

This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: Substituting a Value Added Tax for the Corporate Income Tax: First-Round Analysis

Volume Author/Editor: Stephen P. Dresch, An-loh Lin, and D. K. Stout

Volume Publisher: NBER

Volume ISBN: 0-884-10474-5

Volume URL: <http://www.nber.org/books/dres77-1>

Publication Date: 1977

Chapter Title: A Miscellany of Additional Topics

Chapter Author: Stephen P. Dresch, An-loh Lin, D. K. Stout

Chapter URL: <http://www.nber.org/chapters/c3834>

Chapter pages in book: (p. 157 - 186)

 Chapter 7

A Miscellany of Additional Topics

The preceding chapters, which have been focused on the effects of the VAT-CIT substitution on income distribution, investment, and international trade, certainly do not exhaust the specific issues relevant to the evaluation of this proposed change in tax structure. The issues were selected both because they represented important areas of substantive concern and because they were amenable to meaningful analysis within the confines of the techniques employed here to assess the short-run consequences of the tax substitution. All three have been of significant policy concern and have been primary foci for the various debates over the desirability of the value-added tax within the context of United States tax structure.

However, a number of other important issues arise in connection with a VAT-CIT substitution, to which the preceding analysis can make some contribution. This chapter contains brief examinations of several of these topics, including (a) intergovernmental fiscal effects of the substitution, (b) resultant differential interindustry changes in tax liabilities, (c) interindustry implications of possible wage-adjustments accompanying the substitution, (d) probable differential regional consequences, and (e) potential allocative effects of the tax substitution.

7.1 INTERGOVERNMENTAL FISCAL CONSEQUENCE OF THE TAX SUBSTITUTION

Although nominally involving only two tax instruments, according to the relative yield criterion which has been employed (equal change in government revenue and expenditure), the VAT-CIT substitution would have a number of direct and indirect fiscal consequences, as discussed in sections 2.2 and 2.5. First, the reduction or repeal of the CIT, if the benefits of this tax reduction were shifted, would reduce prices of government-purchased goods and services. Similarly, any failure to fully shift new VAT liabilities forward to purchasers in the form of higher prices—a possibility that has not been considered here—would *reduce* the net-of-VAT prices effectively paid by government. Secondly, through the alteration of prices, the tax substitution would cause changes in the revenue yields of other ad valorem taxes. Also, yields of direct taxes, e.g., the personal income tax, would be affected if the various tax changes were fully or partially shifted backward to factors of production. Finally, further-round price and income adjustments, representing responses to the disequilibrium created by the tax substitution, would imply further changes in revenue yields of various taxes and in government expenditures. Strictly speaking, the compensating yield criterion used here requires that all of the “first-round” manifestations of these effects be incorporated. Specifically, *rates* of other taxes should in principle be held constant, and changes in yields of these taxes induced by tax substitution should be compensated for by appropriate adjustments in the VAT rate. However, for tractability it has simply been assumed that the nominal revenue yields of these taxes are unaffected by the simultaneous changes in the VAT and the CIT.

But even with these constraints, an important set of effects of the tax substitution can be considered: resultant changes in the relative budgetary positions of federal and state-local governments. Recall that the yield criterion defining a compensating tax substitution was applied to the consolidated budgets of all governments (equal monetary surplus or deficit in national accounts terms). That is, the change in revenue of all governments was required to equal the change in expenditure of all governments; only the consolidated surplus or deficit was held constant. Thus, the yield criterion could be met but the fiscal condition of individual jurisdictions, or of jurisdictions at different levels, could yet be markedly altered.

Consider the case of complete removal of the corporate income

tax. Denoting original CIT revenue by T_c , VAT revenue by T_v , and the change in government expenditure induced by CIT shifting by ΔG , the equal surplus or deficit criterion requires that

$$T_v - T_c = \Delta G. \quad (7-1)$$

The change in the surplus (deficit) is simply

$$T_v - T_c - \Delta G = 0. \quad (7-2)$$

However, this does not insure that the budgetary positions (deficits or surpluses) of federal or state-local governments separately will be maintained. The (positive or negative) change in fiscal surplus at the state-local (s) and federal (f) levels can be simply defined as

$$\Delta S_s = - T_{cs} - \Delta G_s \quad (7-3)$$

and

$$\Delta S_f = T_v - T_{cf} - \Delta G_f. \quad (7-4)$$

It is simply required that the sum of these changes in the surplus (deficit) by zero. Note that repeal of both the federal and state corporate income taxes is stipulated, and imposition of a solely federal VAT is assumed.

Thus, implicit in the yield criterion is some degree of revenue sharing, either from federal to state-local governments or in the reverse direction. The magnitude of this effective transfer will depend upon the administration of the VAT, the degree of CIT shifting, and the relative importance of federal and state corporate income taxes.

For government as a whole, it is irrelevant whether government purchases are exempt from the VAT or not. In the former case, governments face VAT-exclusive prices (the VAT is not invoiced on sales to government but sellers are given full credit for the VAT invoiced on their intermediate purchases). In the latter case, governments face VAT-inclusive prices, since the VAT will appear both as government revenue *and* expenditure, which thus cancel each other in terms of the consolidated surplus or deficit. However, for state-local government vis-à-vis the federal government, the alternatives do differ significantly. If government purchases are exempt, state-local expenditures will either be unchanged (if the CIT is not shifted) or will fall (if the CIT is shifted). If purchases are not exempt (VAT

invoiced on government purchases) state-local expenditures will almost certainly rise, in relative terms, by up to the VAT rate, with the magnitude of the increase depending on the degree of CIT shifting.

Assuming CIT repeal, shifting of the CIT thus enters through its effect on government expenditures. If the CIT is not shifted at all, government (federal and state-local) expenditures at VAT-exclusive prices are unaffected by the tax substitution. However, if the CIT is shifted, then government expenditures at VAT-exclusive prices will be reduced.

Relative state reliance on the CIT has an obvious effect, since a federal tax (VAT) is being substituted for a federal-state tax (CIT). If states make relatively little use of the CIT, then their *revenue* positions will be only marginally affected by CIT repeal. But if state corporation taxes are large relative to the revenues of these governments, then the tax substitution will amount to a major shift from state to federal taxation.

Briefly recapitulating, if state-local government purchases are exempt from the VAT and if the CIT is shifted forward and if state CITs are of minor revenue importance, then state-local surpluses will be increased and the federal surplus reduced as a result of the VAT-CIT substitution. But if state-local governments do incur a VAT liability and if the CIT is not shifted and state use of the CIT is important then the opposite will occur.

In fact, as indicated by Table 7-1, the state-local (state) use of the CIT is sufficiently important (\$3.69 billion or about 10 percent of the federal CIT revenue of \$38.99 billion) that even with full forward CIT shifting and federal exemption or rebate of VAT on state-local purchases, state-local surpluses *in the aggregate* would decline by \$1.65 billion. At the other extreme, with zero CIT shifting and no exemption of state-local purchases from the VAT, state-local surpluses are reduced by \$6.9 billion. In each case, the federal surplus is necessarily *increased* by an equal amount.

Of course, it is virtually certain, politically, that state-local purchases would be exempt from the VAT, i.e., either the VAT would not be invoiced on government purchases or a full federal credit would be provided to state-local governments on their VAT-invoiced purchases. Thus, the range of the contraction in state-local surpluses would be only from \$1.65 billion (full CIT shifting) to \$3.69 billion (zero CIT shifting), assuming, of course, the simultaneous repeal of federal and state corporate income taxes.

In any event, the tax substitution itself would involve a form of implicit revenue sharing *from* state-local governments *to* the federal government. Or, equivalently, it would be an effective substitution

Table 7-1. Federal and State-Local Budget Effects, Assuming Full CIT Repeal and Either Zero or Full CIT Shifting (billions of dollars)

	VAT Invoiced on Government Purchases (no credit or rebate) (YES/NO)	CIT Revenue Loss	VAT Revenue Gain	Expenditure Change (at VAT- exclusive prices)	VAT Liability on Expenditure	Net Change in Surplus
<i>Zero CIT Shifting ($\alpha = 0$)</i>						
Federal State	No No	38.99 3.69	42.68 0	0 0	0 0	+3.69 -3.69
Federal State	Yes Yes	38.99 3.69	49.62 0	0 0	3.73 3.21	+6.90 -6.90
<i>Full CIT Shifting ($\alpha = 1$)</i>						
Federal State	No No	38.99 3.69	38.06 0	-2.58 -2.04	0 0	+1.65 -1.65
Federal State	Yes Yes	38.99 3.69	44.25 0	-2.58 -2.04	3.32 2.87	+4.52 -4.52

of federal for state-local taxes, a substitution which would almost necessarily have to be supplemented by a reverse, but explicit, sharing of federal VAT revenues with adversely affected state-local governments.

The point to be made in this context is that all state-local governments would not be equally affected by the tax substitution. Assuming effective exemption of state-local governments from the VAT, those lower-level governments not employing a CIT would be either unaffected (no CIT shifting) or benefited (reductions in expenditure through CIT shifting). Local governments as a group would be in this position, as would those states not currently imposing a corporate profits tax (most notably Ohio, Illinois, Michigan, and Texas). Those states deriving the greatest proportions of their revenues from the CIT would be most adversely affected (e.g., North Carolina, for which CIT revenue was 8.7 percent of own general revenue in 1967; South Carolina, 8.5 percent; and Connecticut, 8.1 percent). Thus, any federal formula intended to offset the adverse state-local fiscal effects of this set of tax changes would either have to distinguish between states according to the degree of their reliance on the CIT or would differentially benefit those states not utilizing the CIT.

There is, of course, the possibility that federal removal of the CIT would not encourage the states to follow suit, or might even result in *increases* in revenues from the CIT. Indeed, in those states that allow the federal income tax as a deduction in computing the base of the state tax, CIT reduction by the federal government would, in the case of incomplete shifting, result in an immediate increase in state CIT revenues.

In addition states may be induced to raise their rates to partly fill the void left by the repeal of the federal CIT. However, such a reaction is unlikely on any large scale or even on the average. First, state CIT rates are as high as they are, at least in part, because the state CIT liability can be deducted in computing the base of the federal CIT.¹ With nominal (and in most cases, effective marginal) federal CIT rates of 50 percent (in 1969), this amounts to an effective federal credit equal to 50 percent of the state CIT paid by any corporation, thus dramatically reducing the effective rates of state CITs. This federal treatment of state CITs has almost certainly stimulated state reliance on this type of tax. Second, as has been often argued, the CIT is not an "ideal" state tax. The fact that most

1. If the *federal* CIT is similarly deductible in computing the state CIT liability, the reduction in effective state CIT rates may be even greater.

corporations operate in many states necessarily requires that corporate profits be allocated among states by arbitrary rules, e.g., in relation to property, payroll, or sales, using for sales either a destination or origin principle. Most adversely, from an allocative point of view, such arbitrary formulas almost certainly insure that even under competitive assumptions the state CITs are shifted in specific, discriminatory directions (onto wages in the case of origin formulas, or onto sales, with destination formulas). Because of the implied excess burdens at the state level, major increases in state reliance on the CIT would seem both undesirable and unlikely. Third, the loss of administrative benefits flowing from the simultaneous use of the CIT by state and federal governments would vastly increase the cost of administering state corporate income taxes.

Thus, although the assumption of simultaneous reductions in both state and federal corporate income tax rates was imposed by data limitations, with complete federal repeal of the CIT it would appear that states would probably not *increase* their CIT rates. While in fact they might not reduce their CIT rates in step with federal rate reductions, it is not too unrealistic to assume, as we do here (for analytic convenience) that reductions in state CIT rates would be made, paralleling the federal reductions.

As indicated above, in addition to differential fiscal consequences for federal and state-local governments, intrastate differentials would also be implied, i.e., local governments would necessarily benefit from any price reductions resulting from the shifting of the CIT reduction, but would not *directly* suffer from the CIT revenue loss. Thus, the tax substitution exerts very different budgetary impacts on different levels and units of government.

7.2 INTERINDUSTRY REDISTRIBUTIONS OF TAX LIABILITIES

Varying degrees of sophistication can be exhibited in assessing the effects of a tax substitution. At its most simplistic, everything other than tax liabilities could provisionally be assumed to be unchanged. The analysis would then be restricted to examination of changes in tax liabilities of relevant economic units. At a more complex level, changes in outputs, prices, and factor incomes in response to the tax substitution would be incorporated. The distinguishing mark of these more complex formulations is that the system is permitted to respond to the disequilibrium created by the initial restructuring and redistribution of tax liabilities.

Limitations of knowledge and the constraints of the input-output formulation have restricted us to the more simplistic, first-round end of this analytical spectrum, although prices and profit incomes (capital earnings) have been permitted to vary in response to the tax substitution. However, it is possible to use the first-round results to project, albeit qualitatively, the likely directions of further dynamic adjustments by the economy to the change in tax structure.

This projective application of the first-round responses has in fact been suggested in the discussion of price responses (Chapter 3). These relative price effects were interpreted as indices of disequilibrium created by the tax substitution, a disequilibrium which would induce further-round responses. The investment and international trade chapters represented attempts to quantify the initial responses in these dimensions to the first-round price effects of the tax substitution. However, these price effects are derived entirely from assumed interindustry redistributions of tax liabilities, as represented in rather simple stipulations concerning the role of taxes in price formation. Thus, a more direct approach to the assessment of tax-substitution-induced changes in outputs, prices, and factor incomes can be obtained by an examination of the tax-liability redistributions themselves. This in effect represents an analysis of what Musgrave has called the "money differential incidence" of the tax substitution.

To assess the money differential incidence of the VAT-CIT substitution, it is necessary to assume that prices charged by sellers, inclusive of all taxes, are initially unaffected by the tax substitution. Price adjustments then appear themselves as later-round responses to the change in tax structure. Thus, it must be assumed that neither the VAT nor the CIT is shifted initially.

In the case of the CIT, zero shifting is, as before, straightforward: prices do not respond to the reduction or repeal of the CIT. The VAT case, however, is more complex: under the assumption of full shifting of the VAT, VAT-inclusive prices increased by the VAT rate. With zero shifting, it is necessary that VAT-inclusive prices equal prices prevailing prior to introduction of the VAT.

The first implication of zero VAT shifting is that the CIT-compensating VAT rate is no longer equal to the ratio of CIT revenue loss to the net base (personal consumption expenditure) of a consumption-type VAT. Rather, the base, consumption expenditure *net of the VAT liability*, will decline by the amount of the VAT liability itself. Thus, if C is consumption expenditure prior to the tax substitution and Z is the compensatory VAT rate, consumption ex-

penditure net of VAT, C' , will become

$$\begin{aligned} C' &= C - ZC' \\ &= \frac{C}{1 + Z} \end{aligned} \quad (7-5)$$

Resultant VAT revenue, $T_v = ZC'$, must then equal CIT revenue forgone, ΔT_c , i.e.,

$$Z \left(\frac{C}{1 + Z} \right) = \Delta T_c$$

and

$$Z = \frac{\Delta T_c}{(C - \Delta T_c)} \quad (7-6)$$

Assuming CIT repeal ($\Delta T_c = \$42.68$ billion), the resultant compensatory VAT rate is 8.3 percent.

The second important implication of zero VAT shifting is that effective *purchaser* prices associated with VAT-exempt transactions, i.e., transactions for which the purchaser gets a credit for VAT invoiced, will decline by the amount of the VAT. Thus, effective export, investment, and government prices can be viewed as declining, and these declines represent an effective burden of the VAT for the seller. In effect, the seller can be treated as viewing his gross VAT liability as the VAT rate applied to his total value added, regardless of rebates his purchasers may (or may not) receive.

The net burden of the VAT for any industry is then the VAT rate applied to total value added (net of VAT) less credits for the VAT invoiced on this industry's net investment goods purchases.² The sum over industries of this net apparent VAT liability (VAT burden) will exceed net VAT revenues of government by the effective VAT credits on export and government purchases.

The effective burden of an unshifted VAT, computed in the foregoing manner by industry, is given in the first column of Table 7-2. The benefits of CIT repeal are given in the second column of this table. The effective *increase* in the tax burden by industry (the

2. Note that the credit for replacement of depreciated capital has already been incorporated by removing depreciation and other intermediate purchases from total sales in determining value added net of depreciation.

Table 7-2. Interindustry Changes in Tax Burdens, Two-Digit Disaggregated Industries

	Billions of Dollars				Ratios:	
	VAT Burden	CIT Burden	Less CIT	VAT/CIT	I/VA	VA
1 Agriculture	2070.4	128.6	1941.76	16.10	0.00	16.0
2 Metal Mining	114.6	36.8	77.84	3.12	0.03	57.9
3 Coal, Stn., Clay, Mag. & Prod.	863.9	730.9	132.88	1.18	0.06	16.1
4 Oil & Gas	357.6	643.7	315.93	1.43	0.04	40.3
5 Construction	4520.3	1352.4	3175.59	3.35	0.02	2.4
6 Ordnance	275.1	142.5	132.64	1.92	0.04	5.4
7 Food	2255.0	1164.0	1067.97	1.89	0.05	8.4
8 Tobacco	333.9	524.8	-225.86	0.57	0.13	1.8
9 Textiles & Apparel	1434.7	364.1	470.55	1.49	0.06	5.1
10 Lumber, Wood Products	533.7	340.6	153.15	1.40	0.05	11.9
11 Furniture & Fixtures	240.4	256.7	33.91	1.13	0.07	7.2
12 Paper & Products	745.9	472.7	-86.83	0.40	0.09	17.1
13 Printing & Publishing	923.4	1079.5	-156.16	0.86	0.09	5.6
14 Chem., Plast., Drugs, Pnt.	1545.8	3181.7	-1635.92	0.49	0.15	15.0
15 Rubber & Leather	623.7	468.4	154.82	1.33	0.06	11.2
16 Footwear	225.4	131.7	124.68	2.23	0.05	3.1
17 Primary Metal	1714.9	1074.7	640.23	1.60	0.05	15.1
18 Fabricated Metal	1233.6	1316.9	-113.27	0.91	0.03	7.2
19 Nonlect. Machinery	2016.1	2446.4	-430.30	0.62	0.09	11.3
20 Electrical Equipment	2025.9	2182.1	-156.24	0.93	0.09	7.4
21 Transp. Equipment	2775.2	2600.4	174.83	1.07	0.08	6.5
22 Instruments	447.0	831.7	-344.67	0.59	0.14	6.2
23 Misc. Manufacturing	381.6	224.4	152.21	1.65	0.06	10.1
24 Transp. & Warehousing	2511.3	755.4	1025.59	3.42	0.02	15.1
25 Communications	1020.6	2557.1	-1636.46	0.38	0.13	37.4
26 Utilities	226.3	2778.0	-2049.15	0.10	0.12	85.2
27 Finance & Insurance	2529.1	7131.6	-4352.72	0.32	0.23	5.9
28 Real Estate & Rental	5778.9	781.6	5997.09	8.57	0.01	3.7
29 Hotels & Services	2728.0	714.1	2308.95	3.79	0.02	9.3
30 Auto Repair & Services	710.4	179.5	530.51	3.95	0.02	10.4
31 Amusements	341.7	32.5	309.15	10.51	0.01	26.9
32 Med., Ed. Serv. & Nonprof.	2243.3	-45.8	2294.10	64.86	-0.03	20.6
33 Wholesale & Retail	1420.4	21.5	1398.47	64.86	0.00	0.6

VAT = aggregate incidence of unshifted VAT at 8.3 percent rate.

CIT = aggregate incidence of unshifted CIT.

I = gross investment by capital goods user industry.

VA = gross value added (inclusive of depreciation).

difference between the VAT and CIT burdens) is given in the third column; and the VAT as a ratio to the CIT, is the fourth.

Thus, under the foregoing assumptions the tax substitution would replace CIT liabilities with apparently greater VAT liabilities. The benefits of the CIT repeal would obviously be greatest in the most highly incorporated industries primarily in the manufacturing sector, for which the ratio of CIT to value added (fifth column of Table 7-2) is highest. Conversely, those industries exhibiting the lowest degrees of incorporation, those benefiting most from special treatments under the corporate tax, and those growing most slowly (i.e., exhibiting the lowest ratios of investment to value added, as indicated in the sixth column of Table 7-2, relating *gross* investment to value added inclusive of depreciation) would be disproportionately affected by imposition of the VAT.

The net effect of the tax substitution is then simply the difference between the newly imposed VAT burden and the rescinded CIT liability. A positive number indicates that the VAT burden for the industry exceeds the original CIT liability; a negative net change indicates the reverse. Alternatively, the ratio of the VAT to the CIT (fifth column) indicates an increase in the tax burden if greater than unity, a decrease if less than unity.

Most manufacturing industries would benefit from the replacement of the CIT by the VAT because they are highly incorporated and their capital intensities (ratios of profit to value added) and rates of capital accumulation are also relatively high. Conversely, those industries which are not highly incorporated and which have low profit margins and low rates of investment relative to value added would experience the greatest increases in tax liabilities. This is particularly true of the agriculture, textile, lumber, footwear, transportation, and service industries.

These changes in tax liabilities thus measure the varying degrees of pressure which would be exerted on different industries by the tax substitution. That is, they reflect the magnitudes of the responses of factor incomes, outputs, and prices which could be expected ultimately to result from the change in tax structure.

7.3 SHORT-RUN INTERINDUSTRY EFFECTS OF POTENTIAL WAGE RESPONSES

It has been explicitly assumed throughout that nominal factor incomes, other than corporate profits, are unaffected by the tax substitution. However, significant initial increases in consumer prices have been projected to result from the tax change, particularly if

the CIT is assumed not to be shifted forward. Specifically, consumption price increases of from 1.7 percent (full CIT shifting) to 7.7 percent (zero CIT shifting) have been estimated to follow from repeal of the CIT and its replacement by the VAT. These price changes then imply corresponding reductions in real wages.

If it were assumed that in the short run the supply of labor were infinitely elastic at the prevailing real wage, it would be possible to project initial wage adjustments and changes in labor cost by industry. This would provide another direction from which the question of the longer-run, later-round responses to the tax substitution could be approached. Specifically, consider the case of full CIT removal and zero shifting: consumer prices rise by 7.68 percent. If it is assumed that initially wages rise, also by 7.68 percent, what pressure will this exert on prices?

The short-run interindustry effect of this wage increase would obviously reflect differences in the labor intensity of different industries. The ratio of employee compensation to value added, presented by industry in Table 7-3, provides a direct measure of this labor intensity. Labor-intensive industries, those in which employee compensation is a relatively large proportion of value added, will be initially most affected by the tax-substitution-induced wage change. Those industries include mining (75 percent), ordnance (85 percent), textiles (81 percent), furniture (82 percent), footwear (84 percent), and miscellaneous manufacturing (83 percent). On the other hand, employee compensation relative to value added is notably low in such industries as agriculture (14 percent), oil and gas (26 percent), tobacco (17 percent), utilities (28 percent), and real estate and rental (2 percent).

Under the assumption of zero CIT shifting, of course, net corporate profits have increased by the amount of initial CIT liabilities. It might be assumed that at least initially the increase in employee compensation is absorbed by profits rather than being passed on in price changes. The pressure for further-round adjustments in prices, profits, and wages would then be greater in those industries in which the increase in wages exceeded the increase in net profit, i.e., exceeded the original CIT liability. The CIT savings (as a proportion of value added), the hypothesized change in the wage bill, or employee compensation (also as a proportion of original value added), and the difference between the two are indicated by industry in Table 7-3. Further adjustments will be most severe in those industries in which this difference is positive (change in employee compensation exceeds original CIT liability). Conversely, downward pressure on prices would be greatest in those industries in which net profit increases

Table 7-3. Short-Run Interindustry Effects of Potential Wage Increases, Two-Digit Disaggregated Industries

	Employee Compensation	Ratio to Value Aided		Labor Cost Increase Less CII Savings
		CIT Savings	Potential Labor Cost Increase	
1 Agriculture	0.14	0.00	0.01	0.01
2 Metal Mining	0.75	0.03	0.06	0.03
3 Coal, Stn., Clay Mng. & Prod.	0.70	0.06	0.05	-0.01
4 Oil & Gas	0.26	0.04	0.02	-0.02
5 Construction	0.69	0.02	0.05	0.03
6 Ordnance	0.85	0.04	0.07	0.02
7 Food	0.61	0.05	0.05	0.00
8 Tobacco	0.17	0.13	0.01	-0.12
9 Textiles & Apparel	0.81	0.06	0.06	0.00
10 Lumber, Wood Products	0.72	0.06	0.05	-0.01
11 Furniture & Fixtures	0.92	0.07	0.06	-0.00
12 Paper & Products	0.67	0.04	0.05	-0.03
13 Printing & Publishing	0.75	0.04	0.04	-0.03
14 Chem., Plast., Drugs, Pnt.	0.58	0.15	0.04	-0.10
15 Rubber & Leather	0.71	0.06	0.05	-0.00
16 Footwear	0.84	0.05	0.06	0.01
17 Primary Metal	0.74	0.05	0.06	0.01
18 Fabricated Metal	0.76	0.08	0.06	-0.02
19 Nonelect. Machinery	0.74	0.09	0.06	-0.04
20 Electrical Equipment	0.77	0.09	0.06	-0.03
21 Transp. Equipment	0.71	0.09	0.05	-0.03
22 Instruments	0.64	0.14	0.05	-0.09
23 Misc. Manufacturing	0.83	0.06	0.06	0.01
24 Transp. & Warehousing	0.68	0.02	0.05	0.03
25 Communications	0.44	0.13	0.03	-0.09
26 Utilities	0.28	0.12	0.02	-0.09
27 Finance & Insurance	0.74	0.23	0.06	-0.17
28 Real Estate & Rental	0.72	0.01	0.00	-0.01
29 Hotels & Services	0.59	0.02	0.05	0.03
30 Auto Repair & Services	0.47	0.02	0.04	0.02
31 Amusements	0.60	0.01	0.05	0.04
32 Med., Ed. Serv. & Nonprof.	0.66	-0.00	0.05	0.05
33 Wholesale & Retail	0.81	0.00	0.06	0.06

^aShort-run labor cost increase = 0.0768 (employee compensation).

are still observed (a negative difference between the change in the wage bill and the CIT liability).

Because these short-run effects depend not only on labor intensity (the labor share of value added), but also on average CIT rates, and in particular on the degree of incorporation, the pressure will not necessarily be greatest in labor-intensive industries. Thus, agriculture, which is not at all labor intensive in terms of the labor share of value added, registers an increase in the wage bill in excess of CIT savings simply because of the very low original CIT liabilities. In general, however, in capital-intensive industries, e.g., communications and utilities, labor cost increases are considerably less than CIT savings, while in labor-intensive industries, e.g., textiles and apparel, the increases significantly exceed CIT savings.

It should be clearly understood that these consequences of a short-run increase in wage rates, of a magnitude necessary to hold real wages constant, do not represent an equilibrium adjustment of labor and output markets to the tax substitution. Specifically, only in the short run, before the system has fully adjusted to the change in tax structure, would differential interindustry effects related to the degree of labor intensity be observed. Ultimately, as wage increases are incorporated in prices of capital goods, increases in capital good prices induced by wage increases would lead to corresponding price increases in more capital-intensive industries, and this effect is independent of the effective CIT liability of the industry. That is, downward price pressure exerted by increases in net rates of return in industries incurring high CIT liabilities operates independently of the upward pressures exerted by longer-run, economy-wide wage adjustments. Nonetheless, the comparison of potential increases in labor cost and reductions in CIT liabilities does provide an index of differential short-run price pressures.

7.4 DIFFERENTIAL REGIONAL CONSEQUENCES OF THE TAX SUBSTITUTION³

In section 1.2, we noted that the predictive econometric models commonly utilized to assess the effects of potential changes in federal fiscal policy are inadequate for examining the *differential* effects of

3. These regional consequences were discussed more fully in a paper by Dresch [1972a].

alternative public policies. One of the most important of these inadequacies relates to the level of disaggregation at which such models operate. In particular, regional disaggregation has received virtually no attention at all in this type of analysis. While the aggregative models have often been criticized for their lack of detail in the household and industrial dimensions, very little attention has been paid to the potential differential regional effects of alternative federal policies.

Correspondingly, the concern of regional policy analysts has been focused, with few exceptions, on the effects of explicitly regional policies for individual geographic areas. Government programs to promote private investment in depressed areas, for example, have been examined under quite confined assumptions concerning the relationship of these policies to broader federal fiscal policies. The possibility that general, ostensibly nonregional federal policies might have as great or even greater effects for the geographic distribution of economic activity than ostensibly regional policies has been left almost entirely unexplored.

The obvious source of this void in policy analysis is the lack of a sufficiently refined conception of the determinants of the spatial distribution of activity. Unless regions are viewed individually, as closed, small-scale representations of national economies, no well-elaborated schema for the analysis of regional economic phenomena is provided by the corpus of economic theory.

While the development of an adequate conceptual representation of the relationship between national and regional economic processes is clearly beyond the scope of the present study, a rough approximation of the first-round differential regional consequences of the VAT-CIT substitution can be attempted (the regions used for our analysis are described in Table 7-4). This discussion will focus on the potential regional impact of the initial changes in income distribution, investment, and international trade which would be induced by the VAT-CIT substitution, and on the differential regional consequences of possible wage adjustments.

7.4.1 Income Distribution

Just as the VAT-CIT substitution has been shown (Chapter 4) to be regressive nationally, redistributing income from low- to high-income households, so it is also likely to be regressive regionally, redistributing income from low- to high-income regions. This regional regressivity is in fact observed in this model, as indicated in Table 7-5, which contains net changes in regional tax liabilities

Table 7-4. Regional Divisions of the United States

New England (NE)	East South Central (ESC)
Maine	Kentucky
New Hampshire	Tennessee
Vermont	Alabama
Massachusetts	Mississippi
Rhode Island	
Connecticut	West South Central (WSC)
	Arkansas
Middle Atlantic (MA)	Louisiana
New York	Oklahoma
New Jersey	Texas
Pennsylvania	
	Mountain (MT)
East North Central (ENC)	Montana
Ohio	Idaho
Indiana	Wyoming
Illinois	Colorado
Michigan	New Mexico
Wisconsin	Arizona
	Utah
West North Central (WNC)	Nevada
Minnesota	
Iowa	Pacific (PAC)
Missouri	Washington
North Dakota	Oregon
South Dakota	California
Nebraska	Alaska
Kansas	Hawaii
South Atlantic (SA)	
Delaware	
Maryland	
District of Columbia	
Virginia	
West Virginia	
North Carolina	
South Carolina	
Georgia	
Florida	

Note: In comparisons between the South and the rest of the country (non-South) the South comprises the South Atlantic, East South Central, and West South Central regions. The regions in this analysis correspond to U.S. Census Bureau "Divisions," as found in, e.g., U.S. Bureau of the Census, *County and City Data Book, 1967* (A Statistical Abstract Supplement), p. 2.

under the extreme assumptions of complete and zero CIT shifting, assuming in both cases complete CIT repeal.

To avoid the necessity of developing household income distributions by region, the regional distribution of retail sales was used to distribute any increase in nominal (VAT-inclusive) consumption expenditure over regions. Similarly, on the basis of the regional dis-

Table 7-5. Change in Regional Tax Liabilities Resulting from VAT-CIT Substitution, Assuming Full CIT Repeal (1969)

Region ^a	Distribution of		Zero CIT Shifting; Full VAT Shifting				Full CIT and VAT Shifting				Disposable Income per Capita		
	Retail Dividends Sales Received		ΔC	ΔCIT	$\Delta C - \Delta CIT$	$\Delta C - \Delta CIT$	ΔC	ΔI	$\Delta C - \Delta I$	$\Delta C - \Delta I$		$\Delta C - \Delta I$	
	%		(billions)	(billions)	(billions)	(billions)	(billions)	(billions)	(billions)	(billions)		(billions)	
NE	6.2%	10.7%	\$2.62	\$4.58	-\$1.95	-\$167	\$0.57	\$0.73	-\$0.16	-\$13	-.049	-.004	\$3,370
MA	18.7	28.2	7.97	12.04	-4.07	-110	1.74	1.92	-0.18	-5	-.032	-.001	3,490
ENC	20.6	18.8	8.78	8.04	0.75	19	1.92	1.28	0.64	16	.006	.005	3,330
WNC	8.4	5.8	3.59	2.45	1.14	70	0.79	0.39	0.39	24	.023	.008	3,020
SA	14.4	13.0	6.15	5.57	0.58	19	1.34	0.89	0.46	15	.007	.005	2,760
ESC	5.2	2.8	2.21	1.20	1.01	79	0.48	0.19	0.29	23	.034	.010	2,340
WSC	8.7	5.2	3.70	2.24	1.46	76	0.81	0.36	0.45	24	.028	.009	2,710
MT	4.0	2.8	1.69	1.19	0.50	62	0.37	0.18	0.18	22	.022	.008	2,830
PAC	14.0	12.6	5.96	5.39	0.57	22	1.30	0.86	0.44	17	.006	.005	3,400
US	100.0	100.0	42.68	42.68	0.00	0	9.34	6.82	2.52	13	0	.004	3,120
South	28.3	21.0	12.06	9.01	3.05	49	2.63	1.44	1.20	19	.021	.007	2,660
Non-S	71.7	79.0	30.62	33.67	-3.05	-22	6.71	5.38	1.32	11	-.007	.003	3,320

Notes:

ΔC = increase in nominal consumption expenditures.

ΔCIT = CIT reduction.

N = population.

ΔI = savings in investment expenditures.

Y = disposable income.

Source: Figures for the United States are computed from 1969 U.S. input-output model. Data on 1969 retail sales are taken from U.S. Bureau of the Census, *Monthly Retail Trade*, January 1970. Data on dividends received are taken from Internal Revenue Service, *1968 Individual Income Tax Returns*. Data on population are taken from *1971 Statistical Abstract of the United States*.

^aThe list of states included in each region is contained in Table 7-4. NE = New England; MA = Middle Atlantic; ENC = East North Central; WNC = West North Central; SA = South Atlantic; ESC = East South Central; WSC = West South Central; MT = Mountain; PAC = Pacific; South includes South Atlantic, East South Central, and West South Central regions.

tribution of dividend income, as reported for federal income tax purposes, increases in net profits (zero CIT shifting) and reductions in investment cost (complete CIT shifting) were distributed.

It is readily apparent from the final three columns of Table 7-5 that the VAT-CIT substitution is regionally regressive, regardless of the value of the CIT shifting parameter. For example, with zero CIT shifting, the low-income Southern regions in the aggregate experience an \$3.05 billion increase in tax liabilities and an increase in the tax burden in excess of 2 percent of disposable income in this area (see penultimate row of Table 7-5). For the rest of the country, tax liabilities are correspondingly reduced by almost 1 percent of disposable income. With full shifting of the CIT, on the other hand, the South's loss is reduced to \$1.2 billion, or about 0.7 percent of disposable income, while the non-South experiences an absolutely greater increase in tax liability of \$1.3 billion, but an increase relative to disposable income of only 0.3 percent.

In this context the relative significance of the regional effects of national policy changes can be vividly indicated. Great energy is expended modifying formulas for federal intergovernmental grant programs to achieve particular distributions and debating the relative desirability of alternative distributions. However, the *net* regional redistributions achieved through these programs are almost invariably less than those implied by the ostensibly "nonregional" substitution of a VAT for the CIT. For example, Dresch [1972a] has shown that the net increase in the South's tax liability due to the VAT-CIT substitution, between \$1.2 billion and \$3 billion depending on CIT shifting, *exceeds* the net benefit to the South of the \$4 billion federal welfare grant program (\$0.403 billion net Southern benefit), of the \$11 billion federal nonwelfare categorical programs (\$0.939 billion), or of any of three \$5 billion income-tax-financed general revenue-sharing (GRS) programs under discussion in 1971 (\$0.467 billion for the original House of Representatives' program, \$0.78 billion under Congressman Wilbur Mills's GRS proposal and \$0.419 billion under the Nixon Administration's original GRS program). Thus, while attention is focused on the regional implications of various intergovernmental grant-in-aid programs, their effects may be literally swamped by changes in national tax policy, the regional implications of which are rarely even explicitly considered.

7.4.2 Investment Effects

The analysis of the potential first-round investment effects of the tax substitution (Chapter 5) was restricted to national responses disaggregated only by industry. To project potential investment con-

sequences by region it is necessary to distribute each industry's investment expansion spatially, not a simple problem. Information is available on the geographic distribution of gross plant and equipment expenditure by industry in 1969, but there is no reason to expect that the investment *expansion* will be distributed proportionately to base levels of investment. Specifically, any increase in investment is much more likely to be "new" investment, i.e., in new plants and in basic new equipment, than is preexpansion gross investment. The latter almost undoubtedly reflects heavily the maintenance of preexisting, spatially distributed industry capital stocks, while marginal investments reflect the *changing* geographic distributions of these stocks, which these marginal investments in fact bring about.

Although the capability for differentiating between total and marginal distributions of investment does not exist, even ad hoc assumptions employed to reach admittedly tentative conclusions provide some insight into potential regional implications. For present purposes, it is simply assumed that for each industry any region's share of the short-run investment expansion is equal to its share of base-year plant and equipment expenditures. However, the South's share of plant and equipment expenditures (29.8 percent), for example, is greater than its share of manufacturing value added (23.3 percent), probably reflecting its differential growth. Thus, simple proportionality will almost certainly result in an understatement of the South's share of the investment expansion.

If regional distributions of investment activities of all industries were identical, then under the proportionality assumption each region's share of the investment expansion would equal its share of base-year investment. However, as indicated in Table 7-6 (zero shifting) and Table 7-7 (unitary shifting), this regional uniformity does not exist. For the subset of manufacturing industries for which sufficient data are available, the tax substitution with zero CIT shifting results in an *aggregate* investment expansion of 10 percent. However, individual regions experience increases in investment ranging from 7.5 percent (West South Central) to 12.5 percent (New England), even on the assumption of intraindustry proportionality. Although the increase for the South is about equal to that for the nation, the South's industrial composition is quite different and its average expansion is explained by the counterbalancing of such regionally important industries as paper and allied products (27 percent investment increase, of which the South's share is 38 percent) at the high end, against tobacco (only 4.8 percent investment expansion with a Southern share of 67 percent) and

Table 7-6. Short-Run Regional^a Investment Expansion Resulting from VAT-CIT Substitution, Assuming Zero CIT Shifting (millions of dollars)

	NE	MA	ENC	WNC	SA	ESC	WSC	MT	PAC	US	South	Non-South
Food	4.52	13.83	19.96	11.89	13.10	4.11	7.23	3.94	13.35	91.93	24.44	67.49
Tobacco	—	0.22	0.06	—	2.14	0.46	—	—	—	2.36	2.60	0.28
Textile products	6.68	9.72	2.02	0.31	55.87	9.26	1.12	—	—	84.98	66.25	18.73
Apparel	0.83	16.03	3.34	1.47	4.61	2.25	1.39	0.23	1.85	30.15	8.25	23.75
Paper	30.42	60.26	80.40	21.22	75.27	37.88	32.33	3.07	40.78	380.63	144.48	236.15
Chemical	3.76	25.43	26.59	5.06	30.06	12.76	48.29	1.66	5.61	159.22	91.11	68.11
Petroleum and coal	0.23	2.90	8.34	1.26	0.54	1.34	12.65	0.46	5.53	33.25	14.53	18.72
Rubber and plastic	8.63	13.52	35.11	5.22	9.42	14.14	5.57	—	8.63	100.24	29.13	71.11
Stone, clay, and glass	2.91	18.15	22.75	4.49	11.70	6.52	4.85	3.26	8.84	83.47	23.07	60.40
Primary metal	3.62	37.94	83.01	3.28	12.61	8.47	7.83	6.31	8.71	172.08	28.91	143.17
Fabricated metal	4.86	13.55	34.37	3.98	5.84	4.62	3.84	0.60	6.82	78.48	14.30	64.18
Machinery	33.92	91.76	165.14	30.40	25.85	12.63	20.25	4.84	36.36	421.15	58.73	362.42
Electrical equipment	14.27	32.14	38.47	6.14	13.51	7.18	10.31	2.77	16.33	141.12	31.00	110.12
Total	114.65	335.45	519.56	94.72	260.52	121.62	155.66	27.14	152.81	1781.43	536.80	1244.63
Percentage change of total	12.5	10.3	10.1	10.6	10.3	10.4	7.5	7.9	10.2	10.0	9.3	10.3

Note: Figures are obtained by applying percentage changes in gross investment by industry, estimated from the 1969 input-output tables, to 1969 capital expenditures by industry over regions, taken from the U.S. Bureau of the Census, *Annual Survey of Manufactures*, 1969.

^aThe list of states included in each region is contained in Table 7-4.

Table 7-7. Short-Run Regional^a Investment Expansion Resulting from VAT-CIT Substitution, Assuming Full CIT Shifting (millions of dollars)

	NE	MA	ENC	WNC	SA	ESC	WSC	MT	PAC	US	South	Non-South
Food	1.22	3.75	5.41	3.22	3.55	1.11	1.96	1.07	3.62	24.91	6.62	18.29
Tobacco	—	0.06	0.02	—	0.58	0.12	—	—	—	0.78	0.70	0.08
Textile products	0.97	1.42	0.29	0.04	8.14	1.35	0.16	—	—	12.37	9.65	2.72
Apparel	0.12	2.33	0.49	0.21	0.67	0.33	0.20	0.03	0.27	4.65	1.20	3.45
Paper	5.32	10.53	14.05	3.71	13.15	6.62	5.65	0.54	7.13	66.70	25.42	41.28
Chemical	0.47	3.18	3.32	0.63	3.76	1.59	6.04	6.21	0.70	19.90	11.39	8.51
Petroleum and coal	0.11	1.40	4.04	0.61	0.26	0.65	6.12	0.22	2.68	16.09	7.03	9.06
Rubber and plastic	1.29	2.02	5.24	0.78	1.40	2.11	0.83	—	1.29	14.96	4.34	10.62
Stone, clay, and glass	0.60	3.75	4.70	0.93	2.42	1.35	1.00	0.67	1.83	17.25	4.77	12.48
Primary metal	1.25	13.06	28.58	1.13	4.34	2.92	2.70	2.17	3.00	59.15	9.96	49.19
Fabricated metal	1.67	4.66	11.83	1.37	2.01	1.59	1.32	0.21	2.35	27.01	4.92	22.09
Machinery	5.10	13.80	24.84	4.57	3.89	1.90	3.05	0.73	5.47	63.35	8.84	54.51
Electrical equipment	1.82	4.11	4.92	0.79	1.73	0.92	1.32	0.35	2.09	18.05	3.97	14.08
Total	19.94	64.07	107.73	17.99	45.90	22.56	30.35	6.20	30.43	345.17	98.81	246.36
Percentage change of total	2.2	2.0	2.1	2.0	1.8	1.9	1.5	1.8	2.0	1.9	1.7	2.0

^aThe list of states included in each region is contained in Table 7-4.

chemicals (investment expansion of 3.1 percent; Southern share, 44 percent) at the sluggish end of the spectrum. The average expansion of the textile industry, 10.3 percent, of which the South's share is 65 percent, also contributes to the South's average standing.

Under the assumption of full forward shifting of the CIT, the national investment expansion in these manufacturing industries is only 1.9 percent. And in this case the South's share is somewhat less than average, only 1.7 percent. The smallest expansion is observed in the West South Central region (1.5 percent), the largest again in New England (2.2 percent). Under both shifting assumptions the New England phenomenon is primarily explained by the rapid expansion of the nonelectrical machinery industry (22.6 percent with zero shifting, 3.4 percent with unitary shifting of the CIT).

Even granting that the South's share of the investment expansion may be understated by the assumption of intra-industry proportionality, it would still appear that the region would not benefit disproportionately from the investment response to the tax substitution, although further analysis might indicate otherwise.

In this discussion investment effects by the *purchaser* (investor) industry have been examined. While this focus is most important in longer-run terms, i.e., in terms of differential regional growth, the short-run consequences would be most sensitive to increases in the activity of investment goods *producer* industries. The latter would not necessarily have the same spatial distributions as investor industries. While beyond the scope of this examination, it is nevertheless desirable that differential regional (and national) consequences of the investment-induced expansion in industrial activity be treated endogenously and examined explicitly.

Our data for the geographic distribution of investment goods producer industries suggest that the regional distribution of these increases in industrial activity would not be uniform. In Table 7-8 the regional distribution of all industries is presented. The data in Table 7-9 indicate the proportion of value added of investment goods contributed by each producer industry. On this basis the regional impact of the increase in capital goods output can be roughly projected. Ignoring construction, which would probably closely approximate the regional distribution of investment purchases and which accounts for 43 percent of investment value added, the largest contribution is by the nonelectrical machinery industry (25 percent). On the basis of the spatial distribution of this industry's activity in 1969, 9.0 percent of its expansion would be concentrated in New England, certainly a disproportionate share.

Table 7-8. Regional^a Distribution of Value Added in Selected Industries, 1969 (percent)

	NE	MA	ENC	WNC	SA	ESC	WSC	MT	PAC	SUM
Ordnance	6.36	4.62	11.92	12.74	7.73	3.01	5.42	5.16	42.18	99.14
Food	3.64	17.34	24.26	11.78	11.32	5.61	7.84	2.99	14.60	99.38
Tobacco	0.20	5.39	1.24	—	67.54	b	—	—	—	74.37
Textiles	9.13	16.73	3.45	0.47	58.23	8.10	1.38	—	—	97.49
Apparel	5.39	43.61	8.92	3.74	16.03	9.31	5.22	0.70	6.49	99.41
Lumber and wood	4.27	6.07	10.86	3.53	13.38	9.49	8.30	5.99	37.42	99.36
Furniture	5.04	16.82	24.05	4.39	23.55	8.13	5.28	0.87	11.36	99.49
Paper	10.13	18.34	23.33	5.38	15.98	7.70	7.08	0.94	11.22	100.10
Printing	6.50	33.35	24.76	7.97	8.86	3.34	4.53	2.04	9.74	101.07
Plastics and chemicals	4.00	24.67	20.79	5.21	16.08	9.15	12.93	1.07	6.10	101.00
Petroleum	0.76	11.39	17.66	6.30	3.01	2.50	40.60	2.68	14.73	99.63
Rubber	10.44	16.82	37.76	6.46	8.31	6.93	4.51	—	b	91.23
Leather	26.60	23.13	15.39	b	6.52	b	b	—	b	71.64
Stone, clay, and glass	4.62	21.44	26.18	7.22	13.77	5.39	7.28	2.60	10.77	99.27
Primary metal	4.38	25.23	40.22	2.54	6.53	5.95	4.31	3.90	7.01	100.07
Fabricated metal	7.31	19.01	41.08	5.49	6.33	4.33	5.20	1.02	9.76	99.53
Machinery	8.74	18.48	42.12	8.97	4.39	3.51	4.41	1.63	7.83	100.08
Electrical equipment	9.34	24.34	30.61	4.93	7.71	5.10	3.31	1.72	12.74	100.00
Transportation	5.50	11.85	39.53	6.99	6.55	2.46	6.17	6.36	17.42	102.83
Instruments	14.80	45.19	17.61	4.61	3.75	1.46	2.72	1.77	7.31	99.22
Miscellaneous mfr.	17.93	32.46	19.85	5.39	6.28	3.98	3.12	0.90	9.80	99.71

^aThe list of states included in each region is contained in Table 7-4.

^bWithheld to avoid disclosing identity of individual firms.

Table 7-9. Industry Share of Investment and Export Value Added and Imports as Proportion of Domestic Value Added

	<i>Share of Plant and Equipment Value Added</i>	<i>Share of Export Value Added</i>	<i>Imports as Percentage of Value Added</i>
1. Agriculture		9.11	6.81
2. Metal mining		0.23	79.75
3. Coal, stn., clay mng. & prod.		1.98	6.15
4. Oil and gas		0.52	26.73
5. Construction	42.99		
6. Ordnance		3.07	11.75
7. Food		2.74	14.15
8. Tobacco		0.40	0.63
9. Textiles and apparel	0.07	0.98	15.96
10. Lumber, wood products	0.02	1.06	19.68
11. Furniture and fixtures		0.09	5.22
12. Paper and products		1.43	15.99
13. Printing and publishing		0.66	1.04
14. Chem., plast., drugs, pnt.		7.82	5.32
15. Rubber and leather	0.18	0.90	7.68
16. Footwear	0.02	0.04	24.83
17. Primary metal		3.36	14.12
18. Fabricated metal	1.75	2.51	2.34
19. Nonelect. machinery	24.87	11.36	6.86
20. Electrical equipment	6.84	5.99	8.21
21. Transp. equipment	12.67	12.29	19.72
22. Instruments	3.49	2.22	8.22
23. Misc. manufacturing	0.82	0.69	23.57
24. Transp. and warehousing	1.51	13.31	7.75
25. Communications	1.79	0.41	
26. Utilities		0.02	0.29
27. Finance and insurance			1.40
28. Real estate and rental		4.47	
29. Hotels and services		11.10	
30. Auto repair and services			
31. Amusements		0.08	
32. Med., ed. serv., and nonprof.			
33. Wholesale and retail		1.12	

Source: Input-output tables, 1969, from Cybermatics, Inc.

Again, there is no more justification for the proportionality assumption in allocating producer than user expansion. Certainly, the geographic distribution of users (investors) will affect the distribution of producers, and even if this were not true, it would be unlikely that marginal expansions of output would be distributed spatially in proportion to total output. Different ages of capital stocks and different technologies will serve to alter the geographic distribution of industrial activity in an expansion. Until such processes and factors are considered it will be impossible adequately to predict the full regional consequences of federal policy.

7.4.3 International Trade Effects

As in the case of expansion in industries producing investment goods, it is virtually impossible adequately to project the regional consequences of an expansion of exports or of import substitutes that results from the VAT-CIT substitution. As discussion of the aggregate trade effects (Chapter 6) indicated, the consequences for the balance of trade were estimated on the basis of aggregate export and import elasticities and indices of price change. While involving serious inconsistencies at the national level, this procedure breaks down completely at the regional level.

However, at least a qualitative feel for the consequences of changes in trade flows at the regional level can be obtained from an examination of Tables 7-8 and 7-9. As was indicated in Table 6-3, the tax substitution, assuming repeal and full shifting of the CIT, would lead to an increase in the physical volume of exports of between \$3 billion and \$5 billion, depending on the relative price elasticity of export demand, and a real contraction of imports of between \$2 billion and \$3 billion. Real consequences of an equivalent balance-of-trade devaluation (of about 5 percent) would be quantitatively similar. Tables 7-8 and 7-9 clearly indicate that many of the most important import-competing industries are heavily concentrated in the South. Thus, for example, any import-substitution expansion in the textile and paper products industries would have pronounced stimulative effects in this region. Conversely, the only quantitatively important export industry in the South is chemicals, but the region lacks any significant concentration of such major export industries as nonelectrical machinery and transportation equipment.

7.4.4 Potential Wage Adjustments

As indicated in section 7.3, full replacement of the CIT by a consumption-type VAT has been estimated to increase consumption prices by 7.7 percent if the CIT reduction is not shifted forward in the form of lower prices and by 1.7 percent if full shifting occurs. In either case, these price increases imply corresponding reductions in real wages. If the supply of labor is initially assumed to be infinitely elastic at the prevailing real wage, it is possible to project the first-round wage adjustment to the tax substitution.

Such wage increases would obviously exert upward pressure on prices. Interindustry variations on this pressure would depend on differences in labor intensity, measured by employee compensation as a proportion of value added (Table 7-3). Those industries in which this ratio is highest would be most affected by this wage adjustment.

Included in this class would be such important Southern industries as textiles (employee compensation 81 percent of value added) and furniture (82 percent). On the other hand, the employee compensation ratio is relatively low in oil and gas (26 percent) and tobacco (17 percent), also important industries in the South.

Under the assumption of zero CIT shifting, of course, net profits increase by the amount of initial CIT liabilities. It could be assumed that, at least in the first instance, the increase in employee compensation is absorbed by profits. The pressure for further-round price changes would then be greater in those industries in which the increase in employee compensation exceeded the original increase in net profit (CIT liability). Original CIT liabilities (= CIT savings), the hypothesized labor cost changes, and the difference between the two, all as proportions of value added, are also indicated in Table 7-3. Further adjustments would be most severe in industries in which the increase in labor cost exceeds the CIT reduction. In no important Southern industry would the net excess of labor cost increase over CIT savings be greater than 2 percent; but in such major regional industries as tobacco, chemicals, and paper significant net profit increases would be observed even if the wage increases were fully absorbed by profits.

In the case of manufacturing industries it is possible to estimate the aggregate regional effects of CIT removal and wage increases, as shown in Table 7-10. For manufacturing for the United States as a whole, the original CIT liability (= CIT reduction) greatly exceeds the hypothetical labor cost adjustment. Nationally, the net increase in profit (CIT liability minus increase in wage bill) in manufacturing is 20 percent of original (pre-tax-substitution) net capital earnings (Table 7-10, last column). This is explained by the predominance of the corporate form in manufacturing, as compared to other sectors. However, regional variations in this net increase are very great, ranging from only 1.5 percent in New England to 35.3 percent in the West South Central. Significantly, the highest increase in capital earnings adjusted for wage increases, 30.2 percent, is found in the combined Southern regions. The consequences of this adjusted profit increase would be an above-average stimulus to investment in the South.

As with the discussion of other effects of the tax substitution, these hypothetical regional consequences do not represent equilibrium adjustments to the tax substitution. Rather they characterize the initial disequilibrium created by this change in tax structure. Again, it is possible only to identify these first-round consequences as indices of disequilibrium. However, that they exist is an indication

Table 7-10. Regional Labor Cost-CIT Differentials for Manufacturing, Assuming Full CIT Reduction, Zero CIT Shifting, and Full VAT Shifting (billions of dollars)

Regions ^a	Net Value Added (1)	Employee Compensation (2)	Net Capital Income (col. 1 less col. 2) (3)	CIT Reduction (4)	Increase in Employee Compensation (5)	Increase in Profit (col. 4 less col. 5) (6)	Profit Increase Relative to Net Capital Income (col. 6/col. 3) (7)
United States	221.3	179.9	41.4	21.9	13.8	8.1	19.6
New England	15.3	13.3	2.0	1.05	1.02	0.03	1.5
Middle Atlantic	47.2	39.8	7.4	3.93	3.05	0.88	11.9
East N. Central	63.3	52.6	10.7	5.67	4.03	1.64	15.3
West N. Central	14.3	11.0	3.3	1.77	0.84	0.93	27.8
South Atlantic	25.1	19.8	5.3	2.79	1.52	1.27	24.1
East S. Central	12.1	8.7	3.4	1.80	0.67	1.13	33.2
West S. Central	14.4	10.0	4.3	2.30	0.77	1.53	35.3
Mountain	4.1	3.1	1.0	0.52	0.24	0.28	28.3
Pacific	25.6	21.8	3.9	2.05	1.67	0.38	9.8

Note:

Col. 1: Based on value-added data from U.S. Bureau of the Census, *Annual Survey of Manufactures*, 1969.

Col. 2: Based on data on 1969 personal income by region and income and employment by industry, from *Survey of Current Business*, July 1970.

Col. 4: Allocated on the basis of the distribution of net capital income (column 3).

Col. 5: Assumed to increase by the VAT rate, 7.68 percent.

^aThe list of states included in each region is contained in Table 7-4.

of the degree of regional nonneutrality inherent in the assumed plan of changes in federal policy.

The primary purpose of this section was to indicate the importance of assessing the differential regional consequences of federal policies that are not often discussed in regional terms or recognized to have significant regional impacts. The identification of these differential regional effects is important for three reasons. First, to the degree to which a particular area is severely affected by a federal policy change, compensating adjustments in other federal programs are indicated. Secondly, in general there exists more than one federal action which will achieve a nationally desired end, and the choice between these should be made on the basis of differential consequences in other dimensions, of which the regional dimension would be one of the more important. And finally, the very effectiveness of a program may itself be affected by its differential regional impacts. For example, a selective tax reduction designed to stimulate demand and employment may be primarily inflationary if, due to the characteristics of those benefited, the expansion is concentrated in industries and areas already relatively fully employed. Only by explicitly assessing the differential effects of alternative policies in disaggregated, including regional, terms is it possible to make rational and effective policy choices.

7.5 ALLOCATIVE EFFECTS OF THE TAX SUBSTITUTION

The most substantive economic argument in favor of the VAT vis-à-vis the CIT emphasizes its allocative efficiency characteristics. Regardless of the assumptions made about *short-run* CIT shifting, to the degree to which the CIT is a tax on capital earnings (as opposed to, e.g., monopoly surpluses) it will necessarily result in (a) the inefficient allocation of capital between the corporate and non-corporate sectors, (b) output price ratios which do not reflect relative opportunity costs of converting one product into another, and (c) suboptimal rates of capital accumulation.

Improper allocations of capital between incorporated and unincorporated sectors result from differences in the tax treatment of capital earnings in each sector. If, prior to the introduction of the CIT, rates of return to capital are equal in the two sectors, imposition of a CIT will result in a net flow of capital from the incorporated sector. The immediate effect is to reduce the net rate of return in the sector subject to the tax. This results in a flow of capital out

of the taxed sector, the consequence of which is an increase in the gross-of-tax rate of return in the taxed sector, which now has less capital, and a decline in the rate of return in the untaxed sector, which now has relatively more capital. This process continues until the net-of-tax rates of return are equal in the two sectors.⁴

Even if the CIT were fully shifted forward, with no initial reductions in net rates of return in the taxed sector, capital would flow from the taxed to the nontaxed sector as a result of demand responses to the relative increase in prices in the taxed sector. Demand would increase in the unincorporated sector and decline in the incorporated sector, resulting in changes in rates of return which would serve to shift capital (and labor) into the untaxed sector.

Thus, the CIT implies a deadweight welfare loss regardless of whether or not it is shifted in the short-run. This is true regardless of the scope for capital-labor substitution. Even with fixed capital-labor coefficients, the imposition of the CIT will result in artificially high relative prices for capital-intensive commodities, with consequent reductions in their consumption.

Furthermore, by reducing the net rate of return to capital, the CIT will result in reductions in the rate of capital accumulation unless the supply of savings is completely interest-inelastic. The initial response of investment demand to the tax substitution, examined in Chapter 5 under the assumption of an unchanged rate of interest, would necessarily result in an increase in the rate of interest and possibly an increase in the savings rate.

By comparison, the VAT, with one exception, is proportionate to price and hence does not serve to alter *relative* prices. If relative prices prior to the introduction of the VAT reflect opportunity costs, post-VAT relative prices will be unchanged and will also reflect opportunity costs. The one significant exception is the VAT treatment of leisure. By not taxing leisure, the VAT would serve to induce the substitution of leisure for market-purchased goods in consumption, with resultant overconsumption of leisure and under-supply of labor. This result, of course, assumes that work-leisure choices would be affected by a decline in the relative price of leisure.

Similarly, the VAT applied to total value added does not result in distortions of relative factor prices. Thus, the attempted substitution of labor for capital resulting from a CIT would not occur with the

4. In this discussion, it is assumed that *at the margin* debt-equity ratios are limited, and increases in investment must be accompanied by increases in equity capital.

VAT; net *and* gross (of tax) relative factor prices would be identical in all sectors, with no resultant allocative distortions. The potentially depressive effects of the CIT on the rate of capital accumulation would then not derive from the VAT.

In brief, the deadweight loss or excess burden associated with the CIT is virtually completely avoided under the VAT. It is on this basis that the VAT is argued to be the allocatively more desirable tax.