Income Taxation and the Allocation of Market Labor

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The allocation of work effort within the market economy will be unaffected by taxation if all returns from labor market activity are taxed equally. However, if the earnings from certain types of market employment are taxed at relatively lower rates, labor will shift into these areas until after-tax earnings are equal across all types of employment. This paper presents evidence suggesting that income taxation induces labor to move from high- to low-tax geographic areas and from wage and salaried jobs into self-employment activities. By affecting the allocation of market labor, the income tax generates a welfare loss in addition to that resulting from the tax's effect on total work effort.

I. *Introduction*

The supply-side effects of individual income taxation have been in the forefront of discussions of the economic desirability of income tax rate reductions. In discussing the impact of income taxes on labor markets, Arthur Laffer, Jude Wanniski, Paul Craig Roberts, and other tax-cut advocates have persuasively argued that high marginal tax rates decrease specialization and exchange in the market (taxed) economy by inducing individuals to consume additional leisure, to produce real (nontaxable) income through nonmarket activities, and to work in the "underground" economy where transactions are not observed, taxed, or regulated by governments. If the current system of federal, state, and local income taxes does reduce the amount of production in the market economy, then total income tax revenues are lower than otherwise, but effective tax burdens are higher than otherwise on individuals whose incomes are derived primarily from market activities.

The purpose of this paper is not to reexamine the labor-leisure trade-off or to estimate the size of the underground economy. That market labor supply will be decreased by income taxes *cum* income transfer programs that make market work less attractive and other uses of time more attractive seems so intuitively obvious

as to make econometric "proof" unnecessary.[1] Instead, I will argue that by misallocating labor resources income taxes reduce the nation's market (taxed) output even in the unlikely case that total market work effort is unaffected by taxation. The impacts of the current income tax system on the market allocation of labor have received little attention in the literature.[2] As explained below, these allocation effects exist because, in practice, effective tax burdens vary with the type and source of market income.

This paper defines the criterion necessary for the optimal allocation of labor (which maximizes total market output) and discusses under what conditions the income tax will induce labor supply shifts that divert labor from its optimal allocation. This is followed by an explanation of how the current tax system generates income tax burden differentials and by empirical evidence of labor supply shifts induced by such differentials. The paper concludes with a brief summary of the empirical findings and their policy implications.

II. *Taxation and the Allocation of Market Labor*

The output of goods and services in the market economy will be maximized when resources are allocated to equalize the value of their marginal products across all firms. The efficient or optimal allocation of labor can be illustrated with the help of Figure 1. D_A and D_B are the demands for labor in sectors A and B of the market economy, and their sum D_{A+B} is the aggregate demand for labor. The areas under these demand curves measure the real market product of labor. S is the aggregate supply of labor to the market, assumed to be perfectly inelastic with respect to the market wage. The optimal allocation of labor between sectors A and B is L_1, with $0_A L_1$ employed in A and $O_B L_1$ employed in B, and $W_0 = VMP_A = VMP_B$. To see why total market output is maximized by this allocation, notice that moving one worker from A to B would reduce output in sector A by more than the increase in output of sector B.

In a perfectly competitive economy, labor shifts will occur so as to equalize the real wages (and *VMP*s) of homogeneous labor inputs across geographical regions, occupations, and industries (Bellante and Jackson, 1979). The concept of equal *VMP*s across firms has been used to explain the welfare cost of "deadweight" loss of labor market imperfections such as unionization (Rees, 1963), discrimination (Bellante and Jackson, 1979), and competition for public

[1]Economists have generally believed that income taxes do not affect the labor supply of prime-age males, but may influence the work behavior of other demographic groups, such as married women. However, in a recent empirical study that improves substantially on the methodology and econometrics of earlier analyses, Hausman (1981) estimates that the current income tax system does significantly reduce labor supply.

[2]As evidence of the inattention given to this topic, notice that Break (1974), Goode (1976), and Rosen (1980) cite very few studies dealing with the effects of income taxes on occupational choice, human capital investment, and type of work. An exception is the recent paper by Long (1981a).

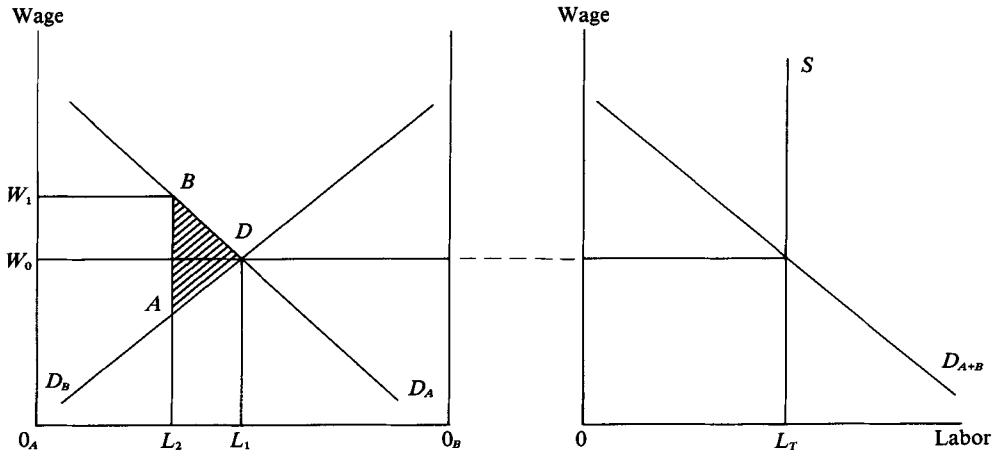

Figure 1

employee rents (Bellante and Long, 1981). For example, if unions are able to raise wages in sector A to W_1, employment declines to O_AL_2 in this sector. This increases the supply of labor to the nonunion sector (B), raising employment to O_BL_2 but driving down wages. Since the *VMP* of labor is now relatively higher in sector A than sector B, the value of the economy's market output is reduced by the shaded area BAD, which measures the welfare cost of unionism.

Turning now to the effect of income taxes on the allocation of labor, suppose that the earnings of labor in sectors A and B are taxed at a proportional rate of 20 percent. The income tax will reduce the net wage, which can be represented by pivoting the demand curves downward to D_A', D_B', and D_{A+B}', as shown in Figure 2. The efficient allocation of labor within the market economy remains at L_1, where both the net and gross returns to labor are equalized, although the net wage is now only 80 percent of its gross (before-tax) level. Once the assumption of a vertical market labor supply curve is dropped, it can be shown that the income tax misallocates labor *between* the market (taxed), household, and underground economies. For example, if the income tax increases the consumption of leisure and household production, or raises the share of total output produced in the underground economy, total market work effort declines to OL_T', as given by the elastic labor supply curve S' in Figure 2.[3] The area BAD is the resulting welfare cost or deadweight loss.[4]

[3]Once these options to market work are recognized, it naturally follows that labor supply to the market will be sensitive to changes in the net market wage (Isachen and Strom, 1980).

[4]Technically, the welfare cost results because the income tax drives a "wedge" between the gross market wage (the value of labor in the market economy) and the net wage (the value of market work to the individual). Browning (1976) estimated the welfare cost due to market labor supply distortions arising from taxes on labor income to be $12.8 billion in 1974, or about 4.4 percent of tax revenues.

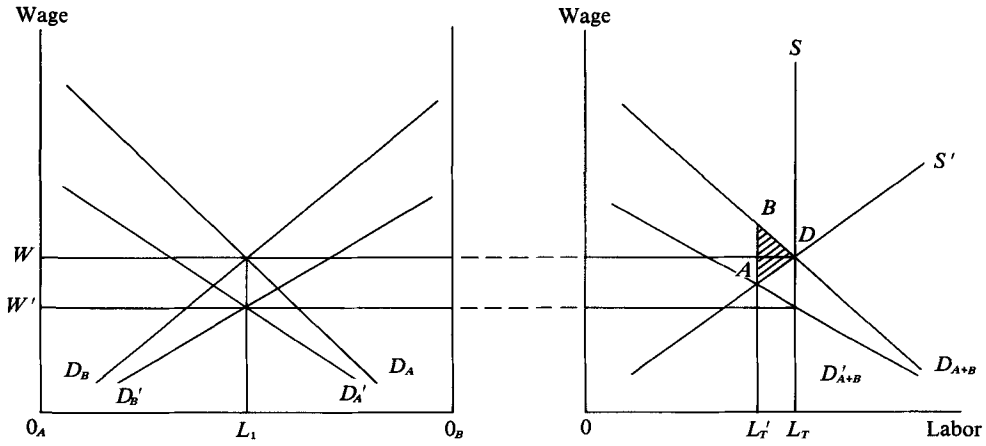

Figure 2

In practice, however, the income tax also misallocates labor *within* the legal market sector because the effective tax rates on market earnings vary with their type and source, as explained below. For analytical purposes, suppose that the government introduces an income tax that reduces the net return to market work by 20 percent in sector A but only 10 percent in sector B, as shown by the demand curves D_A' and D_B' in Figure 3. This imposes a relatively greater burden on individuals employed in sector A, and in the short run nothing can be done to avoid the heavier tax burden. In the long run, labor will flow from sector A into sector B, where it will earn a higher net return. These supply shifts will continue until the net wage is equal in both sectors, creating the allocation L_2 (with O_AL_2 labor in sector A and O_BL_2 in sector B). In the process labor will be diverted from its efficient allocation (at L_1), since the gross return to labor, or its true physical productivity, is higher in sector A than sector B. This misallocation of labor imposes a welfare cost, represented by the area BAD, which is conceptually similar to that associated with the corporation income tax (Harberger, 1962).

In the following sections of the paper, I will describe the features of the U.S. income tax system that give rise to equal real incomes being taxed at relatively higher rates when earned in high cost-of-living areas and when earned from wage and salary employment. I will also present empirical evidence of labor supply shifts in response to these tax differentials. These differentials will divert market labor from its optimal allocation, which generates a welfare loss in addition to that resulting from the income tax's effect on total market work effort.

III. *Regional Differences in Income Burdens*

Under perfect competition, real wages will tend to equalize across regions due to interregional trade and flows of capital and labor (Bellante and Jackson, 1979).

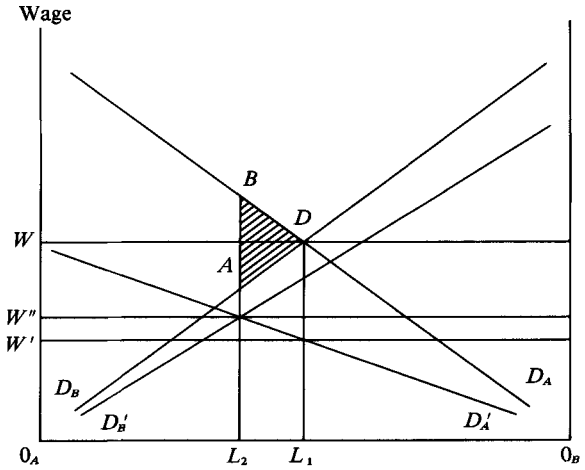

Figure 3

Consequently, nominal earnings will be relatively higher in high cost-of-living areas. Because the tax rate structures of the federal and many state income taxes are progressive and designated in nominal terms, taxes will differ between regions of the United States and even within areas of states. For example, tax burdens will tend to be higher in the North than in the South and higher in large urban areas than in rural areas, even though real incomes in the absence of taxes will equalize across regions and areas.[5] *Ceteris paribus*, these tax differentials will induce labor supply shifts that equalize the after-tax real returns to market work, as explained previously. As a consequence, the gross (before-tax) physical product of labor will differ across regions and areas, which is inconsistent with the maximization of total market output (Lucas, 1977).

To illustrate the magnitude of regional income tax differentials, 38 SMSAs for which cost-of-living data are available were used to calculate the nominal earnings necessary to equalize the average real (i.e., cost-of-living adjusted) wages of male year-round full-time workers across these areas in 1967 and 1978.[6]

[5]This impact of the income tax system has received much less publicity than the "bracket creep" phenomenon resulting from the combination of inflation and progressive tax rates.

[6]The cost-of-living data refer to the annual costs of family consumption (excluding personal income taxes) based on an intermediate budget for a four-person family (U.S. Bureau of Labor Statistics, Bulletin No. 1570-5, *3 Standards of Living for an Urban Family of Four Persons*).

The mean earnings of all male year-round full-time workers in the United States as a whole were inflated or deflated by the SMSA cost-of-living figures in order to produce the nominal earnings in SMSA that equalized real earnings across SMSAs. The U.S. average earnings were taken from U.S. Bureau of the Census, *Current Population Reports*, P-60, No. 60, "Income in 1967 of Persons in the U.S., " and No. 123, "Money Income of Families and Persons in the U.S. in 1978."

The federal and appropriate state and local income tax structures were applied to these nominal earning levels in order to calculate the marginal income tax rate and real tax liability confronting the average-income worker.[7] These data, reported in Table 1, indicate that income tax burdens vary widely across major metropolitan areas. An additional dollar of labor income earned in 1967 was taxed at 32 percent in Minneapolis-St. Paul but only 22 percent in Austin, Dallas, Houston, Nashville, and Orlando. In 1967, real income tax liability ranged from a low of $1,121 in Austin to a high of $1,459 in Milwaukee. Inflation, income growth, and legislated tax increases combined to raise marginal tax rates and real tax burdens (measured in 1967 dollars) substantially by 1978, with the largest increases occurring in New York, Portland, Detroit, and Baltimore.

Data on net migration can be used to test the hypothesis that, *ceteris paribus*, labor will flow into areas with relatively low income tax burdens. Migration theory posits that an individual's decision to locate in a given area depends on the expected level and growth of income in that area and on the amenities or "quality of life" in the area. Ignoring fiscal variables for the moment, a general model suggested by the migration literature specifies the volume of net migration into area i between the years j and k, M_i^{jk}, as:

$$M_i^{jk} = f(Y_i^j, \Delta Y_i, UN_i^j, DW_i),$$

where Y_j^i = median real family income in area i in year j;

ΔY_i = percentage change in real income in area i between years j and k;

UN_i^j = average unemployment rate in area i in year j; and,

DW_i = a dummy variable to denote location of area i in a western state.

Net migration rates for the SMSAs listed in Table 1 are published by the U.S. Bureau of Census (1980a) for the periods 1960 to 1970 and 1970 to 1977. Regression estimates of the migration model for these periods are presented in Table 2, equations (1) and (4). The income change, unemployment, and regional variables are statistically significant in both equations and carry signs consistent with previous studies (Cebula, 1979). The level of real family income at the beginning of the migration period is not significant and carries an unexpected negative sign for the more recent period. This finding, together with the relatively lower explanatory power of equation (1), suggests that the structure and determinants of human migration during the 1970s differ from that occurring in the 1960s.[8]

It can be argued that the relevant income variable in the migration decision is real income adjusted for the costs and benefits of government policies (i.e., the

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[7]Federal income tax schedules were taken from U.S. Internal Revenue Service, *Statistics of Income: Individual Income Tax Returns*. In states not having a personal income tax or not taxing labor income, the state tax rate was set equal to zero. Details of state and local income taxes can be found in Advisory Commission on Intergovernmental Relations, *Significant Features of Fiscal Federalism*. The tax rates used to reflect SMSA differentials in income taxation are those facing a single worker taking the standard deduction and claiming one exemption.

Table 1

Personal Income Tax Burdens, by SMSA, 1967 and 1978

	Marginal tax rate (%)		Real tax liability ($)	
SMSA	1967	1978	1967	1978
Boston	27.5	39.0	1412	2190
Buffalo	30.0	41.0	1414	2268
Hartford	25.0	31.0	1265	1861
Lancaster	25.0	31.5	1187	1942
New York	30.0	47.1	1449	2291
Philadelphia	26.6	33.0	1194	1912
Pittsburgh	26.5	32.3	1170	1897
Portland (Maine)	25.0	40.2	1217	2135
Cedar Rapids	28.8	38.0	1291	2080
Champaign-Urbana	25.0	33.5	1222	1999
Chicago	25.0	33.5	1228	2025
Cincinnati	26.0	35.5	1176	1821
Cleveland	25.0	35.0	1218	1894
Dayton	23.0	33.3	1163	1813
Detroit	25.0	37.6	1190	2092
Green Bay	27.5	40.4	1402	2247
Indianapolis	27.0	33.0	1348	1960
Kansas City	28.0	37.0	1252	1949
Milwaukee	30.5	42.4	1459	2333
Minneapolis-St. Paul	32.0	43.8	1399	2342
St. Louis	28.5	38.0	1270	2003
Wichita	29.0	37.5	1298	2009
Atlanta	25.0	35.0	1194	1978
Austin	22.0	29.0	1121	1617
Baltimore	25.0	38.5	1348	2039
Baton Rouge	24.0	31.0	1182	1772
Dallas	22.0	29.0	1150	1676
Durham	27.0	36.0	1402	2121
Houston	22.0	29.0	1147	1651
Nashville	22.0	29.0	1153	1687
Orlando	22.0	29.0	1142	1667
Washington, D.C.	28.0	40.0	1364	2267
Bakersfield	28.0	38.0	1264	2083
Denver	31.0	39.0	1458	2126
Los Angeles	28.0	40.0	1313	2179
San Diego	28.0	40.0	1302	2154
San Francisco-Oakland	28.0	40.0	1353	2226
Seattle-Everett	29.0	31.0	1246	1837

[8]For example, during the 1970s the South did not experience as much net out-migration of blacks as it did during the 1960s. In addition, the tendency of net migration rates to decrease with city size (which is positively related to family income) was more significant in the 1970-77 period than during the 1960s. For additional discussion of migration trends in the 1960s and 1970s, see U.S. Bureau of Census (1980b).

Table 2

Determinants of Net Migration into SMSAs, 1970-77 and 1960-70

	1970-77			1960-70		
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Y ($100s)	−.240	−.236	−.232	.276	.289	.276
	(−1.49)	(−1.56)	(−1.52)	(1.31)	(1.42)	(1.29)
ΔY	.314	.189	.201	.632	.514	.629
	(2.03)	(1.22)	(1.29)	(6.02)	(4.29)	(5.11)
UN	−3.203	−2.830	−3.143	−1.865	−2.259	−1.881
	(−2.49)	(−2.32)	(−2.57)	(−2.32)	(−2.81)	(−2.14)
DW	10.179	11.328	11.841	13.149	13.939	13.174
	(2.22)	(2.62)	(2.67)	(4.71)	(5.11)	(4.58)
MTR	—	−.872	—	—	−.779	—
		(−2.34)			(−1.83)	
RTAX ($100s)	—	—	−1.906	—	—	−.056
			(−2.11)			(−.05)
Constant	18.051	51.295	55.304	51.299	−21.267	−50.284
	(.85)	(2.10)	(2.06)	(−2.71)	(−.86)	(−1.78)
R^2	.247	.357	.340	.652	.685	.652

Notes: *t*-values in parentheses; Data from U.S. Bureau of Census (1973a, 1973b, 1978, 1980a).

net fiscal burden). That is, the levels of income, sales, and property taxes together with the quality of schools, welfare-benefit levels, and other public expenditures should be incorporated in the potential migrant's decision calculus. By deflating nominal family income by the SMSA cost-of-living index, differentials in sales and property tax burdens have been partially accounted for in the migration regression. To examine the effect of income taxation on migration, the marginal income tax rate (*MTR*) and, alternatively, the real total income tax liability (*RTAX*) are added to the regression model. For the 1970-77 period, *MTR* and *RTAX* are measured as the simple averages of the 1967 and 1978 rates and liabilities, as estimated in Table 1. In the 1960-70 regression, *MTR* and *RTAX* are set equal to the marginal rate and real tax burden in 1967.

High marginal tax rates on income are estimated to reduce net in-migration, as seen by the negative coefficients of *MTR* in equations (2) and (5). Both coefficients are statistically significant, most so in the 1970-77 regression. *Ceteris paribus*, a 1 percentage point increase in the marginal income tax rate is estimated

to reduce the net migration rate by .78 to .87 percentage points. The coefficient of *RTAX* is also negative, but it is statistically significant only in equation (3). *Ceteris paribus*, each $100 increase in the real tax liability reduces net migration during 1970-77 by 1.91 percentage points.

In theory, a high tax burden need not discourage in-migration if there exists a compensating differential in terms of the benefits from public expenditures. However, it is unlikely that these empirical results would be overturned by controlling for SMSA differences in fiscal benefits. First, incomes received from government programs, such as aid to dependent children and old age assistance, are already embodied in the family income measure, so it is not necessary to include specific welfare variables in the migration regression (Cebula, 1979). Second, the coefficients of *MTR* and *RTAX* retain their signs and significance when one measure of nonwelfare benefits, the per capita level of local government spending on education, is included in the regression.[9] Finally, in SMSAs where a relatively high cost-of-living inflates nominal incomes and the associated federal tax burdens, per capita federal outlays generally fall short of per capita taxes.[10]

Data on changes in employment by SMSA provide an alternative, and perhaps more direct, test of the impact of income taxation on labor supply shifts. The number of employees in private sector establishments for the years 1966 and 1978 were obtained from *County Business Patterns*, published by the Census Bureau. Changes in employment during 1966-78 for the SMSAs listed in Table 1 averaged 55 percent, but the variation of SMSA was substantial. Employment growth ranged from −11 percent in New York to +166 percent in Austin. The percentage change in employment was regressed on the average marginal tax rate (*MTR*) and average real tax liability (*RTAX*) for the period 1967-78, as defined above. Alternatively, employment growth was regressed on the change in tax burden between 1967 and 1978, proxied by the ratio of 1978 to 1966 marginal tax rates (ΔMTR) and tax liabilities ($\Delta RTAX$). As control variables the regression included the real mean earnings of males in 1969 (*REARN*) and a dummy variable for SMSA location in a warm weather state (*DWARM*), as delineated in Cebula (1979).

The regression results, reported in Table 3, reveal that the model explains over 50 percent of the variation in employment change among SMSAs. Employment growth in the 1966-78 period is negatively related to the level of income taxa-

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[9]For example, when real educational expenditures (*REDUC*) are added to equation (2), the estimate becomes:

$$M = \underset{(2.11)}{53.804} - \underset{(-1.60)}{.255}\,Y + \underset{(1.11)}{.177}\,\Delta Y - \underset{(-2.30)}{2.845}\,UN + \underset{(2.45)}{10.956}\,DW - \underset{(-2.21)}{.966} + \underset{(.43)}{.016}\,REDUC$$

$$R^2 = .361$$

[10]This observation is suggested by data in Carter (1981), which compare per capita federal outlays and taxes by state. In 1976, federal taxes exceeded expenditures in New York, Minnesota, and Wisconsin, states containing the highest-tax SMSAs listed in Table 1.

Table 3

Determinants of Employment Growth in SMSAs, 1966-78

Variable	(1)	(2)	(3)	(4)
MTR	−3.709 (−2.66)	—	—	—
RTAX ($100s)	—	−8.917 (−2.69)	—	—
Δ*MTR*	—	—	−100.896 (−1.89)	—
Δ*RTAX*	—	—	—	−126.538 (−2.04)
REARN ($100s)	−1.102 (−1.51)	−.980 (−1.38)	−.889 (−1.19)	−.642 (−.84)
DWARM	48.637 (4.87)	50.452 (5.06)	56.208 (5.48)	49.917 (4.73)
Constant	240.528 (3.37)	262.489 (3.25)	243.953 (2.65)	287.423 (2.75)
R^2	.578	.569	.526	.534

Notes: See Table 2.

tion and its rate of change. The coefficients of the average marginal tax rate and the real tax liability, shown in equations (1) and (2), are highly significant. Employment growth falls by 3.7 percentage points for each 1 percentage point increase in *MTR* and falls by 8.9 percentage points for each $100 rise in *RTAX*. The relationship between employment growth and changes in the income tax rate or tax liability is somewhat less significant but still negative, as seen in equations (3) and (4). The growth in employment during 1966-78 is found to be largest in SMSAs with low labor costs (as revealed by the negative coefficients of *REARN*) and in warm weather locations.[11]

The empirical results presented in this section are consistent with the hypothesis that labor will flow from high- into low-tax areas. If the gross physical

[11]The dummy variable for warm weather states is capturing part of the low-wage, low-tax attractiveness of the South, which can be seen by noting the increased significance of *MTR* and *REARN* when a dummy for location in a western state (*DW*) replaces *DWARM* in equation (1):

$$\%\Delta EMP = \underset{(4.29)}{367.10} - \underset{(-3.32)}{5.85}\ MTR - \underset{(-1.80)}{1.649}\ REARN + \underset{(1.62)}{27.12}\ DW$$

$$R^2 = .329$$

product of labor differs across areas as a result of these labor supply shifts, then total market output will fall below its potential maximum level. This loss of output is an excess burden that exists because of regional differences in income tax burdens. Evidence of labor supply movements in response to a different type of tax differential, which results in yet another welfare cost, is presented in the next section.

IV. *Tax Rate Differentials by Type of Work*

In a market economy, individuals can work for firms as wage or salaried employees or they can supply labor to their own business, professional practice, or partnership. In theory, the income tax is general in the sense that its impact is the same on returns from all types of market production. For example, under a proportional income tax of 25 percent, an additional dollar of earnings will yield 75 cents of disposable income for both the self-employed lawyer and the lawyer employed as corporate legal counsel. In this case the income tax will not influence the choice between self-employment or salaried work; instead, the self-employment choice will depend on income-leisure and risk preferences, capital raising ability, experience, and other nontax factors (Long, 1981a).

In practice, the income tax is never perfectly general and, thus, may affect an individual's employment choice. For reasons first pointed out by Goode (1949) over 30 years ago, incomes from self-employment are thought to be less heavily taxed than wages or salaries. First, taxation of the self-employed depends primarily on voluntary compliance, whereas income taxes on wages and salaries are withheld by employers. Studies suggest that a larger percentage of business and professional incomes than wages is unreported to tax authorities (Stern, 1967; Pechman and Okner, 1974), which implies that effective or actual tax rates are relatively lower for the self-employed. Second, self-employed workers can reduce their taxable incomes through deductions for the cost of entertainment, travel, housing, and other expenditures incurred in order to earn income. Even when such expenditures serve business purposes (i.e., are productive inputs), the self-employed worker may still receive personal (consumption) benefits. A comprehensive income tax would include the latter in taxable income, but under present tax treatment personal benefits (real income) are generally not taxed — a practice that misallocates resources by distorting the demand for business "perks" (Clotfelter, 1981). Finally, self-employment provides opportunity for tax savings through using corporate entities to shield income from the higher personal tax rates on wages and salaries. Leibowitz and Tollison (1980), Raby (1972), and others have noted that there are large tax savings involved in corporate practice of law, medicine, and other professions.

Operating a business or professional practice can be very costly (in terms of capital expenses, susceptibility to financial risk, and so forth), but as income taxes rise it may be efficient to incur the costs of self-employment since effective tax rates on real incomes are relatively lower for the self-employed. For example,

rising taxes may induce salaried lawyers to leave firms that specialize in antitrust matters in order to establish legal practices serving the needs of individuals. When this occurs in competitive markets, law firms trying to replenish their ranks will bid up before-tax salaries whereas the increased supply of self-employed lawyers will tend to reduce legal fees. Lawyers will continue to shift from salaried jobs into self-employment until the after-tax returns are equal in both types of work, although before-tax returns will then be relatively higher in salaried work. This results in a welfare cost, since efficiency requires that an additional unit of work effort produce the same value of market output (e.g., legal services) whether one is self-employed or salaried. The existence of this welfare cost can be determined by estimating the effect of income taxation on the choice between self-employment and salaried work.

Data on self-employment among male professional-technical workers in 1970 are published by the U.S. Bureau of Census (1973a) for 33 of the SMSAs listed in Table 1. Professionals are highly mobile and can be expected to know the tax laws. In addition, there is a precedent in the literature for examining the self-employment decision of professionals (Friedman and Kuznets, 1945). In the published class-of-worker data, the number of self-employed professionals is understated since owners of incorporated firms are considered employees of their corporation rather than self-employed. The number of corporate-owners for all occupations combined is published, however, and can be used to estimate the total number of self-employed professionals (proprietors, practitioners, partners, and corporate-owners).[12] The ratio of self-employment to total employment (*SER*) is regressed on the 1967 marginal income tax rate (*MTR*) and real tax liability (*RTAX*) for high-income workers.[13] *Ceteris paribus*, the relative number of self-employed professionals should be highest in the SMSAs with the highest income tax burdens.

The regression equation includes a number of variables to control for nontax determinants of the self-employment ratio (Long, 1981a). The self-employment ratio may be positively related to the percentage of male professionals who are nonwhite (*PCTNEGRO*) if discrimination reduces the opportunities for blacks to enter salaried employment. Since the earnings from salaried work are the opportunity cost of self-employment, the relative number of self-employed pro-

[12]This procedure is straightforward. Let C be the total number of males of all occupations who are employees of their own corporations and N be the total number of males working in unincorporated businesses, professional practices, or partnerships. The total number of self-employed professionals is estimated as $(1 + C/N) = N_p$, where N_p is the number of professionals working in unincorporated businesses, professional practices, or partnerships. This estimate is still expected to understate the true self-employment ratio for professionals, since C/N is not constant across occupations but rather is highest in the upper-income categories.

[13]*MTR* and *RTAX* were estimated using the procedures described in footnotes 6 and 7, except that the earnings data covered professional-technical and managerial occupations only.

fessionals should be negatively related to the real median earnings (in $1,000s) in 1969 of male professionals (*RWAGE*). Because the incomes of consumers and the monetary returns of independent businessmen serving them increase with urban-size, the self-employment ratio should be directly related to the SMSA population (*POP*) in 1970 (in 100,000s). Finally, the opportunities for salaried work are expected to be greater, and hence *SER* smaller, in SMSAs with the high percentages of employment in manufacturing industries (*PCTMFG*) and the public sector (*PCTGOVT*).

The self-employment ratio varied substantially across major SMSAs in 1970, ranging from a low of .084 in Austin to a high of .232 in New York. Nearly 80 percent of the variation in *SER* is explained by the regression model, presented in Table 4. The coefficient of *MTR* in equation (1) is positive and statistically significant at the 1 percent level, indicating that the marginal rate of income taxation is an important determinant of the relative number of self-employed professionals. In elasticity terms, a 10 percent increase in *MTR* raises the self-employment ratio by 6.4 percent. The relative number of self-employed professionals also increases

Table 4

Determinants of Male Self-Employment in SMSAs, 1970

Variable	(1)	(2)
MTR	.0025 (2.82)	—
RTAX ($100s)	—	.0036 (2.38)
PCTNEGRO	.0035 (2.21)	.0027 (1.72)
RWAGE	−.0115 (−2.96)	−.0111 (−2.74)
POP	.0005 (4.11)	.0006 (4.72)
PCTMFG	−.0012 (−2.72)	−.0012 (−2.50)
PCTGOVT	−.0027 (−4.34)	−.0024 (−3.94)
Constant	.2274 (4.36)	.2190 (3.72)
R^2	.791	.774

Notes: See Table 2.

with the expected total income tax liability. The coefficient of *RTAX* in equation (2) implies that a tax increase of $300 would raise the self-employment ratio by approximately 1 percentage point. The nontax variables in the regression model are also significant and carry the expected signs.

The Census count of the number of self-employed includes only individuals reporting that their major work activity during the reference week was self-employment. By omitting those persons operating a business or engaging in partnership activity in addition to their regular wage or salary jobs, Census data understate the labor supply in self-employment. Consequently, the effect of taxation on self-employment may be greater than the regression results indicate.

An alternative measure of self-employment can be constructed from the Internal Revenue Service *Statistics of Income* data. The number of individual proprietorships, small business corporations, and business partners can be combined to yield the total number of "business income" returns, which when divided by the number of individual tax returns provides an index of self-employment activity. This index (*SEI*), which can be calculated for nonfarm industries for the years 1963-77, is regressed on the marginal federal income tax rate (*FMTR*) for the average working couple.[14] As control variables, the regression includes the real median wage and salary earnings of males (*RWAGE*), the percentage of the labor force female (*PCTFEM*), the annual average unemployment rate (*UNRATE*), the percentage of the labor force over age 55 (*PCTOLD*), and the percentage of nonagricultural employment in services-producing industries (*PCTSERV*). The self-employment index is expected to increase with *FMTR* and decrease with *RWAGE* for the reasons stated above. Data on self-employment according to sex (Bregger, 1963) and industry (Long, 1981a) suggest that *SEI* will decline as the female share of the labor force rises and increase as the economy becomes more services-intensive. If rising unemployment reflects declining sales and unfavorable conditions for business formation, the relationship between *SEI* and *UNRATE* should be negative. As the population ages, the share of individual income derived from pensions and other retirement plans rises, so a negative coefficient is expected for *PCTOLD*.

The regression estimates, which were corrected for autocorrelation using the standard Cochrane-Orcutt procedure, are:

$$\begin{aligned} SEI = &- \underset{(-1.25)}{.1263} + \underset{(2.98)}{.0015}\, FMTR - \underset{(-1.31)}{.0042}\, RWAGE + \underset{(3.96)}{.0108}\, PCTSERV \\ &- \underset{(-4.86)}{.0049}\, PCTFEM - \underset{(-1.98)}{.0031}\, UNRATE - \underset{(-3.31)}{.0039}\, PCTOLD \end{aligned}$$

$$R^2 = .993 \qquad (t\text{-values in parentheses})$$

[14]Specifically, *FMTR* is defined as the marginal rate faced by a couple with the following characteristics: (1) husband receives the average income of male full-time workers, (2) wife receives the average income of female full-time workers, and (3) husband and wife file a joint return using the standard deduction and claiming two dependents.

As hypothesized, the coefficient of the marginal tax rate is positive and highly significant. *Ceteris paribus*, rising tax rates increase the relative number of individuals deriving incomes from tax-preferred "business" sources.[15] The remaining coefficients carry the predicted signs, and all variables but *RWAGE* are significant.

Although the Census and IRS measures of self-employment activity are not directly comparable, they are consistent in revealing that rising tax rates induce individuals to receive income from "business" sources rather than from wages, salaries, interest, and other more heavily taxed sources. This need not involve an absolute movement of labor from wage or salary work into self-employment. For example, it is probably common in many university towns to find salaried professors (and other individuals) forming partnerships for the purpose of supplying off-campus housing for students. The bulk of professors' labor continues to flow into teaching and research, but the little time diverted into details of the partnership can provide large accounting losses (through depreciation of structures and furnishings) to offset taxable income from salary, royalties, honoraria, and so forth. A welfare cost can result nonetheless, as capital flows away from projects that are more productive for society and into activities that are profitable to the individual only because of the tax savings they provide.[16]

V. *Summary and Implications*

It has long been recognized that the individual income tax, by omitting leisure, the services (real income) of consumer durables, and other items from the tax base, is not a truly "comprehensive" tax in the Haig-Simons sense. Consequently, income taxes distort the choices of individuals (e.g., by creating incentives to own homes and to consume additional leisure) and create resource misallocations that impose welfare costs or excess burdens. For the most part, however, the individual income tax has been assumed to have the same impact on returns from all types of market work and, in this sense, to be a "general" tax in contrast to a

[15]The increase in tax rates during the 1970s has also induced individuals to substitute other types of tax-preferred income, such as fringe benefits, for wages and salaries. See Long and Scott (1981c).

[16]The hypothesis that partnerships and other business ventures might be demanded as a source of losses to offset labor income can be tested as follows. Since the value (i.e., tax savings) of "business" losses increases with the tax rate of labor income, the percentage of business partnership and proprietorship returns reporting net losses (*PCTLOSS*) should be positively related to the federal income tax rate. Regressing *PCTLOSS* on *FMTR* for the years 1948-79 yields the following equation:

$$PCTLOSS = \underset{}{34.72} + \underset{(3.72)}{.439}\ FMTR + \underset{(1.96)}{.072}\ UNRATE - \underset{(.17)}{1.951}\ PROFIT \underset{(-4.94)}{}$$

$$R^2 = .672$$

The coefficient of *FMTR* is positive and significant at the 5 percent level, suggesting that the reporting of losses is influenced by tax considerations. The variables *UNRATE*, annual unemployment rate, and *PROFIT*, gross corporate profits relative to GNP, are entered in the equation to control for nontax determinants of the economic health of a partnership or proprietorship.

"specific" tax like the corporate income tax. Hence, the individual income tax has been considered to have a neutral impact on the allocation of market labor.

In this paper I have argued that, in practice, the personal income tax is not a truly general tax. Income tax rates are relatively higher on market incomes earned in high cost-of-living areas and in wage and salaried jobs. A variety of empirical results have been presented that are consistent with the hypotheses that the income tax induces labor to move from high- to low-tax geographic areas and from wage and salaried jobs into self-employment activities. In responding to these tax rate differentials, market labor is diverted from its most efficient allocation, thus resulting in excess burdens that must be added to the other welfare costs of the individual income tax (Long, 1981b).

Since income tax rate differentials are responsible for the labor supply shifts that divert labor from its optimal allocation in the market economy, the welfare costs of the income tax could be avoided by taxing incomes from all sources at the same rate. In the case of geographical tax rate differentials, replacing progressive tax rate structures with proportional rates would equalize the tax burdens on equivalent real incomes earned in different areas of states and the nation. Geographical tax rate differentials would also disappear if the tax base was redefined on the basis of real (price-level-adjusted) income — a reform that would eliminate other problems as well, such as the way inflation overstates the measurement of income (e.g., by including nominal capital gains and interest income in the tax base). If it is feasible to make allowances in federal pay scales for area differences in the cost of living, it would also be possible to "index" the federal and many state income taxes.[17] Differences in the tax treatment of self-employment income and wages or salaries could be eliminated by redefining taxable income to include the consumption benefits of business expenditures and by integrating the corporate and personal income taxes. However, such proposals involve thorny issues and have generated considerable controversy in the past (Clotfelter, 1981).

In the case of these and other distortions of the individual income tax, the need for redefining the tax base or restructuring tax rates becomes less acute as tax rates are lowered in general. In this respect, the federal income tax rate reductions that began on October 1, 1981, will reduce but not completely eliminate the adverse effects of income taxation on resource allocation and output in the market economy.

[17]See Rockefeller (1975) for a discussion of reforming federal pay policies.

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