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A FORMAL THEORY OF THE EMPLOYMENT RELATIONSHIP

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In economic theory employees (persons who contract to exchange their services for a wage) enter into the system in two sharply distinct roles. Initially, they are owners of a factor of production (their own labor) which they sell for a definite price. Having done so, they become completely passive factors of production employed by the entrepreneur in such a way as to maximize his profit.

This way of viewing the employment contract and the management of labor involves a very high order of abstraction--such a high order, in fact, as to leave out of account the most striking empirical facts of the situation as we observe it in the real world. In particular it abstracts away the most obvious peculiarities of the employment contract, which distinguish it from other kinds of contracts; and it ignores the most significant features of the administrative process--i.e., the process of actually managing the factors of production, including labor. It is the aim of this paper to set forth a theory of the employment relationship that reintroduces some of the more important of these empirical realities into the economic model. Perhaps in this way a bridge can be constructed between the economist, with his theories of the firm and of factor allocation, and the administrator, with his theories of organization--a bridge wide enough to permit some free trade in ideas between two intellectual domains that have hitherto been quite effectively isolated from each other.

1. The Concept of Authority

The authority relationship that exists between an employer and an employee, and which is created by the employment contract, will play a central role in our theory. What is the nature of this relationship?

We will call our employer E, and our employee W. The whole collection of specific actions that W performs on the job (typing and filing certain letters, laying bricks, or what not) we will call his <u>behavior</u>. We will associate with this behavior a scalar variable x. That is, we will consider the set of all possible behavior patterns of W, and to each pattern in this whole set we will assign some value of the variable x. The various values of x might then represent different sets of tasks, different rates of working, different levels of accuracy, and so forth.[1]

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[1] Our theory is closely related to the theory of a two-person non-zero-sum game, in the sense of von Neumann and Morgenstern. The various values of x correspond to the several strategies available to W.

We will say that E exercises <u>authority</u> over W if W permits E to select the value of x. That is, W accepts authority when his behavior is determined by E's decision. In general, W will accept authority only if x_0, the value of x chosen by E, is restricted to some given subset (W's "area of acceptance") of all the possible values. This is the definition of authority that is most generally employed in modern administrative theory.[2]

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[2] See Simon, <u>Administrative Behavior</u>, p.125; Barnard, <u>Functions of the Executive</u>, p.163.

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2. The Employment Contract

We will say that W enters into an <u>employment contract</u> with E when the former agrees to accept the authority of the latter and the latter agrees to pay the former a stated wage (w). This contract differs fundamentally from a sales contract--the kind of contract that is assumed in ordinary formulations of price theory. In the sales contract each party promises a specific consideration in return for the consideration promised by the other. The buyer (like E) promises to pay a stated sum of money; but the seller (unlike W) promises in return a specified quantity of a completely specified commodity. Moreover, the seller is not interested in the way in which his commodity is used once it is sold, while the worker is interested in what the entrepreneur will want him to do (what value of x will be chosen by E).[3]

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[3] A contract to rent durable property is intermediate between the sales contract and the employment contract, insofar as the lessor is interested in the effect that the use of the property will have upon its condition when it is returned to him.

We notice that certain services are obtained by buyers in our society sometimes by a sales contract sometimes by an employment contract. For example, if I want a new concrete sidewalk, I may contract for the sidewalk or I may employ a worker to construct it for me. However, there are certain classes of services that are typically secured by purchase, and others that are typically secured by employing someone to perform them. Most labor today is performed by persons who are in an employment relation with their immediate contractors.

We may now attempt to answer two related questions about the employment contract. Why is W willing to sign a blank check, so to speak, by giving E authority over his behavior? If both parties are behaving rationally--in some sense--under what circumstances will they enter into a sales contract and under what circumstances an employment contract?

The following two conjectures, which, if correct, provide a possible answer to these questions, will be examined in the framework of a formal model:

1. W will be willing to enter an employment contract with E only if it does not matter to him "very much" which value of x (within the agreed-upon area of acceptance) E will choose; or if W is compensated in some way for the possibility that E will choose a value of x that is not desired by W (i.e., that E will ask W to perform an unpleasant task).

2. It will be advantageous to E to offer W added compensation for entering into an employment contract if E is unable to predict with certainty, at the time the contract is made, what value of x will be the optimum value, from his standpoint. That is, E will pay for the privilege of postponing, until some time after the contract is made. the selection of x_o.

3. The Satisfaction Functions

Let us suppose that W and E are each trying to maximize their respective satisfaction functions. Let the satisfaction of each depend on:

a) the particular value of x that is chosen. (For W this affects, for example, the pleasantness of his work; for E, this determines the product that will be produced by W's labor)

b) the particular wage (w) that is received or paid.

We then have:

(3.1) $$S_1 = F(x) - \phi(w),$$

(3.2) $$S_2 = G(x) + \psi(w),$$

where S_1 and S_2 are the satisfactions of E and W, respectively, and $w > 0$ is the wage paid by E to W. The opportunity cost to each participant of entering into the contract may be used to define the zero point of his satisfaction function. That is, if W does not contract with E, then $S_1 = 0$; $S_2 = 0$. Further, for the situations with which we wish to deal it seems reasonable to assume that $F(x) \geq 0$, $G(x) \leq 0$, $\phi'(w) > 0$, $\psi'(w) > 0$ for the relevant range of x. If S_1 and S_2 are defined only up to a linear transformation (ordinal satisfaction functions) we may, without essential loss of generality, assume that $\phi(w)=aw$, $\psi(w)=bw$, where $a>0$, $b>0$ are constants. If, finally, $F(x)$ has a maximum at x_1, and $G(x)$ at x_2, we may replace (3.1) and (3.2) by:

(3.3) $\quad S_1=f(x-x_1)-aw$

(3.4) $\quad S_2=g(x-x_2)+bw$

where $F(x)=f(x-x_1)$, $f'(0)=0$, $f''(0)<0$, $G(x)=g(x-x_2)$, $g'(0)=0$, $g''(0)<0$.

If $f(x-x_1)$ is analytic, we may expand it in a Taylor's series. Expanding and omitting terms higher than the quadratic, we get from (3.3):

(3.5) $$S_1=f(0)+(x-x_1)f'(0)+\tfrac{1}{2}(x-x_1)^2f''(0)-aw$$
$$=f(0)+\tfrac{1}{2}(x-x_1)^2f''(0)-aw=K_1+\alpha(x-x_1)^2-aw.$$

(3.6) $$S_2=K_2+\beta(x-x_2)^2+bw.$$

Here, from our previous assumptions, we have $K_1>0$, $K_2<0$, $\alpha<0$, $\beta<0$.

Since $S_1=0$, $S_2=0$ if E and W fail to reach an agreement, we may assume that for any agreement they do reach $S_1\geq 0$, $S_2\geq 0$.

(3.7) $\quad K_1+\alpha(x-x_1)^2\geq aw$

(3.8) $\quad -K_2-\beta(x-x_2)^2\leq bw$

In order to find the conditions under which there exists a w that would permit an agreement advantageous to both E and W, we multiply (3.7) by b and (3.8) by a, and combine them, getting:

(3.9) $$bK_1+\alpha b(x-x_1)^2\geq abw\geq aK_2-a\beta(x-x_2)^2$$

4. Preferred Solutions

Thus far we have imposed on the agreement between E and W a weak condition of rationality—that the agreement be advantageous to both. In general, if an agreement is possible at all, it will not be unique. That is, if a solution exists, there will be a whole region in the x,w plane satisfying the inequalities (3.9), and only in exceptional cases will this region degenerate to a single point. (See Figure I.)

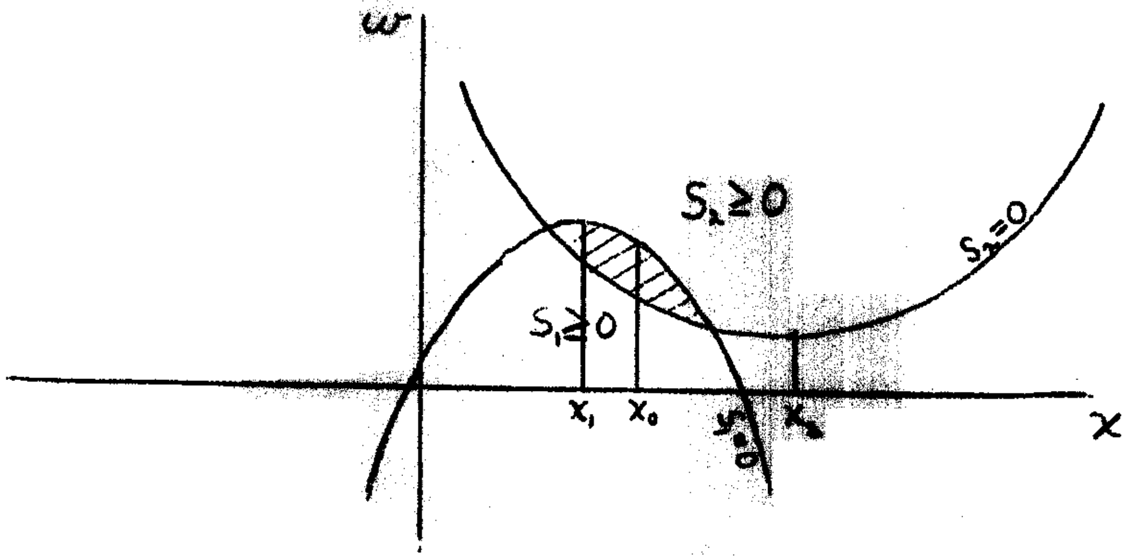

FIGURE I

A stronger rationality condition is the requirement that, when one agreement yields the satisfactions (S_1, S_2) and a second agreement the satisfactions (S_1', S_2') to E and W, the first will be preferred to the second if $S_1 \geq S_1'$, $S_2 \geq S_2'$, where at least one of the two inequalities is a proper one.[4] The subset of solutions that meets this requirement

[4] This stronger rationality requirement is also imposed by von Neumann and Morgenstern in their treatment of the non-zero-sum game.

we will call the set of <u>preferred</u> solutions. Eliminating w between (3.5) and (3.6), and maximizing S_1 in the resulting equation subject to the constraint that S_2 be held constant, we find the following condition for a preferred solution:

$$x = x_0 = \frac{b\alpha x_1 + a\beta x_2}{a\beta + b\alpha} \tag{4.1}$$

Hence, in preferred solutions x_0 assumes a value that is a weighted average of x_1, the value optimal for E, and x_2, the value optimal for W (See Figure I). The weights are compounded of the relative "sensitivities" (α and β) of E and W, respectively, to departures from optimality, and the relative values (a and b) to them of money.

Preferred solutions have been defined as those which maximize S_1 for given S_2, or alternatively, which maximize S_2 for given S_1, where S_1 and S_2 are functions of x and w. The problem of finding such a maximum is equivalent to the problem of finding the unconstrained maximum of $S_1+\lambda S_2$ for an appropriate value of λ. Necessary conditions that $(S_1+\lambda S_2)$ be a maximum are:

$$(4.2) \qquad \frac{\partial S_1}{\partial x}+\lambda\frac{\partial S_2}{\partial x}=0\,; \quad \frac{\partial S_1}{\partial w}+\lambda\frac{\partial S_2}{\partial w}=0$$

Since $\frac{\partial S_1}{\partial w}=-a$, and $\frac{\partial S_2}{\partial w}=b$, we have,

$$(4.3) \qquad \lambda=a/b.$$

Hence, preferred solutions are those which maximize:

$$(4.4) \qquad bS_1+aS_2=bK_1+b\alpha(x-x_1)^2+aK_2+a\beta(x-x_2)^2,$$

which is a function of x alone. We may therefore use the expression (bS_1+aS_2) to compare solutions, and (since this expression is independent of w) to set up a preference scale for values of x. That is, we may define:

$x' \succ x''$ (x' is preferable to x'') if and only if $[bS_1(x',w)+aS_2(x',w)] > [bS_1(x'',w)\ aS_2(x'',w)]$

For the preferred solution given by (4.1), we have, from (4.4):

$$(4.5) \qquad \text{Max}(bS_1+aS_2)=bK_1+aK_2+\frac{b\alpha}{a\beta+b\alpha}a\beta D^2\text{, where } D=x_2-x_1.$$

5. Effect of Uncertainty

The argument thus far suggests that the rational procedure for E and W would be first to determine the preferred value, x_o, of x, and then to proceed to bargain about w so as to fix S_1 and S_2. If they follow this procedure they will arrive at a sales contract of the ordinary kind in which W agrees to perform a specific, determinate act (x_o) in return for an agreed-upon price (w_o).

Let us suppose now that x_1 and x_2, the values of x that are optimal for E and W, respectively, are not known with certainty at the time E and W must reach agreement. W is to perform some future acts for E, but it is not known when they make their agreement what future acts E would most want to have performed. Under these circumstances there are two basically different ways in which the parties could proceed.

1. From a knowledge of the probability distribution functions of x_1 and x_2, they could estimate what value of x would be optimal in the sense of maximizing the expected value of, say (bS_1+aS_2). They could then contract for W to perform this specified x for a specified wage, w. This is essentially the sales contract procedure we analysed previously with mathematical expectations substituted for certain outcomes.[5]

[5] Von Neumann and Morgenstern have shown that introduction of mathematical expectations is equivalent to the definition of a cardinal utility function. Since we have already cardinalized our satisfaction functions by the simplifying assumptions leading up to equations (3.3) and (3.4), we are not really justified in assuming at this stage of our analysis that it is the mathematical expectation of this particular satisfaction index that E or W will try to maximize. In this paper we will simply side-step the difficulty by assuming that the cardinal functions defined by (3.3) and (3.4) are identical with the ones arising out of the von Neumann-Morgenstern preference theory.

2. E and W could agree upon a specified wage, w, to be paid by the former to the latter, and upon a specified procedure that will be followed <u>at a later time when the actual values of x_1 and x_2 are known</u> for selecting a specific value of x. There are any number of conceivable

procedures that E and W could employ for the subsequent selection of x. Perhaps the simplest would be for W to permit E to select x (i.e., for W to accept E's authority). Then E would presumably select that x which would be optimal for him. But this arrangement is precisely what we have previously defined as an employment contract.

ALTERNATIVE 1--SALES CONTRACT. We suppose that at the time of contract negotiation x_1 and x_2 have a known joint probability density function $p(x_1,x_2)dx_1dx_2$. We have:

$$(5.1)\qquad \begin{aligned} E\left[bS_1+aS_2\right] &= bE\left[K_1+\alpha(x-x_1)^2\right]+aE\left[K_2+\beta(x-x_2)^2\right] \\ &= bK_1+aK_2+b\alpha\left[x^2-2xE(x_1)+E(x_1^2)\right]+a\beta\left[x^2-2xE(x_2)+E(x_2^2)\right] \\ &= bK_1+aK_2+b\alpha\left[x^2-2xX_1+\sigma_1^2+X_1^2\right]+a\beta\left[x^2-2xX_2+\sigma_2^2+X_2^2\right] \end{aligned}$$

where $X_1=E(x_1)$; $X_2=E(x_2)$; $\sigma_1^2=E(x_1-X_1)^2$; $\sigma_2^2=E(x_2-X_2)^2$.

To obtain the maximum, S_0', of $E\left[bS_1+aS_2\right]$, we differentiate (5.1) with respect to x and set the result equal to zero, finding:

$$(5.2)\qquad x_0' = X_1+\frac{a\beta(X_2-X_1)}{b\alpha+a\beta} \quad \frac{b\alpha X_1+a\beta X_2}{b\alpha+a\beta}$$

$$(5.3)\qquad S_0' = bK_1+aK_2+\frac{b\alpha}{b\alpha+a\beta}a\beta\bar{D}^2+b\alpha\sigma_1^2+a\beta\sigma_2^2$$

where $\bar{D}=E(x_2-x_1)=X_2-X_1$. Equation (5.3) may also be rewritten:

$$(5.4)\qquad S_0' = bK_1+aK_2+\frac{b\alpha}{a\beta+b\alpha}a\beta E(D^2)+\frac{b^2\alpha^2}{a\beta+b\alpha}\sigma_1^2+\frac{a^2\beta^2}{a\beta+b\alpha}\sigma_2^2+2\frac{r_{12}b\alpha a\beta}{a\beta+b\alpha}\sigma_1\sigma_2$$

where $\sigma_1\sigma_2 r_{12} = E(x_1-X_1)(x_2-X_2)$.

The effect of the introduction of uncertainty may be seen by comparing (5.2) with (4.1) and (5.3) with (4.5). The value of x_0 is altered by the substitution of the expected for the actual values of x_1 and x_2. The expression (bS_1+aS_2) is reduced in amount by $-(b\alpha\sigma_1^2+a\beta\sigma_2^2)$. As we would expect, uncertainty decreases the gross amount of satisfaction available to E and W, the amount of reduction depending upon the degree of uncertainty (σ_1 and σ_2) and upon the sensitivities of E and W to departures from optimal x_1 and x_2 (α and β).

ALTERNATIVE 2A--EMPLOYMENT CONTRACT (A). If x is left indeterminate when E and W make their contract, and if W agrees to accept E's authority, we would expect E subsequently to fix x so as to maximize S_1. (We will consider other possible behavior rules later.) The wage, w, is fixed by the terms of the agreement, and x_1 is known with certainty at the time when E chooses x. Differentiating (3.5) with respect to x and setting the result equal to zero, we find:

(5.5) $$x_0'' = x_1$$

(5.6) $$(bS_1 + aS_2) = bK_1 + aK_2 + a\beta D^2$$

But at the time when the agreement is negotiated, $D = x_2 - x_1$ is a stochastic variable. Hence the expected value of $(bS_1 + aS_2)$ at that time is:

(5.7) $$\begin{aligned} S_0'' = E(bS_1 + aS_2) &= bK_1 + aK_2 + a\beta E(D^2) \\ &= bK_1 + aK_2 + a\beta\left[\sigma_1^2 + \sigma_2^2 - 2r_{12}\sigma_1\sigma_2 + \bar{D}^2\right] \\ &= bK_1 + aK_2 + a\beta\left[(\sigma_1 - \sigma_2)^2 + 2(1 - r_{12})\sigma_1\sigma_2 + \bar{D}^2\right] \end{aligned}$$

Comparing (5.7) with (5.4), we find:

(5.8) $$S_0'' - S_0' = \frac{a^2\beta^2}{a\beta + b\alpha} E(D^2) - \frac{(b\alpha\sigma_1 - a\beta\sigma_2)^2}{a\beta + b\alpha} - \frac{2(1 + r_{12})b\alpha a\beta}{a\beta + b\alpha}\sigma_1\sigma_2$$

The first term on the right-hand side of (5.8) is negative, the second and third terms are positive. Hence:

$S_0'' > S_0'$ if and only if:

(5.9) $$(b\alpha\sigma_1 - a\beta\sigma_2)^2 + 2(1 + r_{12})b\alpha a\beta\sigma_1\sigma_2 > a^2\beta^2 E(D^2)$$

Since $E(D^2) = \sigma_1^2 + \sigma_2^2 - 2r_{12}\sigma_1\sigma_2 + \bar{D}^2$, (5.9) may be written as:

(5.10) $$(b^2\alpha^2 - a^2\beta^2)\sigma_1^2 + 2a\beta(b\alpha + a\beta)r_{12}\sigma_1\sigma_2 > a^2\beta^2\bar{D}^2$$

Before turning to an interpretation of these equations, we consider another alternative arrangement. In the employment contract (A), we assumed that E would choose x so as to maximize S_1 (We will call this "Postulate (A)"). We now suppose, instead, that E chooses x so as to maximize $(bS_1 + aS_2)$. (We will call this "Postulate (B)")

ALTERNATIVE 2B--EMPLOYMENT CONTRACT (B). The assumptions are the same as in 2A, except that E chooses the x that will maximize (bS_1+aS_2) instead of the x that will maximize S_1. Carrying out the calculation for the optimum, x_o''', and maximum, S_o''', we find:

$$(5.11) \qquad x_o''' = \frac{b\alpha x_1+a\beta x_2}{b\alpha+a\beta}$$

$$(5.12) \qquad S_o''' = E(bS_1+aS_2) = bK_1+aK_2+\frac{b\alpha}{b\alpha+a\beta}\, a\beta E(D^2)$$

$$(5.13) \qquad S_o'''-S_o'' = -\frac{a^2\beta^2}{b\alpha+a\beta}E(D^2)$$

The right-hand side of (5.13) is positive and is identical except for sign with the first term on the right-hand side of (5.8). For this reason, we can alsways assert that $S_o''' > S_o''$. Also, comparing (5.12) with (5.4), we see that $S_o''' > S_o'$.

5. Interpretation of the Results

From the fact that $S_o''' > S_o''$ and $S_o''' > S_o'$, it follows that the satisfactions from employment contract (B) can always be distributed (by varying w) in such a way between E and W that both of them will be better off than if they entered contract (A) or the sales contract. Is it reasonable to suppose that this will actually happen?

The difficulty lies in the fact that, once agreement has been reached on w, there is no way for W to enforce the understanding that E will behave according to postulate (B) rather than postulate (A). Moreover, it is to E's short-run advantage to maximize S_1 rather than (bS_1+aS_2) after w has been determined. Translated into every-day language, the worker has no assurance that the employer will consider anything but his own profit in deciding what he will ask the worker to do.[6]

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[6] It must be remembered that our model does not take account of morale effects--that the worker may actually perform better if the employer makes allowance for his satisfactions. Our omission of this point does not imply that it is unimportant.

If the worker had confidence that the employer would take account of his satisfactions, the former would presumably be willing to work for a smaller wage than if he thought these satisfactions were going to be ignored in the employer's exercise of authority, and only profitability to the employer taken into account. On the other hand, unless the worker is thereby induced to work for a lower wage, the employer has no incentive to use his authority in any other way than to maximize S_1. Hence, we might expect the employer to behave according to postulate (B) only if he thought that by so doing he could persuade the worker, in subsequent renewals of the employment contract, to accept a wage sufficiently smaller to compensate him for this. Otherwise, the employer would rationally behave according to postulate (A). We might say that postulate (A) represents "sort-run" rationality, whereas (B) represents "long-run" rationality when a relationship of confidence between employer and worker can be attained. The fact that $S_0''' > S_0''$ shows that it "pays" the employer to establish this relationship.

Let us return now to the perhaps more common case where it is assumed by both parties that the employer will behave according to postulate (A). The inequalities (5.9) and (5.10) indicate the relative advantage (or disadvantage) of an employment contract over a sales contract under this assumption. We see that the advantage of the employment contract is enhanced if: the "conflict of interest" between E and W (measured by $\overline{D}$) is small; if r_{12} is positive and close to unity; if the sensitivity of E to departures from x_1 (αb) is large relative to the sensitivity of W to departures from x_2 ($a\beta$); and if x_1 and x_2 are subject to great uncertainty (σ_1 and σ_2 large). Hence the model verifies the conjectures that were set forth at the end of Section 2.

6. Extension of the Model

It should hardly be necessary to state again that the model presented here, while it appears to be substantially more realistic in its treatment of the employment relationship than is the traditional theory of the firm, is still highly abstract and oversimplified, and leaves out of account numerous important aspects of the real situation. It is a model of hypothetically rational behavior in an area where institutional history and other non-rational elements are notoriously important.

In one important respect the model can be brought into closer conformity with reality without serious difficulty. Any actual employment contract, unlike the hypothetical arrangements we have thus far discussed, specifies much more than the wage to be paid and the authority relationship. The limits within which the employer will exercise his authority are often spelled out in considerable detail; e.g., hours of work, nature of duties (in general or specifically), and so forth. If the employment relationship endures for an extended period, all sorts of informal understandings grow up in addition to formal agreements that are made when the contract is periodically renewed. Under modern conditions when a labor union is involved, many of these contract terms are spelled out specifically and in detail in the union agreement. Our model has taken care of this fact only in recognizing that authority is accepted "within limits." We have said nothing as to how such limits might be rationally determined.

In order to extend the model in this direction, let us suppose that the behavior of the worker (or a whole group of workers) is specified, not by a single scalar variable, x, but by a vector with components $(x,y,z,\ldots)$. Let us suppose that these components enter into the satisfaction functions additively:

(6.1) $S_1 = s_{1x}(x-x_1)+s_{1y}(y-y_1)+\ldots -aw$,

and similarly for S_2.

Then the parties may enter into a contract in which the values of certain of the variables, say, x,..., are specified as terms in the contract (as in the sales contract); the values of a second set of variables, say, y,..., are to be subject to the authority of the employer; and the values of a third set of variables, say, z,..., are to be left to the discretion of the worker or workers. In analogy to postulate (A), we may assume that if the variable y is subject to the authority of E, he will fix it so as to maximize $s_{1y}(y-y_1)$, i.e., at the value y_1; while if the variable z is left to the discretion of W, he will fix it so as to maximize $s_{2z}(z-z_2)$, i.e., at the value z_2. We can now derive inequalities analogous to (5.9) and (5.10) that will indicate which variables should, on rational grounds, fall in each of these three categories.

Let s_{Cx} be the value of $E(bs_{1x}+as_{2x})$ if x is stipulated in the contract; s_{Ex} its value if E is given authority over x; and s_{Wx} its value if x is left to W's choice. Then, by analogy with (5.10):

$$(6.2) \qquad -(a\beta+b\alpha)(s_{Ex}-s_{Cx}) = (b^2\alpha^2-a^2\beta^2)\sigma_1^2+2a\beta(b\alpha+a\beta)r_{12}\sigma_1\sigma_2-a^2\beta^2\bar{D}^2$$

and by symmetry:

$$(6.3) \qquad -(a\beta+b\alpha)(s_{Wx}-s_{Cx}) = (a^2\beta^2-b^2\alpha^2)\sigma_2^2+2b\alpha(b\alpha+a\beta)r_{12}\sigma_1\sigma_2-b^2\alpha^2\bar{D}^2$$

Subtracting (6.3) from (6.2), and substituting $E(D^2)$ into the result, we get also:

$$(6.4) \qquad -(a\beta+b\alpha)(s_{Ex}-s_{Wx}) = (b^2\alpha^2-a^2\beta^2)E(D^2)$$

Interpreting these relationships in rough qualitative terms, we have shown that the conditions making it advantageous to (1) stipulate the value of a particular variable in the contract are:

(a) sharp conflict of interest with respect to the optimum value of the variable. ($\bar{D}$ large and r_{12} negative);

(b) little uncertainty as to the optimum values of the variable. (σ_1 and σ_2 small); and

(c) small, or equally balanced, sensitivities of E and W to departures from optimality. ($|(b^2\alpha^2-a^2\beta^2)|$ small).

The conditions making it advantageous to (2) give E authority over a variable, or (3) leave it to the discretion of W are, of course, just the opposite of those listed above. Moreover, (2) will be preferable to (3) if E's sensitivity to departures from optimality is greater than W's ($b^2\alpha^2 > a^2\beta^2$), and conversely. Contrary to what "common sense" might lead one to suppose, the choice between alternative (2) and alternative (3) is independent of the relative magnitudes of σ_1 and σ_2.

7. Conclusion

We have constructed a model that incorporates rational grounds for the choice by two individuals between an employment contract and a contract of the ordinary kind (which we have called a sales contract). By a generalization of this model we are able to account for the fact that in an employment contract certain aspects of the worker's behavior are stipulated in the contract terms, certain other aspects are placed within the authority of the employer, and still other aspects are left to the worker's choice. Since administrative theory has been interested in explaining behavior within the framework of employment relations, and economic theory in explaining behavior within the area of market relations, the model suggests one possible way of relating these two bodies of theory. The most serious limitations of the model lie in the assumptions of rational utility-maximizing behavior embodied in it.