

Nominal Labor Contracts, Aggregate Risk and Taxes

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Nominal labor contracts replicate net of tax real contracts contingent on aggregate risk in the model presented. Perhaps this is a model of money.

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by

John Bryant

In Macroeconomics and in Labor Economics much has been made of the fact that labor contracts are written in nominal, dollar, terms rather than in real, purchasing power, terms. This observation has been taken to imply that the economy is malfunctioning and to justify government interferences of various sorts [6,7]. It is the message of this paper that this could be much ado about nothing. The message is delivered in the form of a simple general equilibrium model. First we consider a model with aggregate supply risk and long-term labor contracts, and then add government expenditure.

The Model Without Government Expenditure

The structure of our economy is as follows. Time is discrete and divided into periods $t = 1, 2, \dots$. There are $n > 1$ identical owners and $Nn, N > 1$, identical workers in the economy who live forever. Each owner possesses a technology, or site, for generating C_t output of a single transferable but nonstorable consumption good per period per worker. C_t , common to all production technologies, are stochastic with some cumulative distribution function $F(C_1, C_2, \dots)$ defined on the non-negative quadrant.^{1/} At the beginning of period 1 each worker can costlessly choose a single technology at which to locate. In subsequent periods the worker can change technologies at cost σC_t , $0 < \sigma < 1$.

Preferences are described as follows. Workers and owners both prefer

^{1/} The randomness of C_t is not important to our results.

more consumption good to less, with decreasing marginal utility for the consumption good. Workers are indifferent to working and owners get nontransferable increasing utility from watching labor at their own sites.

By "possesses" we mean that each owner can determine an enforceable condition for access to her technology. The announcements of these conditions occur at the beginning of each period and in some sequence, not simultaneously.

Now let us solve for behavior in the model. Owners are competitive with each other [2]. As workers wish to avoid owners extracting rent on the cost of moving between technologies, the owners offer a long-term contract for paying the worker [3]. This contract is to pay the worker C_t per period for working. For a different model of long term contracts see [9].

Suppose now that there exists a nominal unit of account which is in fixed supply N_n (say) forever. This unit of account, "money", is somehow distributed to owners in the first period. After it is distributed, owners announce a nominal wage for each period forever, and a commitment to sell their entire product competitively for the nominal unit of account. Wages are paid at the beginning of the period and products sold at the end. Only between period lending and borrowing between owners and workers is possible.^{2/} Because they are competitive owners announce a wage of 1 per worker up to their endowment of money forever.^{3/} Prices adjust to make every worker choose consumption C_t in every period. In terms of

^{2/} Some such structure is necessary to determine the velocity of money, to make the price level determinate. We assume owners are competitive in this credit market as well.

consumption the solution is the same as in the previous paragraph, except that there the convention for distributing labor-watching pleasure among owners is not specified.

Government Expenditures

Now let us assume that there is another entity with a desire to consume a fixed amount of the production from one particular technology, "site one" say. ^{4/} This entity has the power to tax. If this "government" simply taxes the output of site one, no worker goes there, and no taxes are collected. If the government appropriately taxes all sites, and gives the proceeds of taxes of all sites except site one to workers at site one, then the government extracts the desired consumption.

Suppose we are in the monetary regime of the previous section. Moreover, the government, instead of taxing in each period, "prints" additional money and with it purchases the consumption good at site one. Workers are then promised an increasing sequence of nominal wages. All consumptions are the same as above under the appropriate tax scheme except possibly, once again, for the labor-watching pleasure of owners. As compared to the no government expenditure monetary regime there are, for a given initial distribution of money, more workers at site one and a steady inflation instead of zero inflation. ^{5/} The same result is achieved without inflation if the government raises its revenues by a proportionate nominal income tax on workers.

^{3/} Actually because there is borrowing and lending between owners and workers, all that is required is some sequence of wages such that owners never to get to spend money, wage of 1 being an example.

^{4/} Alternatively one can assume the government is indifferent between the products of sites as are individuals. We are stressing the complexity of tax-transfer as compared to money issue.

^{5/} Changes in C_t generate consumption good price level changes. See also footnote 3.

There is, of course, a problem in the inflationary monetary regime. Owners can revert to the convention of offering real contingent contracts, and thereby have their workers avoid the "inflation tax". The government's ability to use deficit finance-inflation tax, must then, depend upon a regulatory ability to inhibit the real contracts (prohibitions on note issue and on interest on deposits?), some contract writing costs not included in our model, or the understanding that the decision to revert to real contracts just calls forth the explicit tax.

Now let us consider government policy changes. Suppose the government is using deficit finance but its consumption is not a known constant. As long as government consumption is deterministic, or random with the law of large numbers applying, then because of borrowing and lending between owners and workers nominal contracts still generate each worker consuming C_t .^{6/} Otherwise nominal labor contracts are contingent upon government deficits. Were contracts not contingent on government deficits an increase in the deficit could give the owners rents as workers renegotiate their contracts, and a decrease in the deficit could cause rising unemployment or such a rent redistributing renegotiation of contracts.

Conclusion

Nominal labor contracts could replicate net of tax real contracts contingent on aggregate supply risk. If you wish, this is a model of (backed) money, and one in which money is a veil.

^{6/} See footnote 3. This is the only result which depends upon the feasibility of borrowing and lending between owners and workers.

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