Occupational Choice with Benefits*

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ABSTRACT

This paper quantifies the impact of employer benefits on occupational choice, many of which are government-mandated obligations. A general equilibrium model of occupational choice is developed and disciplined with micro data on individual incomes and benefits and macro data from national accounts. The model captures a key cost-benefit trade-off of benefits, with the cost similar to a wedge in the occupational choice of self- versus paid-employment and the benefit arising from enhanced liquidity of households through employer insurance. We investigate two versions of the model: with and without mandated benefits. The elimination of mandates significantly increases hours allocated to business but reduces an important source of insurance for many households.

Keywords: Entrepreneurship, occupational choice, taxation JEL classification: E13, H21

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1 Introduction

This paper investigates the role that government-mandated benefits play in determining occupational choice. According to estimates of the Bureau of Economic Analysis, U.S. employer contributions for employee pensions and insurance grew from roughly 2 percent of overall compensation in 1929 to close to 20 percent by the early 1990s—and have remained at that level ever since. Part of the growth is attributable to the tax advantages of qualified employer-sponsored pension and group health plans. Part of the growth is attributable to an increase in labor force participation of groups that value expanded insurance for themselves and their dependents. These benefits are particularly valuable for low-income individuals that receive similar wage and salary supplements as their higher-earning colleagues because, by law, tax-qualified employee plans cannot discriminate in favor of highly compensated employees. The better the employee benefits, the less likely are individuals to choose self-employment and cover the costs themselves.

To evaluate the allocative role of these benefits, we analyze an extension of the heterogeneous-agent, incomplete-markets model of Aiyagari and McGrattan (1998) that includes an occupational choice of paid- or self-employment and mandated employee benefits. The self-employed run private businesses that produce intermediate inputs for the corporate sector. The paid-employed supply labor directly to the corporate sector. More importantly, the choice of self- or paid-employment triggers different benefit options and income taxation. If the total hours in paid-employment are above a certain threshold, an employee receives an untaxed benefit that is the same regardless of the employee's productivity on the job. The compensation scheme then is the sum of taxable wages that are a function of the individual's productivity

plus untaxable benefits that are not. We also allow for differences in effective tax rates on paid- and self-employment income to capture the fact that there are greater opportunities for underreporting in self-employment as compared to paid-employment.

Aggregated national accounts and distributional accounts are compiled for two simulations of the model: one with mandated benefits and a second without mandated benefits. The former can be thought of the relevant comparison to current U.S. policy. In the model with mandated benefits, we find a significant amount of insurance is provided for lower-income households—so much so that the interest rate is close what it would be in the near complete-markets limit. Eliminating the mandate would imply a 90 basis-point decline in the interest rate and a 14.5 percent increase in the economy-wide capital stock. With the higher capital stock, we find a 4.4 percent higher output level and a roughly 1.2 percent higher consumption level. Eliminating the mandate would also have a large impact on the allocation of hours and wages. Hours allocated to private business would increase by 80 percent despite a fall in the price of their goods by nearly 10 percent. If the mandate is eliminated, all labor income is taxable and tax revenues from this source would rise by 16 percent.

The literature on mandated benefits is too large to be summarized here, although we found Summers (1989) to be a timeless summary of the ongoing debates. Perhaps more relevant to current debates are papers in the empirical literature providing detailed data on government mandates. A recent example covers the mandated health insurance programs under Obamacare (see, for example, Lurie and Pearce (2021) and Lurie and Miller (2023)). Also relevant for this work are papers in the entrepreneurship literature providing detailed data on occupational choice (see, for example, Bhandari et al. (forthcoming)).

2 Data

In this section, we examine administrative and survey evidence on taxable labor incomes (before accounting for benefits) and employee benefits. We analyze the data for women and men separately in order to highlight an entrepreneurial gender gap.

We start with the administrative data analyzed by Bhandari et al. (forthcoming), but here report results for men and women separately. These authors used individual tax filings (specifically, Form 1040 and Schedule K-1 for partners and S corporation owners) to build a panel dataset of incomes from self- and paid-employment for all individuals aged 25 to 65 with a Social Security number who were alive over the period 2000–2015. Income from self-employment is the sum of incomes from proprietorships (Form 1040, Schedule C net profits), partnerships (Form 1065, Schedule K-1 ordinary business income), S corporations (Form 1120-S, Schedule K-1 ordinary business income), and own-business compensation (Form W-2 wages from S corporations that the individuals own). Income from paid-employment is wage income (Form W-2 wages) less any own-business compensation.

Because individuals can have both types of income, Bhandari et al. (forthcoming) classify individuals in a particular tax year as being *self-employed*, *paid-employed*, or *non-employed*. An individual in a particular tax year was classified as self-employed if the absolute value of income exceeded $5,000 (in 2012 dollars) and meets one of three criteria establishing that they are primarily running a business. The first criteria is that the absolute value of their self-employment income is greater than their paid-employment income. The second criteria is that they have at least one employee (or, if there are multiple owners, their share of the business times the number of employees is larger than one). In other words, even if they do

not have much income from the business (say, because they are just starting), the fact that they have hired employees suggests they are in fact running a business. The third criteria is that the sum of gross profits across businesses exceeds their paid-employment income. Here again, new business owners may have significant expenses and low net income for the first few years but Bhandari et al. (forthcoming) assume that high receipts is indicative of business activity.

Table 1 reports the summary statistics for women (which can be compared to Table 2 for all individuals in Bhandari et al. (forthcoming)). Table 2 reports the same statistics but, in this case, for men. There are several noteworthy differences across tables. Starting with the total number of observations, we find that women make up only 27 percent of total self-employed but are 49 percent of the paid-employed over the sample period 2000–2015. For those women that do choose entrepreneurship over paid-employment, their average total income—from both self- and paid-employment—is $54 thousand (in 2012 U.S. dollars) with $46 thousand coming from self-employment. This is roughly half of the estimates for self-employed men who have an average total income of $102 thousand with $85 thousand coming from self-employment. Differences in total incomes for the paid-employed are not as stark, with women earning $43 thousand on average and men earning $70 thousand—almost exclusively from W-2 wages. Including fringe benefits would close this gap further, especially when considering benefits like health insurance that are the same for all employees.

In addition to providing information on incomes, the administrative IRS has information on occupations, primary industries, the businesses for those self-employment, demographics, and other incomes reported on the tax returns. Bhandari et al. (forthcoming) use the occupation information along with classifier algorithms to infer skillsets and education. A

comparison of Tables 1 and 2 reveals some interesting differences for skillsets: with more women having occupations requiring interpersonal skills and men having occupations requiring cognitive or manual skills. These findings are consistent with the fact that women are more likely to be found in professional services and health care and less likely in construction and manufacturing than the men. In terms of demographics, key differences are revealed if we compare self- and paid-employed by gender. Self-employed women are single and younger than either the paid-employed women or men—which is relevant when debating the value of government-mandated benefits. Finally, there are some differences in other incomes, with women having higher spousal incomes than men and thus greater outside support when married.

There are two important sources of insurance for individuals: employer-mandated own or spousal benefits and direct government insurance for consumption of the poor and elderly and insurance for health care. In Tables 3 and 4, we provide some survey evidence related to these sources in the case of health insurance—the first based on the Current Population Survey (CPS) and the second related to the American Community Survey (ACS). In both tables, we list the occupational choices of women in the rows and potential sources of insurance in the columns. For paid-employed women, we also report estimates for full-time and part-time employees because there are eligibility thresholds in many firms that depend on the full- and part-time status. Starting with the CPS in Table 3, we find that 28 percent of women have husbands that report they are in full-time paid-employment with benefits. Close to half of these women are in part-time paid-employment, self-employment or not employed and likely are taking advantage of employer-sponsored insurance for dependents. In the case of women with husbands that do not have benefits, most are in full-time paid-employment and are

likely eligible themselves for employer-sponsored insurance. In the case of single women, 9.3 percent have some coverage through Medicaid or other government transfer program. Most of those that are not covered through a government program have full-time paid employment. In the case of the ACS, we find similar patterns. The main difference in the surveys are counts for married women whose husbands do not have benefits. The CPS shows 12 percent of married women in this category, while the ACS shows only 2.6 percent. If we focus on female respondents that choose self-employment—in either CPS or ACS—we find that few are relying on government transfer programs. They are either married and have husbands with benefits or they self-insure.

3 Theory

In this section, we describe the model, which is an extension of Aiyagari and McGrattan (1998) to include an occupational choice and employee benefits.

There are a continuum of infinitely lived households who receive idiosyncratic shocks to productivity in running a business, z_t, and working in paid-employment, ϵ_t, where t indexes time. These households have one unit of time that can be allocated to running a business, h_t, with the remainder allocated to working as an employee. This allocation could be thought of as allocation of household members specializing in different activities or individuals splitting time across activities.[1] Hours devoted to the business produce intermediate goods that are sold to the corporate sector. Hours in paid-employment are a direct input to corporate

[1]In the next draft, we plan to introduce an extensive margin whereby individuals choose each period to do either paid-employment or self-employment and to invest in their businesses as in Bhandari and McGrattan (2021).

production. Corporations also use capital in production. In the aggregate, total output in t is given by

$$Y_t = A_t F(K_t, L_t, M_t), \tag{1}$$

where K_t is the capital stock, L_t is the direct labor input, M_t are intermediates, and A_t is technological progress. We assume that product and factor markets are competitive and use a Cobb-Douglas form for $F(\cdot)$ with revenue shares α for capital, ν for direct labor, and $1-\alpha-\nu$ for intermediates. If we assume that technological progress is labor-augmenting—for direct inputs and intermediates—then we have

$$A_t = (1+g)^{(1-\alpha)t}. \tag{2}$$

On a balanced growth path, output, capital, and prices for labor and intermediates grow at rate g.

Households choose the hours allocation along with their consumption, c_t, and savings, a_{t+1}, to maximize expected utility:

$$\begin{aligned} \max_{\{c_t, h_t, a_{t+1}\}} & E\left[\sum_{t=0}^{\infty} \beta^t U(c_t) | a_0, z_0, \epsilon_0\right] \\ \text{subject to} \quad & c_t + a_{t+1} \leq (1+\bar{r})a_t + \bar{p} z_t h_t^{\phi} + \bar{w}\epsilon_t(1-h_t) + \chi_t \\ & \chi_t = \xi f(h_t) + T_t \\ & a_{t+1} \geq 0, \end{aligned} \tag{3}$$

where $\bar{r}$ is the after tax interest rate, $\bar{p}$ is the after tax price for intermediates sold to the

corporate sector, $\bar{w}$ is the after tax wage excluding employer benefits, and χ_t are employer benefits plus government transfers. The employer benefits depend on the number of hours devoted to paid-employment, for example, whether individuals work part-time or full-time. We assume that households have a technology for producing intermediates that requires an input of hours h_t. The output $z_t h_t^{\phi}$ of this private business is sold to corporations at price p and then taxed. We assume that taxes are assessed on asset income at rate τ_a, on labor income at rate τ_n, and on business income at rate τ_b. Therefore, the after-tax prices are given by $\bar{r} = (1 - \tau_a)r$, $\bar{w} = (1 - \tau_n)w$, and $\bar{p} = (1 - \tau_b)p$.

We assume that employer benefits are untaxed and are part of a compensation package of firms, one that divides total labor costs into taxable wages paid to effective labor hours and untaxed benefits paid to labor hours regardless of who supplied them. In a competitive environment, the marginal product of labor is $\partial AF(K, L, M)/\partial L$, which in this case is split as follows

$$\begin{aligned} \frac{\partial AF(K, L, M)}{\partial L} &= \nu Y/L \\ &= w + \xi \int f(h(a, s)) d\mu(a, s), \end{aligned} \tag{4}$$

where $\mu(a, s)$ is the joint distribution over assets and productivities, that is, $s = (z, \epsilon)$. In the version of the problem 3—with a continuous choice of hours to self- or paid-employment—it is easy to show that the optimal hours decision does not depend on the level of assets. The optimal hours decision is simply:

$$\max_h \quad \bar{p} z h^{\phi} + \bar{w}\epsilon(1 - h) + \xi f(h), \tag{5}$$

which is a static problem given after-tax wages, $\bar{w}$, prices, $\bar{p}$, and shock values, $s = (z, \epsilon)$. In the economy without mandated benefits, $\xi = 0$, the solution to 5 can be analytically calculated. Furthermore, if prices are given by the marginal products of F and the aggregate inputs are $L = E[\epsilon(1-h)]$ and $M = E[zh^{\phi}]$, then both hours *and* prices for labor and intermediates can be analytically calculated—before solving the dynamic household problem and the equilibrium interest rate. In the economy with manadated benefits, $\xi > 0$, the problem of computing hours is still a static one but slightly less tractable. For a general technology f, we can compute the optimal hours and equilibrium prices w and p before solving the households' dynamic problem but this must be done numerically. (See the appendix for details.)

In equilibrium, the interest rate r is such that aggregated asset holdings of the household are equal to the sum of capital K plus governement debt B. The government budget constraint is given by

$$G_t + T_t + (1-\tau_a) r B_t = B_{t+1} - B_t + \tau_a r K_t + \tau_n w_t L + \tau_b p_t M, \tag{6}$$

and satisfied where G_t is government spending on goods and services, T_t is aggregate transfers, $\bar{r} B_t$ are interest payments on the debt, $B_{t+1} - B_t$ are new issues of debt, and the remaining terms in 6 are taxes paid on factor inputs in production. Notice here that we only include the taxable wages. When computing the equilibrium, we must decide how the budget is balanced. Later we fix spending and debt levels as well as tax rates on labor income and business income. We adjust the tax rate on assets, τ_a, as we vary the mandate on benefits.

4 Results

In this section, we investigate two versions of the model: with and without mandated benefits. In ease case, we compute equilibrium prices and quantities and aggregate statistics in order to summarize the model's national accounts and government budget. Finally, we consider the impact on occupational choice and levels of insurance in the two economies.

4.1 Calibration

We parameterize the model using annual data with growth technology set to 2 percent. The utility function is assumed to be given by $U(c) = [c^{1-\mu} - 1]/(1 - \mu)$, with the curvature parameter μ equal to 1.5. To achieve interest rates in the range of 4 to 5 percent, we set the discount factor β equal to 0.992, which implies a normalized value $\tilde{\beta}$ of 0.982.

For the income process, we chose an extremely simple and transparent 2-state Markov chain with the first state with $z = 1/2$ and $\epsilon = 0.95$ and the second state with $z = 2$ and $\epsilon = 1.05$. The idea here is to have a much wider spread in the business productivity outcomes. For the transition matrix, we set transition rates equal to 0.99 for remaining in both states. The other parameter governing business income is the curvature parameter ϕ, which we set equal to 1/4. This parameter governs the elasticity of the occupational choice, which could be disciplined with longitudinal data and changes in public policy (for example, the introduction of Obamacare). For the corporate sector, we chose revenue shares to achieve a 30-50-20 split for capital-labor-business. This implies values for α and ν equal to 0.3 and 0.5, respectively. The depreciation rate for capital is set at 5 percent.

Government policy is set so that spending on goods and services, G, is 0.2 times output,

the stock of debt, B, is 1 times output, and government transfers, T, is 0.03 times output. The latter is set much lower than the overall transfer level for the United States because we are abstracting from the life-cycle and are thus only considering transfers for those of working age. The tax rates for labor income and business income are set equal to 40 percent and 20 percent, respectively. The latter is much lower to take in account the fact that business owners under report taxable income by roughly 50 percent.

The parameters governing the mandated benefits formula $f(h)$ are $\underline{\mathrm{h}} = 0.05$ and $\zeta = 5$ (see 7 in the appendix). The coefficient on this benefits formula is set to $\xi = 0.15$ if there are mandated benefits. These choices imply that 50 percent time as a paid employee receives no benefits and 100 percent time receives benefits that are roughly 25 percent of after-tax compensation. The functional form ensures that the change in benefits is highest as hours allocated to paid-employment approaches 100 percent.

4.2 Policy Analysis

In this section, we describe the two economies with mandated benefits ($\xi = 0.15$) and without ($\xi = 0$). We describe four sets of results: equilibrium prices and quantities; national accounts; government accounts; and occupational choice.

4.2.1 Equilibrium Prices and Quantities

In Table 5, we report outcomes for the three factor prices and key aggregates[2] In the case of mandated benefits, we find a high interest rate of 4.8 percent—close to the upper bound of 4.88 percent that would be found in the complete-market limit and much higher than the

[2]Prices are pre-tax and no value is normalized by output.

3.9 percent rate found in the economy without the mandate. The wage rate listed in the table is w which excludes the benefits. Thus, if we compare this to the no-mandate case, we find it is lower: 0.63 versus 0.81 when $\xi = 0$. With benefits, there is a shift away from business and prices on intermediate goods are thus higher in the economy with mandated benefits by roughly 10 percent.

Higher insurance levels imply lower precautionary saving and thus lower capital stocks. With the mandate, capital K is 4.2 and 14.5 percent higher without the mandate. The shift in occupational choice that accompanies the policy change implies a 5.4 percent drop in the labor input L and a 14.9 percent rise in the intermediate input when we change ξ from 15 percent to 0. Changes in output and consumption are not as large but there is a slight uptick in both if mandated benefits are eliminated.

4.2.2 National Accounts

The national income and product accounts for the model are shown in Table 6. The main categories of income do not change because of the Cobb-Douglas assumption. What changes is the share of compensation to wages and to wage supplements. When we aggregate across households, we find that 43 percent of pre-tax compensation is allocated to payments to effective labor (that is $(E\epsilon(1-h))$ and 7 percent to mandated benefits that do not depend on worker productivity. On the product side, there is no change in government spending by assumption. There is drop in the *share* of consumption because output rises with little change in total consumption and coincident rise in the share of investment.

4.2.3 Government Accounts

The change in policy primarily affects government revenue shares (and negligibly the equilibrium interest on debt). The share of tax revenues from labor are lower with mandated benefits, which are not taxed. With the mandates, the share is a little over 17 percent, and without them, the share is 20 percent. The shares of revenue from business income are barely different. The main change is the share from taxes on capital since τ_a was adjusted to balance the budget. The tax rate needed for budget balance is 23.7 percent when $\xi = 0.15$ and 5.3 percent when $\xi = 0$.

4.2.4 Occupational Choice

Finally, we consider the shift in occupational choice with a change in policy. As we noted above, the choice of hours in self- versus paid-employment does not depend on the asset holdings of the individual in this version of the model. Thus, all households shift their hours in response to the policy. In Figure 1, we plot the distributions of hours with asset levels on the x-axis and total business hours supplied on the y-axis for state $s = (2, 1.05)$. Most business hours come from households with this high-z state. To get a sense of the impact on total business hours, we normalized both distributions using the same number: the aggregate hours when $\xi = 0.15$ and $s = (2, 1.05)$. In other words, the probabilities for the economy with benefits sums to 1. The probabilities for the economy without benefits sums to 1.77 implying a 77 percent increase in business hours for high-z individuals across the distribution.

5 Summary

This paper takes a first step in incorporating benefits and occupational choice into an otherwise standard framework with heterogeneous agents and incomplete markets. What we have shown is that they are a potentially important source of insurance for lower-productivity, lower-income households.

The model here was purposefully simple and thus useful for highlighting the key trade-off between enhanced insurance and efficiency in labor market choice. However, essential features are missing from the model if we are to fully answer the question of how to rank government-mandated employer benefits versus tax-financed government programs.

A. Computation

In this appendix, we provide details on computing the equilibrium. Given the nature of the household problem, we can decouple the decision to allocate hours between self- and paid-employment and the consumption-saving decision.

Before describing these subproblems, we first normalize any variables that grow over time by $Y(1+g)^t$. In the household budget, this includes consumption, assets, the wage rate, the price of intermediates, the employer benefit rate, and transfers. Here, we will assume that these variables have been normalized but, for convenience, will continue to use the same notation as in Section 3.

The hours decision, after normalizing prices, can be written as in 5. For the results in Section 4, we use following functional form:

$$f(h) = \frac{1}{2}\left[1 + \tanh\left(\zeta(\underline{\mathrm{h}} - h)\right)\right], \tag{7}$$

where ζ determines how quickly the benefits are phased out as hours devoted to paid-employment (that is, $1-h$) fall. If ζ is sufficiently high, this function is a step function that starts at $f(0) = 1$ and falls quickly at $h = \underline{\mathrm{h}}$ down to 0. In other words, the recipient receives ξ if $h < \underline{\mathrm{h}}$ and 0 otherwise. For this choice of f, we find h that solves

$$0 = \phi(1-\tau_b)pzh^(\phi - 1) - (1-\tau_n)w\epsilon + \xi\zeta\mathrm{sech}^2\left[\zeta(\underline{\mathrm{h}} - h)\right]/2 \tag{8}$$

We can solve simultaneously for h and the equilibrium prices by using the fact that the normalized pre-tax prices are given by:

$$w = \frac{\nu - \xi E f'(h)}{E\epsilon(1-h)}, \tag{9}$$

$$p = \frac{1-\alpha-\nu}{Ezh^{\phi}} \tag{10}$$

in equilibrium, where the denominators are the aggregated labor input, L, and intermediate input, M, in corporate production. If $\xi = 0$, then earnings wL normalized by output Y is equal to ν and payments for intermediate goods normalized by Y is equal to $1-\alpha-\nu$. Given processes for the shocks ϵ and z, we have to solve three equations, 9, 10, and 8 in three unknowns, w, p , and h. We do this using standard Newton methods with a starting guess that is the solution in the $\xi = 0$ case:

$$w^0 = (\nu + \zeta_1(1-\alpha-\nu))/E\epsilon$$

$$p^0 = (\zeta_2(1-\alpha-\nu))^{1-\phi}(w^0)^{\phi}$$
$$h^0 = (\phi z(1-\tau_b)p^0/(\epsilon(1-\tau_n)w^0))^{\frac{1}{1-\phi}}$$

where the coefficients are given by

$$\zeta_1 = \phi(1-\tau_b)/(1-\tau_n)E\left[\epsilon(z/\epsilon)^{\frac{1}{1-\phi}}\right]/E\left[z(z/\epsilon)^{\frac{\phi}{1-\phi}}\right]$$
$$\zeta_2 = 1/(\phi(1-\tau_b)/(1-\tau_n))^{\frac{1}{1-\phi}}E\left[\epsilon(z/\epsilon)^{\frac{1}{1-\phi}}\right].$$

Once we have a solution for aggregate prices w and p and hours in each state $s = (z, \epsilon)$, we can apply the usual Bisection method over the interest rate r and solve the household problem. To do this, we follow Aiyagari and McGrattan (1998) and apply the Finite Element method with linear bases and a penalty term $1/3\chi \min(a_{t+1}, 0)^3$ added to utility. More specifically, we use local approximations for assets next period (that is, $a_{t+1}(a_t, s_t)$) with linear bases, that is:

$$a'(a,s) = \theta_j^s \Psi_j(a) + \theta_{j+1}^s \Psi_{j+1}(a) \tag{11}$$

on the element $[a_j, a_{j+1}]$, where

$$\Psi_j(a) = \frac{a_{j+1}-a}{a_{j+1}-a_j}, \quad \Psi_{j+1} = \frac{a-a_j}{a_{j+1}-a_j}. \tag{12}$$

The coefficients $\{\theta_j^s\}$ are unknown coefficients of the approximation. We choose values for these unknown coefficients by setting the weighted residual from the household Euler equation to zero:

$$\int R(a,s;\alpha)\Psi_j(a)da = 0 \tag{13}$$

for all s and j, and the residual is:

$$R(a,s;\theta) = (1+g)U'(c) - \chi min(a',0)^2 - \tilde{\beta}(1+\bar{r})E[U'(c')|s] \tag{14}$$

where χ is the penalty parameter (set large to ensure that $a' > 0$), g is the growth rate, $\tilde{\beta} = \beta(1+g)^{1-\mu}$, c and a' are normalized values for consumption and assets next period and depend on the state this period, and c' is next period consumption that depends on the state next period.

Once the optimal policy function $a'(a,s)$ is computed, we need to compute the invariant distribution of a and s. This can be found by simulating the economy many periods as in Aiyagari (1994), by applying a second Finite Element method loop as in Aiyagari and McGrattan (1998) or Aiyagari and McGrattan (2003), or by constructing a transition matrix

for a and s built from knowing $a'(a, s)$ and $s'(s)$ as in Young (2010). Given the invariant distribution, we find the interest rate r that equates total assets of the household to the sum of capital and debt $K + B$. For each step in the Bisection method, we set τ_a to ensure the government budget is balanced.

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Table 1: Summary Statistics for Main IRS Sample: Women

Statistic	Total Sample	Self-Employed	Paid-Employed	Non-Employed
Observations (Mil.)	637.7	29.0	462.9	145.7
Shares (%)				
Counts	100	4.6	72.6	22.9
Total income	100	7.2	92.3	0.4
SE income	100	99.0	0.5	0.4
PE income	100	1.1	98.5	0.4
Incomes (2012$, Thous.)				
Mean, Total income	33.8	53.6	43.0	0.6
Percentiles, 10^{th}	0.0	5.2	11.7	0.0
25^{th}	6.5	10.3	20.2	0.0
50^{th}	24.8	18.4	33.8	0.0
75^{th}	45.7	51.2	52.9	0.3
90^{th}	71.5	120.5	78.3	3.0
Mean, SE income	2.1	45.8	0.0	0.0
Percentiles, 10^{th}	0.0	−10.6	0.0	0.0
25^{th}	0.0	8.8	0.0	0.0
50^{th}	0.0	15.4	0.0	0.0
75^{th}	0.0	41.0	0.0	0.0
90^{th}	0.0	105.2	0.0	0.0
Mean, PE income	31.7	7.8	43.0	0.6
Percentiles, 10^{th}	0.0	0.0	11.7	0.0
25^{th}	3.6	0.0	20.2	0.0
50^{th}	23.8	0.0	33.9	0.0
75^{th}	44.6	2.1	52.9	0.1
90^{th}	69.4	20.1	78.2	2.8
Education and skills (%)				
College-educated	56.5	58.9	61.1	41.4
Cognitive	36.5	35.3	40.1	25.2
Interpersonal	65.4	62.2	70.7	49.3
Manual	21.6	19.8	21.1	23.7
Primary industry (%)				
Agriculture	0.4	1.0	0.5	–
Mining	0.1	0.4	0.1	–
Utilities	0.1	0.1	0.1	–

Table 1: Summary Statistics for Main IRS Sample: Women (cont.)

Statistic	Total Sample	Self-Employed	Paid-Employed	Non-Employed
Primary industry (%)				
Construction	1.2	5.2	1.4	–
Manufacturing	4.7	2.3	6.3	–
Wholesale trade	1.7	2.2	2.1	–
Retail trade	5.0	7.9	6.3	–
Transportation	1.0	2.2	1.3	–
Information	0.9	1.1	1.1	–
Finance	2.4	2.3	3.1	–
Real estate	1.3	5.8	1.5	–
Professional services	5.3	12.7	6.5	–
Management	0.4	0.1	0.6	–
Administration	2.7	6.6	3.3	–
Education	0.4	1.0	0.5	–
Health care	6.2	13.8	7.7	–
Arts	0.5	2.3	0.5	–
Accommodation	2.6	4.2	3.3	–
Other services	1.9	15.4	1.7	–
Other NAICS	12.5	3.5	17.0	–
Missing NAICS	48.8	9.9	35.1	100
Employees and Profits				
Has employees (%)	1.7	30.0	0.3	0.5
Gross profits (Th. 2012$)	7.8	160.1	0.4	1.0
Demographics				
Male (%)	0.0	0.0	0.0	0.0
Married (%)	59.2	43.8	58.6	64.2
Has children (%)	52.4	58.8	54.1	45.7
Mean number of children	1.0	1.1	1.0	0.9
Median birth year	1963	1963	1963	1964
Other incomes (2012$, Thous.)				
Mean, spousal wages	35.8	30.0	32.1	48.6
Mean, asset income	8.1	38.8	4.7	12.8
Mean, UI income	0.3	0.2	0.3	0.4

Notes: SE=self-employed and PE=paid-employed. These summary statistics are computed using individual-year observations for the main balanced sample of Bhandari et al. (forthcoming). Incomes and gross profits are reported in thousands of 2012 dollars. Industries are classified by 2-digit NAICS.

Table 2: Summary Statistics for Main IRS Sample: Men

Statistic	Total Sample	Self-Employed	Paid-Employed	Non-Employed
Observations (Mil.)	642.1	78.6	478.0	85.6
Shares (%)				
Counts	100	12.2	74.4	13.3
Total income	100	19.3	80.5	0.1
SE income	100	97.1	2.8	0.2
PE income	100	3.6	96.3	0.1
Incomes (2012$, Thous.)				
Mean, Total income	64.2	101.5	69.5	0.6
Percentiles, 10^{th}	0.0	6.2	18.3	0.0
25^{th}	18.6	14.1	31.5	0.0
50^{th}	42.4	33.8	50.0	0.0
75^{th}	72.1	90.2	77.5	0.3
90^{th}	118.2	221.7	119.5	3.0
Mean, SE income	10.8	85.7	0.4	0.1
Percentiles, 10^{th}	0.0	−5.5	0.0	0.0
25^{th}	0.0	11.3	0.0	0.0
50^{th}	0.0	27.0	0.0	0.0
75^{th}	0.0	73.9	0.0	0.0
90^{th}	12.6	192.1	0.0	0.0
Mean, PE income	53.4	15.8	69.1	0.5
Percentiles, 10^{th}	0.0	0.0	18.4	0.0
25^{th}	8.3	0.0	31.6	0.0
50^{th}	38.3	0.0	49.9	0.0
75^{th}	66.5	1.0	77.1	0.0
90^{th}	105.6	33.7	118.5	2.2
Education and skills (%)				
College-educated	49.2	55.7	51.8	28.8
Cognitive	68.3	67.7	70.1	59.2
Interpersonal	51.9	54.8	54.6	34.1
Manual	53.5	46.4	52.6	65.1
Primary industry (%)				
Agriculture	1.0	1.6	1.0	–
Mining	0.5	0.4	0.5	–
Utilities	0.2	0.1	0.3	–

Table 2: Summary Statistics for Main IRS Sample: Men (cont.)

Statistic	Total Sample	Self-Employed	Paid-Employed	Non-Employed
Primary industry (%)				
Construction	8.1	18.8	7.8	–
Manufacturing	10.7	2.9	13.9	–
Wholesale trade	3.3	2.8	4.0	–
Retail trade	5.7	7.3	6.5	–
Transportation	3.3	6.7	3.3	–
Information	1.2	1.1	1.4	–
Finance	1.8	3.5	1.8	–
Real estate	1.7	4.6	1.5	–
Professional services	6.7	13.6	6.7	–
Management	0.5	0.1	0.6	–
Administration	3.2	4.2	3.6	–
Education	0.2	0.5	0.2	–
Health care	1.8	6.2	1.5	–
Arts	0.7	2.1	0.6	–
Accommodation	2.3	3.4	2.5	–
Other services	2.8	10.1	2.1	–
Other NAICS	5.8	2.8	7.3	–
Missing NAICS	38.6	7.0	32.8	100
Employees and Profits				
Has employees (%)	4.7	34.0	0.5	1.2
Gross profits (Th. 2012$)	36.4	281.8	1.7	5.1
Demographics				
Male (%)	100.0	100.0	100.0	100.0
Married (%)	63.2	75.9	66.3	33.9
Has children (%)	48.8	59.0	52.3	19.6
Mean number of children	0.9	1.2	1.0	0.4
Median birth year	1963	1961	1964	1963
Other incomes (2012$, Thous.)				
Mean, spousal wages	17.7	18.6	18.6	11.9
Mean, asset income	9.4	37.0	5.7	4.6
Mean, UI income	0.5	0.2	0.4	0.8

Notes: SE=self-employed and PE=paid-employed. These summary statistics are computed using individual-year observations for the main balanced sample of Bhandari et al. (forthcoming). Incomes and gross profits are reported in thousands of 2012 dollars. Industries are classified by 2-digit NAICS.

Table 3: Occupational Choice and Health Insurance Resources, CPS

	Potential Sources of Insurance					
	Husband		No Husband			
Occupational Choice	With Benefits	Without Benefits	With Transfers	Without Transfers	Other	Total
Paid-employed	19.3	8.8	3.0	18.1	14.1	63.2
Full-time	15.6	7.7	1.8	15.9	11.0	52.0
Part-time	3.7	1.2	1.1	2.2	3.0	11.2
Self-employed	1.5	0.4	0.3	1.2	2.3	5.8
Non-employed	7.3	2.7	6.0	3.8	11.2	31.1
Total	28.1	12.0	9.3	23.1	27.6	100.0

Notes: CPS= Current Population Survey. Table counts are based on survey responses in 2016. Rows correspond to responses of women, aged 25 to 65. The columns marked "Husband" include all respondents with husbands that have full-time, paid-employment. Husbands with benefits are those that reported participating in an employer-sponsored plan. Husbands without benefits are those that did not participate in an employer-sponsored plan. The column marked "No husband–with transfers" includes women that are single and receive benefits from the government. The column marked "No husband–without transfers" includes women that are single and have no other source of insurance. The column "Other" includes married women with husbands that are not full-time, paid employees.

Table 4: Occupational Choice and Health Insurance Resources, ACS

	Potential Sources of Insurance					
	Husband		No Husband			
Occupational Choice	With Benefits	Without Benefits	With Transfers	Without Transfers	Other	Total
Paid-employed	29.2	1.7	6.0	22.7	15.1	74.8
Full-time	20.4	1.0	2.1	17.6	8.9	50.1
Part-time	8.8	0.7	3.9	5.1	6.2	24.7
Self-employed	2.1	0.2	0.6	1.6	2.3	6.8
Non-employed	4.9	0.7	4.9	2.1	5.9	18.4
Total	36.2	2.6	11.5	26.4	23.3	100.0

Notes: ACS= American Community Survey. Table counts are based on survey responses in 2016. Rows correspond to responses of women, aged 25 to 65. The columns marked "Husband" include all respondents with husbands that have full-time, paid-employment. Husbands with benefits are those that reported participating in an employer-sponsored plan. Husbands without benefits are those that did not participate in an employer-sponsored plan. The column marked "No husband–with transfers" includes women that are single and receive benefits from the government. The column marked "No husband–without transfers" includes women that are single and have no other source of insurance. The column "Other" includes married women with husbands that are not full-time, paid employees.

Table 5: Model Equilibrium With and Without Mandated Benefits

Equilibrium values	With Mandate	Without Mandate	Percent Change
Prices			
Interest rate (%)	4.80	3.90	−18.8
Wage rate	0.63	0.81	28.6
Intermediate price	0.41	0.37	−9.8
Quantities			
Capital stock	4.20	4.81	14.5
Labor input	0.93	0.88	−5.4
Intermediate input	0.67	0.77	14.9
Output	1.37	1.43	4.4
Consumption	0.80	0.81	1.2

Notes: See Section 3 for details of the model and calibration. The case without mandates sets $\xi = 0$ and the case with mandates sets $\xi = 0.15$.

Table 6: National Accounts With and Without Mandated Benefits

Shares	With Mandate	Without Mandate	Percent Change
National Income			
Compensation	50.0	50.0	0
Wages	43.0	50.0	16.3
Benefits	7.0	–	–
Business income	20.0	20.0	0
Capital income	30.0	30.0	0
Total	100	100	
National Product			
Consumption	58.6	56.4	−3.8
Investment	21.4	23.6	10.3
Government	20.0	20.0	0
Total	100	100	

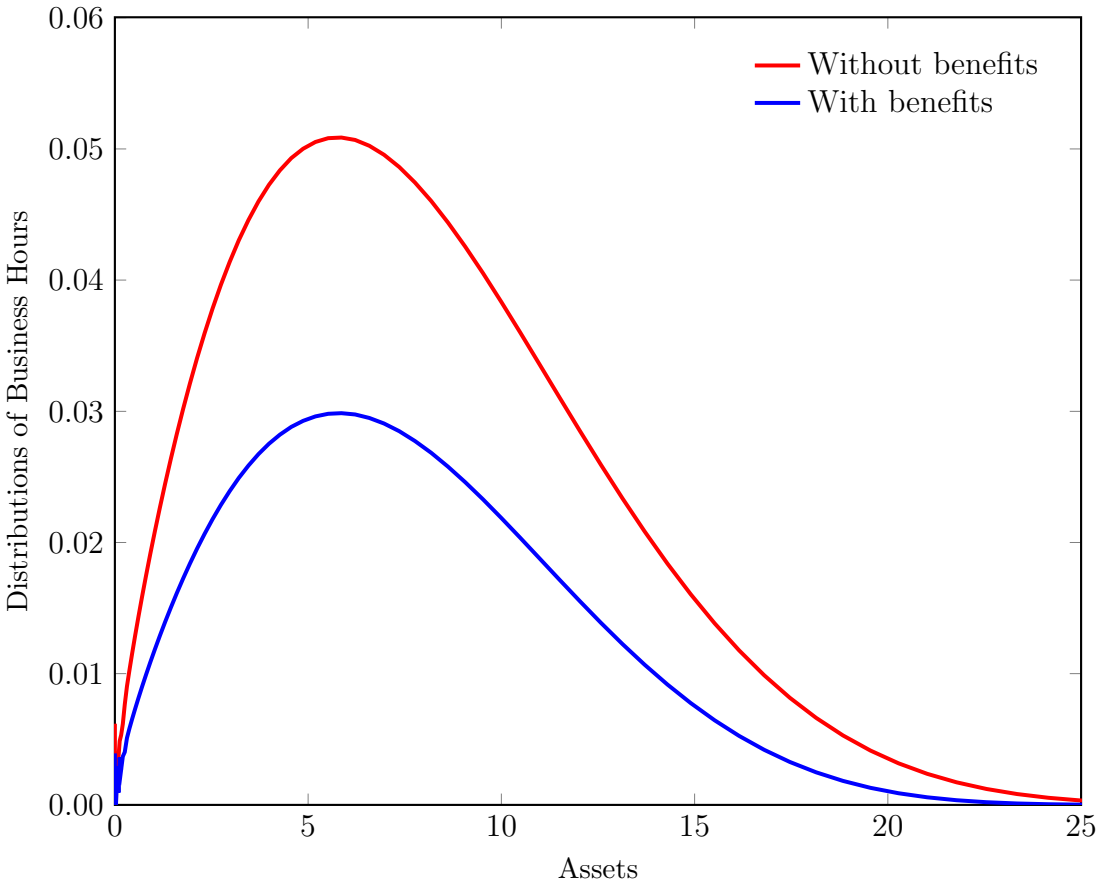
Notes: See Section 3 for details of the model and calibration. The case without mandates sets $\xi = 0$ and the case with mandates sets $\xi = 0.15$.

Table 7: Government Budget With and Without Mandated Benefits

Shares of GDP	With Mandate	Without Mandate	Percent Change
Government revenue shares			
Taxes on labor income	17.2	20.0	16.3
Taxes on business income	4.0	4.0	0
Taxes on capital income	3.5	0.7	−80
New debt issues	2.0	2.0	0
Total	26.7	26.7	
Government spending shares			
Government consumption	20.0	20.0	0
Transfers	3.0	3.0	0
Interest on debt	3.7	3.7	0
Total	26.7	26.7	

Notes: See Section 3 for details of the model and calibration. The case without mandates sets $\xi = 0$ and the case with mandates sets $\xi = 0.15$.

Figure 1: Distributions of Business Hours With and Without Mandated Benefits



Notes: The figure shows the probability densities of hours $h(a, s = 2)$ across a for second shock state $s = (2, 1.05)$, with both normalized by total hours $Eh(a, s = 2)$ in for the economy with mandated beneefits ($\xi = 15$ percent).