to different attitudes toward risk bearing where risk neutral firms contract with risk averse workers. The models rely on mobility and turnover costs. Workers decide before the period of production (ex ante) for which firm they will work during the period (ex post). Ex post workers cannot move between firms, either they work with the firm with which they made the contract or they become unemployed. As Baily (10) argues, the firm offers the workers the joint product of employment and financial intermediation (insurance). Workers cannot buy insurance in capital markets because these markets are absent. The most straight forward analysis of

implicit contracts is given by Sargent (47). In Sargent's model there are two states of nature indexed by

$P(\Theta)$  = price of output in state  $\Theta$   $P(1) > P(2)$  (Assumption)

$F(M(\Theta))$  = production function where output depends only on labor

employed ( $M(\Theta)$ ).

$\pi(\Theta)$  = probability of state  $\Theta$  occurring. Both firms and workers assign the same probability to state  $\Theta$  (symmetric information)

$U = g(W(\Theta), L)$  utility function of workers  $U' > 0$   $U'' < 0$

$U(r) = g(r, L_0) = g(0, L_1)$  where  $r$  = pecuniary value attached to having Leisure  $L_1$  rather than work  $L_0$ .

$M(\Theta) \leq \text{MAX} [M(1), M(2)]$  Since  $P(1) > P(2)$  there exists a presumption that  $M(1) > M(2)$

Workers maximize expected utility as a function only of pecuniary income across states:

$$4 \text{ MAX } V = \frac{U}{D} = \pi(1) U(W_1) + \pi(2) \frac{M(2)}{M(1)} U(W_2) + \pi(2) \left[ \frac{M_1 - M_2}{M_2} \right] U(r)$$

where  $D = \sum_c \delta^c$  = discount factor (assumed constant)

$\frac{M(2)}{M(1)}$  = probability of being employed in state 2

$\frac{M(1) - M(2)}{M(2)}$  = probability of being laid off in state 2

Firms are risk neutral and maximize expected profits subject to

$$V \geq \bar{V} \quad \text{where } \bar{V} \text{ is market determined (reservation utility)}$$

$$5 \quad \underset{\substack{M(1), M(2) \\ W(1), W(2)}}{\text{MAX}} \quad V = \pi(1) \left[ P(1)F(M(1)) - W(1)M(1) \right] + \pi(2) \left[ P(2)F(M(2)) - W(2)M(2) \right]$$

For given levels of employment the first order conditions of the firm's optimization problem yield a constant wage across states of nature, i.e., the optimal contract eliminates any risk due to wage fluctuation. In Baily's model (10) the firms take as given the income available elsewhere to the worker and correctly argue that the constant wage strategy is feasible to the firm provided that mobility costs are large relative to the alternative income of the worker.

As Sargent (47), Baily (10), Solow (49) and Gordon (30) explain, if the worker has no alternative income while unemployed (unemployment benefits, for example) the optimality of a rigid wage contract does not follow. Sargent (47) shows that if this alternative income ( $v$ ) is zero the optimal contract should involve a constant wage and employment, i.e.,  $W(1)=W(2)$ ,  $M(1)=M(2)$ , the worker bears no risk and due to the risk neutrality assumption on the part of firms they completely insure the worker against wage and employment fluctuations.

Once we allow for the existence of government transfers we get a nonconcave utility function of workers. In this case the optimal contract involves a constant wage but fluctuations in employment. Government transfers give the firm an incentive to decrease costs by laying off workers and not cutting wages. In Sargent's model if  $\gamma > 0$  then the optimal strategy for the firm is  $M(1) > M(2)$  and  $W(1) = W(2)$ . If the utility function is concave with unemployment compensation, there is a Pareto improvement if firms layoff workers in bad states (state 2); workers are willing to bear some risk. For certain types of utility functions (additive functions of wages and leisure), workers will bear no risk. However, with stochastic employment and constant wage, the workers' income will still be stochastic. In a general equilibrium context, Baily asserts that a constant wage strategy is also profit maximizing for each single firm provided fluctuations in the demand for their output are not too large.

Implicit contracts theory did not survive unscathed as an explanation of wage rigidity. As pointed above, their feasibility requires the existence of at least two institutional elements:

- 1) labor force specific to each firm
- 2) existence of unemployment compensation

Further refinements of the theory, however, weakened the theory as an explanation of wage rigidity and involuntary unemployment. An excellent explanation of the "state of the arts" in implicit contracts theory is given by Azariadis and Stiglitz (9) and a powerful critique of the theory is found in Akerlof and Miyazaki (4). We would like to highlight the main points of both papers. The Akerlof and Miyazaki paper (A+M) criticizes the implicit contracts model based on the wage bill argument. As we saw before in the absence of an alternative source of income, the optimal contract between risk averse workers and risk neutral firms involves constant employment <sup>AND</sup> wages. Firms in the ex ante period face a perfectly elastic labor supply but the contract acts as a constraint on the possible adjustments of the economy during the second period once the true state of nature is known by all agents. A+M criticize the ex post immobility of labor assumption in the standard implicit contracts model. The worker does not have an ex post employment opportunity outside the firm of his ex ante contract. This assumption "enables the firm to lower the wage rate in exploiting fully the worker's aversion to uncertainty without risking the loss of them to other firms" (A+M, p. 330). Furthermore, since workers can insure against layoffs and get contracts with sticky wages and full employment (following the wage bill argument), A+M state: "the necessary conditions for layoffs is that

the value of the marginal product of labor at full employment be less than the worker's "effective" reservation wage--this is the only unemployment that can occur in the basic Azariadis-Baily model . . . in any event such unemployment is purely voluntary . . ." (A+M, p. 329).

Once the ex post immobility of labor assumptions is removed one can get unemployment equilibrium but layoffs follow an "unrealistic cyclical pattern." When labor is no longer tied to a firm, the evaluation of expected profits and utility both require knowledge of the distribution of the set of all contracts offered in the economy. The opportunities of outside employment act like unemployment benefits but must be endogenously generated.

In the implicit contracts model, employment is a long term attachment. Firms insure workers against fluctuations in the marginal productivity of labor but workers can only buy insurance from their employer.

As Azariadis and Stiglitz (A+S) note  $W=MRPL+NII$  where  $W$ =wage rate,  $MRPL$ =marginal revenue product of labor and  $NII$ -net insurance indemnity. The real wage rigidity follows because the wage is no longer equal to  $MRPL$  and this separation also accounts for the possibility of real wage rigidity without unemployment. To get involuntary unemployment in the model it is necessary that insurance against contingencies be carried out by an outside party.

Furthermore, when workers can change employers ex post, new problems arise regarding the enforceability of contracts. The worker can renege on his contract by refusing to be laid off by the firm when a 'good' state obtains. One explanation for not reneging on a contract emphasized the value of reputation to the worker, but to acquire a reputation you need a multiperiod model. There was a need to make quits costly to the worker but as A+S say it was difficult to distinguish legitimate motives by the workers to quit from opportunistic ones.

Another explanation for "non-Walrasian" fluctuations in employment in a world of imperfect information was to abandon the idea of symmetric or public information of the standard Azariadis-Baily model for asymmetric or private information (where employers are the ones who know the true state of nature). Wages and employment become pre-determined functions of the state announced by the employer. But, when will it be optimal to announce the true state? Since wages are no longer equal to MRPL if the firm tells the truth it may not necessarily maximize profits. The explanation based on asymmetric information proved to be fatal to the theory since anything could happen (we may get over or underemployment). As A+S say: "to sum up: it seems a safe claim that private information by itself is sufficient to explain departures of employment from its fully Pareto optimal volume. First principles of economics, however, do not guarantee that

"involuntary" (that is, inefficient) underemployment or unemployment is a necessary consequence of every informational asymmetry. The direction of the asymmetry depends on several factors, one of them being the nature of this asymmetry" (Azariadis and Stiglitz, p. 11).

Once we also accept the possibility of risk averse firms we may get overemployment or underemployment as a result, depending on the form of the workers' utility function. As a conclusion, the outcome one gets under implicit contracts depends on stringent assumptions about who has what information and special forms of utility functions. "We do not yet have at hand an entirely satisfactory aggregative story of unemployment or of money wage rigidity" (A+S, p. 15). In addition: ". . . All we have to go on is the well-known result of Baily that the wage rate is state invariant under public information when labor supply is inelastic. This stickiness, however, is a property of the real rather than the nominal wage rate, and it is the latter that is assumed to be rigid in Keynesian macroeconomics" (A+S, p. 16). But then what can we do with the postulates of the theory? I agree completely with the opinion of Akerlof and Miyazaki:

. . . the essential rationale for the existence of 'implicit' contracts need not be, and may indeed be quite apart from, risk shifting between firms and workers. The reasons for contractual arrangements could be technological (on the job training), organizational (internal labor markets) or as a response to informational impactedness . . . (Akerlof and Miyazaki, p. 328)

### C. Social Custom Theories of the Labor Market

Within the standard neoclassical approach I believe that the "social custom view" is the most promising in an explanation of sticky wages. Unfortunately (or fortunately) by so doing, some of the underpinnings of the theory are undermined in the attempt of formulating a more realistic approach to the labor market. The approach seems to be fairly new and after going through the different authors' arguments, I get the impression of an implicit recognition that the labor market cannot be analyzed solely through economic principles. In essence, the different authors reflect the conviction that there is "more to a wage than just a price."

Arthur Okun (38) lay great emphasis on the distinction between auction markets and customer markets. Auction markets involve spot transactions and absence of any kind of impediments to trade like transaction or information costs. These markets correspond to the standard Walrasian auctioneer market and are characterized by "impersonal" relations between buyers and sellers. Customer markets, on the other hand, are characterized by long term relationships between buyers and sellers. The explanation for the existence of this type of market evolves around some sort of imperfect information or transaction costs that discourages the search for the lowest price on the part of the buyers.

In relation to the labor market which Okun considers a customer market, he develops a toll model where the interest of the firm and the worker to engage in a long term relation arises from training costs incurred by the firm when hiring a worker. Although Okun accepts the Keynesian idea of workers' concern for their relative wages his main argument for a customer relation between workers and firms is that quits are costly to the firm and offering some combination of wage and job security affects this quit rate. The firm recognizes that its quit rate is sensitive to the relative wage it pays its employees.

This link between quit rates and relative wages introduces "social" elements in the relation the firm has with its employees. When applicants accept a job offer, they have some idea of how their wage stands in relation to the wage they could get in an alternative job if they kept searching.

Firms and workers have a long term relation because due to the training costs that the firm incurs (the firm is making an investment when it hires a worker) it has an interest in recouping some profits from this investment. On the other hand the wage that the worker receives is lower in the initial years of his relation with the firm and he has a stake in staying on the job for the higher prospective wages he will receive in later periods.

Although Okun recognizes at some point that some sort of a "Fair" wage determines contracts in the labor market, his model is not much different from a transaction cost model that underlies the implicit contract theory. He explicitly rejects implicit contracts on the basis of moral hazard and enforceability problems but, from my point of view, his "training costs" and concern for the quit rate do not provide a strong enough foundation for long term contracts. If the problem of the firm is to recover its costs when it hires a worker, why doesn't it insure itself in the financial markets against a possibility that the worker reneges his contract? The implicit contracts school assumed that capital markets did not exist but why should Okun assume it also?

Let me be more clear in my argument. I do not think that the notion of firms buying insurance against quitters is realistic in any way. I think, however, that market imperfections such as training and search costs that form the basis of Okun's toll model do not provide a very convincing explanation of long term contracts that may account for the real wage constancy and fluctuations in unemployment that characterize business cycles.

Solow (5) goes a little further and while Okun sees market imperfections, for Solow the labor market is a case of market failure. Solow also puts a little more flesh to the diffuse idea of a fair wage:

I suspect that the labor market is a little different from other markets, in the sense that the objectives of the participants are not always the ones we normally impute to economic agents, and some of the constraints by which they feel themselves bound are not always the conventional constraints . . ." (Solow 50, p. 3)

Among these nonconventional constraints we find "social conventions whose source is not entirely individualistic." Solow is convinced that customs determine in some amount the outcome in the labor market. A "fair wage" affects wage negotiations between firms and workers and explains in some measure the stickiness of the real wage.

In an analysis of collective bargaining between a union and a firm, McDonald and Solow (37) try to determine what elements may account for constant real wages during business cycles. Business cycles fluctuations affect negotiated outcomes through two effects that reinforce each other with respect to employment and compensate each other with respect to the real wage. However, a key assumption in their model is that product market conditions are more sensitive to business cycles than the reservation wage of the workers; there exist mobility costs when workers change employers. Although they characterize the efficient bargains, they argue that in negotiations between unions and firms concern about equity or "fair shares" may be as important as questions of efficiency.

Once we accept that social conventions can have an impact on wage determination, the obvious question to ask is what determines these social customs or habits. Solow is not very helpful in this respect.

. . . One can ask why workers cling to such costly conventions. It is the job of sociology to answer that question. (Solow 50, p. 8)

In orthodox neoclassical theory, man is seen as a psychological entity or at least his preferences have a psychological origin. Solow implies that economics does not have anything to say with respect to social conventions, this is the role of other social disciplines. But if "economic man is a social, not a psychological category" (Solow 50, p. 10), why should we take social customs as given? We will analyze this question in Section V.

It is a long way to argue that "equilibrium" in a Market (the labor market) is not only determined by agents reacting passively to parametric prices. The idea of a "fair wage" reflects some notion of equity. After all, why call it a fair wage? In Solow (48) we see a model that formalizes this notion of a sticky wage due to fairness considerations. The firm is output constrained and productivity depends positively on the wage. The firm minimizes costs by choosing the wage it will offer in the market, taking into account the effect of the wage on productivity (why

should only the wage affect workers' morale? What about working conditions?). The problem for the firms is:

$$6 \quad \min_w WM(\bar{q}, w) \quad \text{where } W = \text{wage rate} \\ \bar{q} = \text{constrained level of output} \\ M = \text{labor input}$$

From the first order conditions we get:

$$7 \quad M(q, w) + WM_w(q, w) = 0 \quad \text{where } M_w = \frac{dM}{dW} \text{ (partial derivative)}$$

sticky wage implies  $\frac{dW}{dq} = 0$  so differentiating the first

order condition we get:

$$8 \quad M_q + w M_{wq} = 0 \quad \text{where } M_{wq} = \frac{d^2 M}{dw dq}$$

Substituting equation 7 we get:

$$9 \quad M_q - \frac{M(q, w)}{M_w} M_{wq} = 0 \quad \text{or} \quad M_q M_w - M M_{wq} = 0$$

the solution to this equation has the form:

$$10 \quad \log M = A(q) + B(W) \text{ or} \\ M = \frac{a(q)}{b(w)} \quad \text{where } \exp A = a \quad \exp (-B) = b$$

Solving for the level of output we get:

$$11 \quad q = a^{-1} [b(W)M] = q(b(W)M)$$

If the current or future performance of workers depends on their feelings that wage levels are fair, the wage rates appear in the production function constraining firms. (Solow 50, p. 10)

The effect of the wage is a sort of labor augmenting effect. In my opinion what really affects workers' productivity is not the wage offered by the firm per se but the wage relative to the "fair wage." The wage in Solow's model is the wage offered by the firm. The fair wage appears only as an aside. The important point to get is that the fair wage is taken as given; it is not determined inside the economy. The rationale for having employment instability (layoffs) and not wage cutting is that while layoffs affect only a part of the workforce, a wage cut has a stronger effect on productivity since it affects all the employers.

In my opinion Akerlof (1, 2, 3) is really an "innovator" within the neoclassical tradition. Social customs impose a cost on transactors in a market, trade cannot occur at market clearing prices. For Akerlof:

A social custom is an act whose utility to the agent performing it in some way depends on the beliefs or actions of other members of the community. (Akerlof 2, p. 749)

Although his analysis of social customs does not go beyond this definition and the effect of customs (taken as given) on the market, it seems to me that this definition implies that cultural elements determine social customs.

A social custom persists because it is sanctioned by the community's beliefs the punishment imposed on people who break the custom is a loss of reputation. The models that

incorporate social customs have multiple equilibria where at least two are stable. In one of them the custom is obeyed while in the other it has disappeared. For me a fundamental equation in Akerlof's models is the following utility function:

$$U = U(G, R, A, d^C, E) \quad \text{where } E = \text{parameter of tastes}$$

G = consumption of goods

R = reputation

A = dummy variable that reflects obedience of the custom

$d^C$  = dummy variable that reflects belief or disbelief in the social convention

We can notice that if utility depends on reputation, it loses its individualistic character. In my opinion when social customs may affect the agents' behavior in the economy, their transactions will no longer reflect consumer sovereignty in the market. A social custom does not act like an externality. Akerlof's definition reflects the notion that an agent's role in society affects his utility. In the standard neoclassical model, externalities may affect efficiency and introduce a divergence between social and private costs, but we still get market clearing prices. A social custom not only undermines the possibility of market clearing prices. It makes explicit the idea that an agent's utility may depend

on his social interaction with other agents beyond the simplistic notion of an externality.

Unlike Solow, Akerlof does not take the social convention as given. It is affected by how people act and its dynamic behavior determines in what equilibrium the economy will end up in the long run. The dynamic equation takes the following form:

$$\begin{array}{ll}
 13 \quad \dot{\mu} = g(\mu, X) & \text{If } \mu > X \quad \text{then } g < 0 \\
 & \mu < X \quad \text{then } g > 0
 \end{array}$$

Where  $\mu$  = proportion of people who believe in the code

$X$  = proportion of people who obey the code

Akerlof applies his social custom model to the labor market where an equilibrium may be characterized by unemployment. The social custom is characterized by an Exogenous fair wage. Akerlof recognizes that the fair wage should be made endogenous but I believe that by so doing he will undermine further the neoclassical elements of his (somehow nonorthodox) model.

As he says:

Which customs will be obeyed is partly endogenous to the model and partly due to history . . .  
(Akerlof 2, p. 772)

In Akerlof (3) he provides a sociological basis for implicit contracts between workers and firms. Worker's efforts depend on social norms and firms can affect these

norms by paying a wage above its market clearing level. He argues that in this way dual labor markets are determined endogenously:

Primary markets are those in which the gift component of labor input and wages is sizeable and therefore wages are not market clearing. Secondary markets are those in which wages are market clearing. (Akerlof 3, p. 544)

It is interesting to note that the social custom theorists converge part of the way to the recognition that labor is unlike any other input and that one thing is signing a contract with the worker and quite another making him work:

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. (Akerlof 3, p. 545)

What the firm wants when it hires a worker is productive performance which is not readily ascertainable in advance. (Okun 38, p. 62)

The fact that labor is not a commodity and that the capitalist faces a problem of extraction of labor from labor power is something that Marxists have recognized all along (see Bowles (12) and Gintis (27)).

Although I sympathize somehow with Akerlof's endogenous determination of dual labor markets, it is not clear to me how the process takes place. At least for Piore (39, 40) labor market stratification is explained by technological



In the standard neoclassical model (labor auction market), there is the implicit constraint on the firm that it should pay a wage at least as great as the market wage. Firms in this model achieve a boundary solution. In Akerlof's gift model it pays the firm to offer a wage above the market clearing level. His model's conclusions are similar to Solow's (48). "Gift exchange occurs in the sense that the workers' norm for effort depends upon their treatment by the firm" (Akerlof 3, p. 560).

I do think that within the strict neoclassical approach, the social custom theory is the most promising but will not get very far as long as social customs are taken as given (determined outside the economy) or partially endogenous but without taking a more detailed view of the historical and social development of these customs. Even if they do so, I believe the attempt would seriously damage the neoclassical approach to the labor market which is eminently ahistorical. As I have tried to make clear, to me Akerlof's nonindividualistic utility function obscures the role of consumer sovereignty in economics. I believe that their inability to make less diffuse the broad concept of social customs stems from the traditional definition of economics which reflects economic relations as interaction between man and nature:

The science which studies human behavior as a relationship between ends and scarce means which have alternative uses. (Robbins 45, p. 15)

As long as the economy is taken as something different and very thinly linked to other social spheres or sites (Bowles and Gintis (13)) and economic outcomes are unrelated to agents' behavior within the family, state, etc., then social customs will still be taken as given and the concept will be so broad that any nonmarket clearing price can be explained by the existence of a social custom. Even if one does not agree completely with the Neomarxian approach, we cannot deny that by taking into account the interaction between the different social sites in their analysis they are at least looking the right way. For a development of this idea see Bowles and Gintis (13). To end my long discussion of the social customs theory, let me quote Alfred Marshall with whom I partially agree:

To say that any arrangement is due to custom, is really little more than to say that we do not know its cause. I believe that very many economic customs could be traced, if we only had knowledge enough to the slow equilibration of measurable motives . . . (Marshall 36)

#### D. Labor Market Stratification (Segmentation) View

The fourth offspring of the neoclassical approach can claim as neoclassical only its intellectual origins. The theory arose out of a conviction that the only way orthodox theory could explain the characteristics of the labor market was with the use of "ad hoc" assumptions.

Although both the labor market stratification (or dual labor market) school (Piore, Doeringer et al) and the labor market segmentation school or radical school (Edwards, Reich and Gordon) study the same set of phenomena they offer different explanations that, I think, reflect different views about the historical development of the labor market.

In this last part of the neoclassical view I will analyze the dual market school jointly with the radical school to highlight their similarities and differences.

What are the characteristics of the labor market that both approaches seek to understand? As Piore (40, p. 1) says:

The original version of the dual labor market hypothesis postulates a division between a primary and a secondary sector distinguished from each other by the greater stability of jobs and workers in the primary sector and the tendency for that sector to offer jobs which, relative to the secondary sector, have higher pay, better working conditions, greater change of advancement, and an institutional, as opposed to personal, relationship between supervisor and subordinate.

Further on, the primary sector is divided into two parts: Lower tier (subordinate primary)--characterized by routinized work, workers tend to develop specific skills. Workers are expected to show behavioral patterns oriented towards dependability, responsive to rules, etc. Workers have the expectation of a secure and stable job: they will move along a career ladder within the firm. Workers acquire

skills through a "learning by doing" process like "on the job" training programs. Age and experience are important factors in the development of skills. In relation to this workers are not expected to have a formal education since the return to it is very low for these type of workers. Relations between supervisors and supervisees are institutionalized.

Upper tier (independent primary). Workers in this group are of the managerial or professional type but unlike workers in the lower primary tier, they develop a career ladder by moving among different firms and not by developing a long term relation with one firm. However, their pattern of employment instability is different from the one that characterizes the secondary segment.

"The only thing a worker brings to a secondary job is labor power; the worker is treated and paid accordingly" (Edwards 25, p. 168). Few skills are required and few can be learned. Workers in the secondary segment face dead end employment.

Workers in the primary independent market move from one job to the other but each job signifies a career advancement, people move up a career ladder. People in this segment have a less institutionalized relationship with superiors and subordinates than the lower tier. Frequently formal education is a prerequisite for work in this segment and people are expected to develop cognitive skills.

These are the "stylized facts" both the dual labor market theorists (Piore (39, 40), Doeringer and Piore (43)) and radical economists (Edwards (24, 25), Gordon (29), Reich et. al (44)) seek to explain. They differ in what they consider to be the cause of the structural division in the labor market. Further points of similarities are the following:

- 1) race and sex discrimination tend to reinforce the structural divisions in the labor market.
- 2) workers differ not only in mobility patterns but more importantly, they tend to develop different behavioral patterns
- 3) wage and unemployment are no longer directly related. As a matter of fact, they are considered to be two distinct processes (Piore (41))
- 4) the wage may still respond to competitive forces specially at the points of entry or hiring spots within the internal labor market but the determination of the wage structure becomes institutionalized through administrative procedures like job evaluation (Doeringer and Piore (43)) and class struggle (Reich et. al. (44), Edwards (24)). One important difference between both schools in this point is the following: Dual labor market theorists take the technology and market relations

as constraints on the determination of the wage structure while for radical theorists market or exchange relations really reflect social relations within the production process and the technology is also determined by the social relation of productions and so, by class struggle. However, wages are no longer related to workers but to the job structure:

The worker, therefore may never produce enough in a particular job classification to cover wages during the period in which he is employed in that classification. Both worker and management decisions will, as a result, center upon a structure of wages over the series of jobs which the individual is likely to hold over his career in the enterprise, not upon particular wage rates. The wage structure which in neo-classical theory results from a series of separate decisions upon individual job rates, becomes itself the focus of decision making. (Piore and Doeringer 43, p. 76)

In theory, wages are paid to workers, as a factor of production. In many jobs in the economy, wages are not attached to workers but to jobs. (Doeringer and Piore 43, p. 72)

If I tried to synthesize in a few words the difference between both schools I would say that they see different aspects of the production process as the determinants of the segmentation of the labor market. While Piore et al emphasize the evolution of technology (or forces of production) as the exogenous cause of this stratification, the radical school of Edwards, Gordon and Reich centers the analysis on

the class struggle between capitalists and workers over control of the production process. Within the Neomarxian approach the forces of production are themselves something to be explained and not exogenous as Piore et al consider. This implies that for the radical school the causation between forces of production and social relations of production is not a strict one way street from the former to the latter.

The formal theory of the evolution of technology in the dual labor market view is imbedded in a broader theory of economic dualism (see Piore (40)). For them the stratification in the labor market reflects nothing else than the evolution of the division of labor and process of specialization along strictly Smithian lines:

The theory of technology is an expanded version of Adam) Smith's conception that the division of labor is related to the extent of the market. (Piore 40, p.3)

Technology permeates not only the development of institutions in the labor market but the criteria of job classification and the determinants of the wage structure as we can see from the elements considered in a job evaluation:

First a set of categories is selected upon which differences in wage rates will be based. These generally include categories of characteristics relating to the job itself (skill, working conditions, responsibility for equipment, responsibility for directing other workers, etc.) and categories of characteristics pertaining to the individual holding the job (education, experience, and the like) . . . (Piore and Doeringer 43, p. 66)

In the job evaluation form we do not find elements like the following work habits that play an important role in stabilizing the work force within the modern corporation according to the radical view (Edwards, 24, 25):

- 1) rules orientation
- 2) habits of predictability and dependability
- 3) internalization of goals and values of the firm

Piore is careful not to particularize technology as the only cause of division in the labor market but as far as I would understand it is the only element on the labor demand side that determines the job structure within the labor market. The important point is not that it is the unique element but that it is a Constraint. To the traditional Smithian explanation of the extent of the market as determinant of the division of labor, Piore adds three new elements:

- 1) standardization of product
- 2) stability of demand
- 3) uncertainty of demand

These are standard Galbraithian elements in the explanation of the development of the technostructure. These elements on their own explain the duality characteristic of product markets. In these markets we have large core firms that control their environment. They have a stable demand

and they stabilize their input markets through the development of internal labor markets. Employment within these firms is linked to the primary market (firms are characterized mainly by bureaucratic forms of control as we will see shortly (Edwards, 25). The unstable part of demand is covered by a fringe of competitive firms (simple hierarchical control) and workers are drawn from the secondary labor market.

This vision of technology contrasts with the Neomarxian approach. For example for Marglin (34):

The capitalist division of labor, typified by Adam Smith's famous example of pin manufacture, was the result of a search not for a technologically superior organization of work, but for an organization which guaranteed to the entrepreneur an essential role in the production process . . .

Technology in Piore's scheme is the all pervasive force in the demand side of the labor market but what about the supply side? The supply of labor for the different segments of the labor market come from different classes, i.e., each segment is linked on the supply side to a particular class. But we have to be aware that classes in Piore's context (39) are not classes in the Marxian sense, nowhere do we find classes in their relations to the means of production. Classes to Piore are defined in terms of Subcultures and so we get the following interrelation:

- a) lower class subculture--secondary sector
- b) working class subculture--lower tier-primary sector
- c) middle class subculture--upper tier-primary sector  
(work and education become ends themselves)

How are labor demand and labor supply related if competitive market forces are ineffective or absent? Piore introduces the diffuse concept of "mobility chain":

The concept of a mobility chain represents an attempt to formalize the intuitive notion that socio-economic movement in our society is not random but tends to occur in more or less regular channels. These channels are such that any given job will tend to draw labor from a limited, and distinct number of other particular points. As a result, people hold jobs in some regular order or segments. Such a sequence, we shall term, a mobility chain. The points along a mobility chain may be termed stations: they generally include not only jobs but other points of economic and social significance. Thus, people in a given job will tend to be drawn from a limited range of schools, neighborhoods, and types of family background; and conversely, people leaving the same school or neighborhood will move into one of a limited set of employment situations. (Piore 39, p. 6)

The worker that moves along a mobility chain is characterized by a set of productive traits that will change with his experience along this chain. A fundamental element in acquiring productive traits is the training process that occurs within INFORMAL social groups. Productive traits are of two types: Specific traits that are really Pavlovian responses to stimuli from the environment, and general

traits that represent an "inductive deduction" of rules and response.

The acquisition of productive traits depends on two basic processes that underlie the sociological underpinning of Piore's theory:

- 1) Automatic incidental learning process that occurs as the worker moves along the different jobs that compose his/her career ladder. The learning process occurs through initiation and reinforcement of habits and socialization through the work group.
- 2) Custom. Reflects the development of norms that regulate different aspects of the workplace, e.g., the way in which work is done, how individuals relate to each other, etc. Customs develop through a dependence of current work experience on past practices or are imported from a larger community from which the work force is drawn. (Piore 42)

The workers participate in different environments (or sites in Bowles and Gintis (13)) and each of these environments will reinforce certain characteristics and patterns of behavior on the individual. The traits these different environments require may complement or conflict each other. This, in turn, will determine the speed with which the worker will adapt to a new environment and internalize the

norms that rule it, i.e., the speed at which the worker will be socialized.

Besides some vague linkage between the wage structure within a firm and competitive forces in the external market, there is no formal attempt to make more clear and rigorous this relation. My belief is that within an internal labor market, the wage rate loses much of its allocational role and becomes enmeshed in a whole complex of different institutional mechanisms that determine the allocation of labor within a firm. It is difficult to discern what is the true role of the wage rate inside these forces. From my point of view once the wage rate is tied to a job and not to a worker it will not, in itself, play a predominant role in the scheme of remunerations given to a worker nor in the allocation mechanism within the firm.

Dunlop (22) however, provides an analytical framework to relate the internal wage structure with the external market. Once again, the concern is not with what determines "a" wage rate but the wage structure. The wage structure within a firm will be composed of a limited number of job clusters. These clusters are formed by a stable group of jobs linked together by technology, administrative organization or social customs. Job clusters form part of stations in a mobility chain (Piore (42)). Stations are a broader concept than job clusters because the former takes into account the different

social environments in which the individual participates while job clusters refer to the work place. Within each job cluster we will find a key wage rate that will provide the link between the external and internal labor markets.

The dual labor market is related to product markets via "wage contours." Wage contours reflect the stabilization of input and output markets done by "core" firms. A wage contour is a stable groups of wage determining units linked by:

- 1) similar product markets
- 2) similar sources for recruitment of their labor force
- 3) common labor market organization

Dunlop provides the most "technological" view about the determination of the wage: ". . . product market competition and conditions decisively influence the structure of wage rates. In the longer run, however, the wage structure is a reflex of the pattern and speed of industrialization" (Dunlop (22) p. 73).

For radical theorists the segmentation of the labor market is tightly linked to the transition from competitive to monopoly capitalism. Edwards (24) argues that internal labor markets were created as an effort to alter social relations of production. Although firms saw the need to stabilize their input markets, the labor demand side of the different

segments does not reflect purely technological causes as Piore et al argue. The labor market segmentation arose from the need of capitalists to stabilize their work force through control of the production process.

Firms will develop different systems of control depending on their position in the development of monopoly capitalism. Three main types of control have accompanied the historical development of capitalism:

- 1) Simple or hierarchical control. Characteristic of entrepreneurial firms that form the competitive fringe in monopoly capitalism. Since firms have unstable demand for their products, their employment pattern will also be unstable. Their labor supply will be withdrawn mainly from secondary labor markets. The hierarchical structure in this firm resembles **AN ARMY**. Relations between supervisors and the work force are personalized. Power is exercised in an open and arbitrary manner.
- 2) Technical control. This type is really a transition phase from simple control to institutionalized or bureaucratic control. As firms grew, the first requirement in the stabilization of their work force was to have an homogeneous labor force. This was achieved through changes in technology that imposed a uniform rhythm to the assembly line and most

important of all, tied workers to a particular station along the assembly line. Workers could no longer socialize in the work place. "Power was made invisible in the structure of work" (Edwards 25, p. 110). Technical control followed a simple divide and conquer strategy from the part of the capitalists but by not affecting the social organization of worker, it was unable to solve conflicts over control of the production process.

The only way that a system of control could be expected to survive was if it addressed the three main elements of a system of control:

1. direction of work tasks
  2. evaluation of work performed
  3. dicipline
- 3) Bureaucratic or institutionalized control was the one that routinized these three functions and brought about the development of internal labor markets. It was the institutionalization of hierarchy within the firm. As Edwards (24) argues, bureaucratic control had important consequences for the social relations of production:

- a) Power relations of hierarchy and authority were made invisible
- b) the formal structure of hierarchy within the firm allowed differentiation of jobs. Emphasis was put on elements of the social organization of production that differentiated between jobs.
- c) the role of supervisor was transformed into evaluator and monitor of workers' performance
- d) workers faced an impersonal organization to solve their grievances and collective worker opposition was undermined. "Unions accepted the organization of work and directed their energies toward non-control issues" (Edwards 24, p. 92).

Rewards under bureaucratic control were related to behavior patterns of workers, it emphasized work habits. These behavioral traits are:

- 1) orientation towards roles (directed at workers in lowest hierarchical levels)
- 2) habits of dependability and predictability (middle level workers)
- 3) internalization of goals and values of firms (top management)

Segmentation of the labor market according to radical theorists undermines workers' class consciousness since the only form of opposition left to them is individual. Workers in different segments undergo different working experiences and see each other not as members of the same class with a unity of goals but as competing groups with conflicting goals. Radical theorists do not negate the role of technology in the segmentation of the labor market but for them technology is an endogenous not an exogenous variable. The choice of technique depends on its profitability and

. . . Whether it is profitable depends not only on relative wage costs but also on the rate at which labor power is transformed into labor--that is, on the organization of the labor process itself. (Edwards 25, p. 180)

For a formal model of this concept of profitability see Bowles (12) and Gintis and Ishikawa (28). Control and technology are not unrelated aspects of the production process, they both reflect the class struggle between labor and capital:

The system of control approach leads to a somewhat different understanding of the role of job skills, schooling, on the job training, experience, and other technical characteristics of labor . . . it is the system of control that creates the context within which experience, training, schooling, skills and other attributes assume their importance. (Edwards 25, p. 179)

Rubery (46) makes an interesting critique to radical theorists:

Workers, in these theories, play little part in the formation of structured labor markets. A basic premise of radical theory is that the development of a homogeneous labor force would maximize the benefit to workers and the disadvantage to the capitalists. . . . this proposition ignores the practical problems for workers of establishing a bargaining position which perhaps can only be established and maintained through the development of a structured labor force. (Rubert 46, p. 21-22)

Radical theorists in the U.S. give the impression that the segmentation of the labor market was to the disadvantage of the working class, it was a system imposed by the capitalists to undermine the power of unions and divide the workers: a divide and conquer strategy. Rubery argues that this point of view does not apply to England where workers' organizations are much stronger than in the U.S.:

The establishment of a system of high wages, secure employment and promotion ladders, may, from this viewpoint be thought to indicate workers' success in regaining control lost through the destruction of the craft system, rather than a further increase in capitalists' control. (Rubery 48, p. 29)

Rubery's critique is very interesting but I believe that even though the segmentation of the labor market in the U.S. and the U.K. may have different causes they are still the outcome of class struggle between capitalists and workers. Whatever their original causes, the historical development

of the different segments will depend on the evolution of class struggle. Even if labor market segmentation in the U.S. reflects the fact that the balance of power tilted in favor of the capitalist class, the bargaining struggle between workers and capitalists will determine the evolution of the different divisions. Sometimes the workers will win and sometimes the capitalists.

#### IV. The Neomarxian Approach

One of the main differences between the neomarxian and neoclassical theories is their view of the production process. For the neoclassical theory production is purely technological in character. The firm is characterized by a set of market exchanges and physical input-output relations. The entrepreneur is the agent that determines these exchanges with input and output markets and the allocation of inputs in the production process.

Rather than place the capitalist enterprise at the center of the analysis, neoclassical economics portrays it as a passive actor that simply optimizes subject to all powerful market forces and given technical constraints. (Lazonick 33, p. 2)

In the Walrasian or neoclassical system, labor is just like any other input. What the entrepreneur buys (labor) is what he gets. There is no problem in getting the worker to perform as is required.

In Marxian economics, labor is not an input like any other nor can the firm be characterized by a set of technological relations, it is more than just a production function. The production process is also characterized by class struggle embedded in the social relations of production. Social relations of production (SRP) cannot be reduced to exchange relations determined by technology and preferences nor can the organization of the firm be understood as a cost minimization problem. The essence of capitalism is the exploitation of labor through private ownership of the means of production and the system of wage labor. The distinction between labor power and labor is the basis for understanding the social character of production (see Gintis (27)). When the capitalist goes to the market he buys labor power (the capacity of the worker to produce) but what really goes into the production process as input is labor. The capitalist has the problem to extract labor from labor power. The Marxian approach adds a third dimension to the Walrasian characterization of the production process (Bowles (12))

- a) market exchanges (profit maximization)
- b) technological relations (production function)
- c) social relations of production reflecting class conflict between labor and capital (problem of extracting labor from labor power)

Furthermore, labor is both an input and output of the production process. The workers' consciousness plays an important role in the production process.

. . . the profitability of production will depend intimately on the consciousness of workers. In this sense the labor exchange differs radically from a true market exchange, in which the parties are concerned with only the attributes of the things exchanged, and not with the personal attributes of the other parties themselves. The labor/labor power distinction, however, implies that capitalist production will be organized not only to produce a marketable commodity but also to reproduce, from period to period, forms of worker consciousness compatible with future profits. (Gintis 27, p. 42)

Workers' objectives will enter in conflict with the capitalist's pursuit of profits and the latter will impose constraints on workers' behavior that will guarantee the well functioning of the labor extraction mechanism and so the profitability of production. These constraints will be structured along organizational variables under the capitalist's control (Gintis, 27, p. 43):

- a) extent and character accountability
- b) manipulation of worker consciousness
- c) pay scales and criteria of promotion and dismissal

The organization of the production process will be structured according to power relations within the firm. As a result this organization will have the following effects:

- 1) the capitalist will pay a wage above the market clearing level to increase the cost of being fired to the worker
- 2) the development of job ladders will be used as instruments that guarantee the extraction of labor from labor power. As we have seen, the development of internal labor markets will provide privileges to existing workers and will undermine the workers' consciousness of class.

Bowles (12) formalizes these concepts in a model where the maximization of profits will be affected by class conflict. Profit maximization will be constrained by technology (production function) and a labor/labor power extraction function. The model is:

$$\text{MAX } \pi = F(\bar{X}, \bar{L}) - P\bar{X} - (W + P_s S)L_p$$

$$\text{Subject to } \bar{L} = L^*L_p = h \left[ p^d(S)W^* \right] \bar{L}_p$$

where:  $\bar{L}_p$  = labor power bought by the capitalist in the market  
 $S$  = supervision input--does not enter into the production process  
 $P_s$  = cost of supervision  
 $X$  = material inputs  
 $W$  = wage contracted with the worker  
 $\bar{L}$  = labor (input into the production process)

$L^*$  = a variable that measures intensity of work effort and is determined by the worker

$p^d$  = probability of being detected (workers may take on the job leisure), depends on supervision

$h[\cdot]L_p$  = labor/labor power extraction function

$W^* = W - [\beta W^1 + (1-\beta) W^c]$  Measures the worker's

cost of being fired and is given by the difference (assumed positive) between the wage paid to the worker and a weighted average of the wage in an alternative employment ( $W^1$ ) and unemployment compensations ( $W^c$ ). The weights are the probability of finding another job ( $\beta$ ) and of being unemployed ( $1-\beta$ ).

An equilibrium in the labor market is given by levels of wage, employment and labor extraction such that none of the agents have the ability or interest to alter. The equilibrium will be characterized by a non-clearing labor market. The firm will offer a wage such that for a given work effort the workers are not indifferent between working and being unemployed. There will be involuntary unemployment (reserve army).

The firm alters its labor cost by choosing a point along the labor extraction function. According to Bowles the class struggle at the point production is reflected by shifts in the labor extraction function, i.e., for any given wage rate and labor power (assuming  $\beta$ ,  $W^1$ ,  $W^c$  are not under

the control of the capitalist), the capitalist will obtain more or less labor depending on the balance of power at the work place. I would consider that according to the development of the social relations of production and the class conflict they reflect, not only will the labor extraction function shift but it may very well change shape. Gintis and Ishikawa (28) provide a more detailed model along these lines that incorporates the firm's and workers' reactions not only to outcomes within the production process, but also to macroeconomic events.

Although all along it has been argued that a capitalist buys labor power in the market and hence, along strictly Marxist lines labor power is a commodity, Bowles and Gintis (13) argue on the contrary. For a good to be considered a commodity it must be produced by abstract labor (labor in its general form--what is common to all productive activity). Labor power then, is not a commodity since it is not produced in the site of capitalist production, labor power is produced within the family with household labor. Since the allocation of household labor is not determined through market exchanges it cannot be considered abstract labor. The value of labor power, as the value of all other commodities, should be determined according to its conditions of production. The production process of labor power, however, does not occur within the capitalist mode of production. Bowles and Gintis (13) conclude:

. . . the condition under which the value of labor power (defined as a commodity) is identical to the socially necessary costs of production of the wage worker is that the house worker not perform unpaid labor time. By collapsing the terms value of labor power and labor time socially necessary to reproduce the worker the Marxian theory of value commits itself to the result that while wage workers are exploited, house workers are not! In this case the internal relations of the family would be represented by an equal exchange of labor services for commodities. (Bowles and Gintis 13, p. 12)

The long run equilibrium wage rate (conventional wage-- see Marglin (35)) in the neomarxian approach is not completely determined by market forces. It is determined by social and historical forces, mainly class conflict. The demand for labor is given by the capitalists' drive for accumulation. It would seem that labor demand is technologically determined but we must remember that the technological coefficients of a production function are also determined by class conflict. On the supply side the creation and recreation of the industrial reserve army will affect the bargaining power of the working class over the determination of the conventional wage. The existence of the industrial reserve army defines a perfectly elastic labor supply at the conventional usage. The market wage will respond to supply and demand by temporarily deviating from the conventional wage but will eventually converge to this value.

The conventional wage in the neomarxian approach does not function as a price that determines the allocation of

labor throughout the economy. It is an element that reflects the underlying class conflict in capitalism.

## V. Conclusions

One of the accepted virtues of the price mechanism is its role in the efficient allocation of scarce resources to competing ends in an economic system. In orthodox economic theory this is the role of the wage rate. If the wage rate is not perfectly flexible and responds to excess supply or demand in the labor market we will get a misallocation of resources, unemployment and the economy will operate inside the production possibilities frontier.

Keynes was the first (to my knowledge) to emphasize that the institutional structure of capitalism may be such that the nominal wage rate would be downward inflexible. Workers would be willing to work at the going wage rate or less but they would be unable to do so because they would not on their own attempt to undercut the wages of people already employed. Firms would be unwilling to hire them at a lower wage for fear of jeopardizing their existing work force or because they did not know if they would be able to sell the product obtained by increasing their labor force. Even if the unemployed and firms agree to decrease the money wage and increase employment, there might not exist an

institutional mechanism that would allow them to do this. The unemployment one could see on the streets was Involuntary Unemployment.

The new-classical macroeconomics explains unemployment through misperceptions and imperfect information. People are not involuntarily unemployed, they just decided to increase their consumption of leisure. The wage rate is not sticky, as a matter of fact, it clears the labor market continuously.

However, the rigidity of the real wage during recessions when unemployment increases is a fact of life. Simple explanations like an excess demand for leisure will not do. After all, people's misperceptions cannot continue to exist. A serious macroeconomic theory has to account for real wage rigidity and involuntary unemployment. The labor market is not characterized by information based imperfections. It is a market that fails in its allocational role.

How do the different theories analyzed account for real wage rigidity? The most serious explanations reflect the idea that the wage rate does not only allocate resources. It is determined by social forces as well as by supply and demand. While for some theories supply and demand are still the most important determinants of the wage rate, they all agree that social elements due to the interaction of people that occurs in the labor market, affects the wage rate.

The problem now is: if social forces (customs, culture, class struggle, etc.) determine the wage rate, do we take them as given? Neoclassical theory is inclined to say yes while the dual labor market theorists and the neomarxians say no.

When neoclassical theory took preferences and technology as given, the idea was hardly rejected. Most economists do not argue that market outcomes determine preferences so they may be taken as given. After all, behavioral relations derived from preferences are the ones that really determine prices. If we want a sound theory of prices, we have to explain how supply and demand (these behavioral relations) are determined, i.e., they are endogenous variables.

I believe that to be able to explain how wages are determined in the economy and why they are sticky, we need to explain how social customs are determined. They do not affect the wage rate indirectly through supply and demand, their effect is direct. The wage rate is not a simple price.

I agree with Piore (42) that we need a sociological theory of wages. How are the social forces that affect the wage rate determined? We need to integrate standard economic theory with what other social sciences say about social reality, how do they explain social behavior? I do not imply that a full integration is needed. My point is far from it. What I want to argue is that to understand what happens in

the labor market we must cease to study it with tools designed to analyze the exchange between man and nature as Lord Robbins' definition of economics implies. Other social sciences may shed light on why the wage rate does not respond only to market forces. After all, we cannot pretend that people's behavior in the labor market (or in the economy for that matter) is independent of their behavior in other social spheres (family, state, etc.).

The neomarxian approach has always emphasized the social and historical elements that determine the wage rate. Dual labor market theorists (Piore et al) have started to do that. Piore argues that class subculture determines the labor supply of the different segments of the labor market. His emphasis on cultural elements and his arguments that the worker's other environments may reinforce attitudes that may help him or bring him into conflict with his work environment can be enriched by Talcot Parson's functionalism (Theory of Social systems).

As long as we do not attempt to explain how the social determinants of the wage rate are themselves determined, wage rigidity will always be a puzzle in economics.

VI Bibliography

## Abbreviations:

A.E.R. = American Economic Review

C.J. Econ = Cambridge Journal of Economics

Can. J. Econ. = Canadian Journal of Economics

E.J. = Economic Journal

J.E.B.O. = Journal of Economic Behavior and Organization

J. Macr. = Journal of Macroeconomics

J.P.E. = Journal of Political Economy

J.P.K.E. = Journal of Post-Keynesian Economics

O.E.P. = Oxford Economic Papers

QJE = Quarterly Journal of Economics

R.R.P.E. = Review of Radical Political Economics

1. Akerlof, G. "The Economics of Caste and of the Rat Race and other Woeful Tales." Q.J.E., 90, 1976: 599-617.
2. Akerlof, G. "A Theory of Social Custom, of which Unemployment may be One Consequence." Q.J.E., 94 1980:749-775.
3. Akerlof, G. "Labor Contracts as Partial Gift Exchanges." Q.J.E., 97, 1982:543-569.
4. Akerlof, G. and Miyazaki, H. "The Implicit Contract Theory of Unemployment Meets the Wage Bill Argument." R.E.S., 47, 1980:321-338.
5. Alchian, A. and Demsetz, H. "Production, Information Costs and Economic Organization." AER, 62, 1972.
6. Amadeo, E. "Desemprego, Salarios E Precos." (Unemployment, Wages and Prices). Universidade Federal De Riode Janeiro, Brazil (1982)

7. Appelbaum, E. "The Labor Market in Post-Keynesian Theory." in Piore, M., ed. Unemployment and Inflation. New York: M.E. Sharpe, Inc., 1979.
8. Azariadis, C. "Implicit Labor Contracts and Underemployment Equilibria." JPE, 83, 1975:1183-1202.
9. Azariadis, C. and Stiglitz, J. "Implicit Contracts and Fixed-Price Equilibria." Q.J.E., 98 (Supplement) 1983:1-22.
10. Baily, M.N. "Wages and Employment under Uncertain Demand." R.E.S., 91 (1974):37-50.
11. Begg, D. "Rational Expectations, Wage Rigidity and Involuntary Unemployment: A Particular Theory." O.E.P., March 1982.
12. Bowles, S. "The Production Process in a Competitive Economy: Walrasian, Neo-Hobbesian, and Marxian Models." (mimeo) University of Massachusetts at Amherst, 1983.
13. Bowles, S. and Gintis, H. "Structure and Practice in the Labor Theory of Value." R.R.P.E., 12 (1981).
14. Bowles, S. and Gintis, H. "The Crisis of Liberal Democratic Capitalism: The Case of the United States." Politics and Society vol. 11, no. 1 (1982).
15. Calvo, G. "Quasi-Walrasian Theories of Unemployment." A.E.R., 69, 2, 1979:102-107.
16. Calvo, G. and Wellisz, S. "Supervision, Loss of Control, and the Optimum Size of the Firm." JPE, 86, 5, 1978:943-952.
17. Calvo, G. and Wellisz, S. "Hierarchy, Ability and Income Distribution." J.P.E. vol. 87, 5:1979.
18. Chick, U. Macroeconomics After Keynes. Cambridge, Mass: MIT Press, 1983 (Chs. 1, 7, 8).
19. Coase, R. "The Nature of the Firm." Economica. Nov. 1937:386-405.
20. Davidson, P. "The Marginal Product Curve is not the Demand Curve for Labor and Lucas's Labor Supply Function is not the Supply Curve for Labor in the Real World." JPKE, 6, 1, 1983:105-117.

21. Deaton, A. and Muelbauer, J. Economics and Consumer Behavior. Cambridge Univeristy Press, 1982.
22. Dunlop, J. "Wage Contours." in Piore, M., Ed. Unemployment and Inflation. New York: M.E. Sharpe, Inc., 1979.
23. Eichner, A. The Megacorp and Oligopoly. New York: M.E. Sharpe, Inc., 1982 (Ch. 5).
24. Edwards, R. "The Social Relations of Production in the Firm and Labor Market Structure." Politics and Society, 1975:83-108.
25. Edwards, R. Contested Terrain. New York: Basic Books, Inc., 1979.
26. Fama, E. "Agency Problems and the Theory of the Firm." J.P.E. vol. 88 no. 2 (1980);288-307.
27. Gintis, H. "The Nature of Labor Exchange and the Theory of Capitalist Production." R.R.P.E., 1976.
28. Gintis, H. and Ishikawa, T. "Wages, Work Discipline and Macroeconomic Equilibrium." mimeo, 1983.
29. Gordon, D. Theories of Poverty and Underemployment. D.C. Heath and Co., 1972.
30. Gordon, R. J. "The Theory of Domestic Inflation." A.E.R. vol. 67 no. 1 (1977):128-134.
31. Hicks, J. The Crisis in Keynesian Economics. New York: Basic Books, Inc., 1974.
32. Keynes, J. M. The General Theory of Employment, Interest and Money. New York: Harcourt, Brace and Word, Inc., 1964.
33. Lazonick, W. "Class Relations and the Capitalist Enterprise." H.I.E.R. Discussion paper. no. 980, May 1983.
34. Marglin, S. "What Do Bosses Do?" R.R.P.E. vol. 6, no. 2, (1974).
35. Marglin, S. Growth, Distribution and Prices. Cambridge, MA: Harvard University Press. (forthcoming), 1984.

36. Marshall, A. "The Present Position of Economics." in A.C. Pigou (ed.) Memorials to Alfred Marshall 1925:152-174.
37. McDonald, I. and Solow, R. "Wage Bargaining and Employment." A.E.R. vol. 71 no. 5 (1981):896-908.
38. Okun, A. Prices and Quantities. The Brookings Institution. Washington D.C., 1980.
39. Piore, M. "Notes for a Theory of Labor Market Stratification." MIT working paper no. 95, 1972.
40. Piore, M. "On the Technological Foundations of Economic Dualism." MIT working paper no. 110, 1973.
41. Piore, M. "Introduction." in Piore, M., ed. Unemployment and Inflation (op. cit.).
42. Piore, M. "A Sociological Theory of Wages." in Piore, M., ed. Unemployment and Inflation. (op. cit.).
43. Piore, M. and Doeringer, P. Internal Labor Markets and Manpower Analysis. Lexington, MA: D.C. Heath, 1971.
44. Reich, M. et al. "A Theory of Labor Market Segmentation." A.E.R. vol. 63 no. 2, 1973:359-365.
45. Robbins, L. The Nature and Significance of Economic Science (1932).
46. Rubery, J. "Structured Labor Markets, Worker Organization and Low Pay." C. J. of Econ. vol. 2 1978: 17-36.
47. Sargent, T. Macroeconomic Theory. New York: Academic Press, 1979.
48. Solow, R. M. "Another Possible Source of Wage Stickiness." J. of Macr. vol. 1 no. 1 1979:79-82.
49. Solow, R. "Alternative Approaches to Macroeconomic Theory: A Partial View." Can. J. Econ. August 1979:339-354.
50. Solow, R. "On Theories of Unemployment." A.E.R. vol. 70 no. 1 1980:1-10.
51. Spence, M. "Job Market Signalling." Q.J.E. 1973.

52. Trevithick, J. A. "Money Wage Inflexibility and the Keynesian Labour Supply Function." E.J. 86(June 1978):327-332.
53. Weintraub, S. "The Missing Theory of Money Wages." J.P.K.E. vol. 1 no. 2 (1978/79):59-78.
54. Williamson, O.E. "The Organization of Work." J.E.B.O. vol. 1 no. 1, 1980:5-38.

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