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How Do Taxes Affect Food Markets?

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Abstract

Several food market indicators would change if a flat income tax system—that is, a system without exemptions, deductions, credits, and deferrals—replaced the current system. Our findings support the widely held view that even though a flat income tax system would increase national income, gains for consumers would be only modest. Nor would economic growth be universal. A Federal flat tax structure would lead to smaller farm industries with lower than average growth rates, larger food industries with higher than average growth rates, slightly lower food production costs and consumer food prices, reduced net farm exports, and reduced net food imports. If States were to enact similar reforms, consumer food prices would drop 2.2 percent overall and over 5 percent in the Delta, Appalachian, and Southern Plains regions. Some of these indicators vary substantially by region.

Introduction

Most tax codes provide for exclusions, deductions, credits, and deferrals, which reduce the amount of tax revenues and are comparable to government payments, thus known as "tax expenditures." Proponents tout the directness of tax expenditures to exact desired changes in social and economic activities—increased private savings, private charitable giving, home ownership, educational advancement, etc. Many proposals to extend the scope of tax expenditure policies are currently being considered in Congress. Opponents of such policy argue that the tax system is not an effective policy instrument, since the ultimate beneficiaries of tax expenditures are often not those for whom the policy was targeted. Rather, opponents argue, it is more effective to implement a neutral tax system, and obtain social objectives by other means.[1]

We examine the impacts on food markets—consumer food prices, producer farm and food prices, farm and food production levels, investment and growth of farm and food industries, and patterns of international food trade—of changing the current tax system to a neutral tax system. We also consider State and local taxation, and find that the impact of changes in Federal taxation depends on whether State/local taxation changes or remains the same. To demonstrate the impacts of geographic disparity in tax policy, we track effects in 10 different U.S. regions.[2]

Taxes and the Economy

Federal taxes apply almost exclusively to income, with ancillary sales, excise, and other taxes. Income taxes generally fall on income from labor and investment capital. Some Federal taxes on business income are passed on to customers, such as final consumers, thus raising the mar-

[1] Two prominent examples of current legislation along these lines are the "Flat Tax Proposal," which was re-introduced into the U.S. House of Representatives in March 1999 as proposal HR 1040, and the "National Retail Sales Tax" proposal, introduced in 1997 as HR 2001.

[2] Northeast (New England, NY, NJ, PA, DE, MD); Southeast (SC, GA, AL, FL); Cornbelt (OH, IN, IL, IA, MO); Lake (MI, WI, MN); Delta (AR, MS, LA); Appalachia (VA, WV, NC, KT, TN); Northern Plains (ND, SD, NE, KN); Southern Plains (OK, TX); Mountain (MT, ID, WY, NV, UT, CO, AZ, NM); and Pacific (WA, OR, CA, AK, HI).

Table 1—Marginal tax rates on factor income, by type and industry, and taxes on output and consumption, 1994

Tax base	U.S.	North-east	South-east	Cornbelt	Lake	Delta	Appala-chia	No. Plains	So. Plains	Moun-tain	Pacific
						Percent					
A. Income, by type											
Federal:											
Income from capital	27.2	27.4	25.0	28.2	29.2	29.1	30.1	27.0	24.7	27.1	26.1
Income from labor	23.9	23.0	26.0	23.4	23.7	24.3	23.6	23.8	25.3	24.0	24.6
State and local:											
Income from capital	12.7	17.3	9.0	12.6	19.6	4.6	6.9	9.0	13.1	10.7	11.2
Income from labor	8.4	10.2	2.6	8.0	9.4	8.5	8.2	8.6	5.6	8.1	9.3
B. Industrial output											
Federal:											
Farm	0	0	0	0	0	0	0	0	0	0	0
Food	2.0	1.8	3.0	1.2	1.3	0.4	9.7	0	1.4	4.6	2.6
Nonfood	0.5	0.5	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.5	0.9
State and local:											
Farm	0	0	0	0	0	0	0	0	0	0	0
Food	3.0	6.3	4.5	1.0	2.6	2.2	1.2	1.2	5.2	2.6	2.6
Nonfood	1.1	1.4	0.8	1.0	1.0	1.0	1.1	1.3	1.3	1.0	0.8
C. Household consumption											
State and local:											
Farm products	1.3	0	1.3	1.0	0	4.8	4.4	2.7	0.6	1.5	0.2
Manufactured foods	1.3	0	1.3	1.0	0	4.8	4.4	2.7	0.6	1.5	0.2
Nonfood goods	4.3	3.2	4.3	4.2	4.0	5.9	4.8	4.8	4.6	5.0	5.3

Source: *Regionalism, Federalism, and Taxation: A Food and Farm Perspective*, TB-1882, ERS, USDA, and ERS calculations.

ket price of the commodity. Business taxes not passed on to customers are taken out of wages and returns to business investors.

States also tax income, but are more likely to tax retail sales, which raises the price of retail goods and services. This tax, too, may lower payments to labor and capital investors. Local governments mostly tax property, such as real estate and autos.

Federal, State, and local taxation of market transactions creates differences between prices received by sellers and prices paid by buyers. Table 1 gives an aggregate picture of current U.S. tax policy on several broadly defined market activities for the year 1994.[3]

[3] We chose 1994 because of the data used in our economic model. The basic relationships between Federal and State/local taxes remain true today.

Payments to factor owners. Private households earn income by supplying labor to industry, and from their share of ownership in industry capital. Households use this income to purchase food, other products, services, and shelter, and to save.

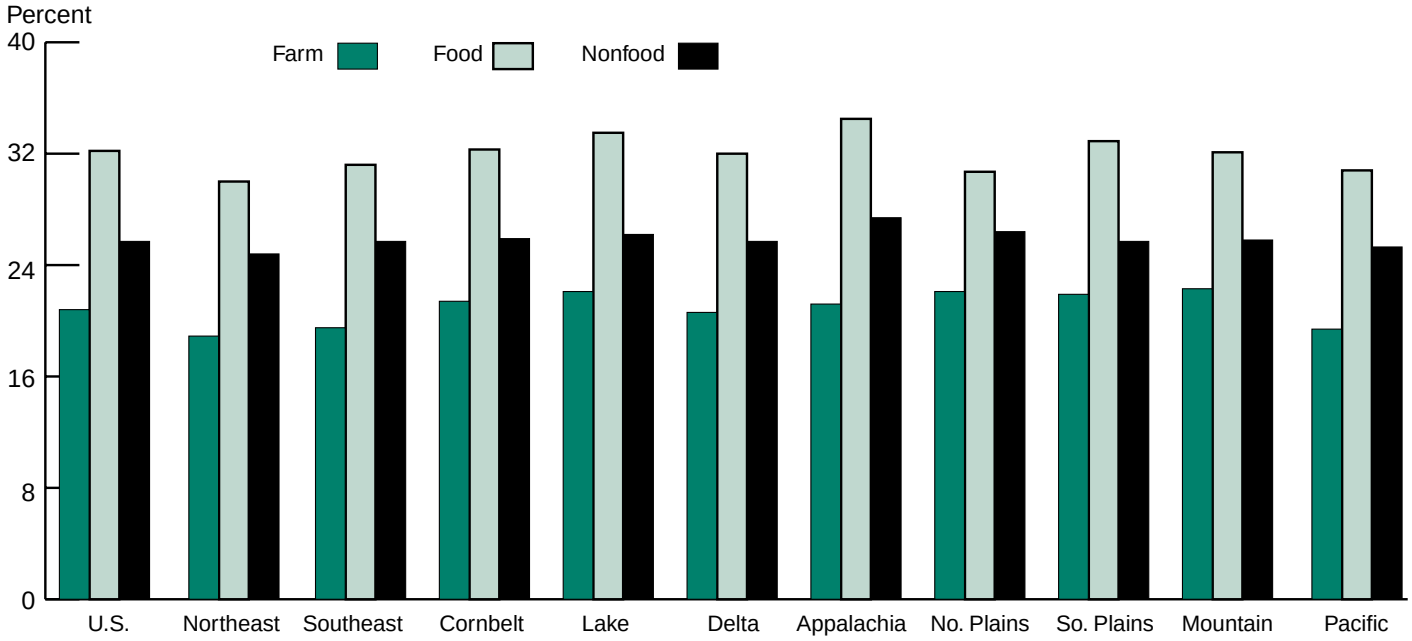
Table 1, part A, summarizes rates of taxation on factor incomes, by region. These rates reflect the tax on the last dollar earned by factor owners in the tax year. These taxes include income, property, wealth, wage, and capital gains taxes.

The Federal Government received 27.2 cents per dollar of income earned from household ownership of capital, without much variation across regions. Any variation is largely due to the kinds of capital employed by the different industries in each region, as well as the extent of incorporation (which subjects the industry to a Federal corporate income tax) by industries in each region. For the same reasons, State and local taxes on capital income vary, but more widely because of variations in State tax policy.

Labor income, on average, was taxed at 23.9 percent and 8.4 percent by Federal and State/local governments. This does not include a roughly 14-percent wage tax to cover social insurance costs (such as social security, Medicare, and State pension funds), which is not part of general tax revenues.

Income from farming is taxed at 20.8 percent nationwide, which is less than the Federal tax rate on income from food (32.2 percent) and nonfood industries (25.7 percent) (fig. 1). State governments tax income from farming at a higher rate, 7.9 percent, than that from other industries (fig. 2). Food manufacturing income is taxed more heavily than other industries at the Federal level and less so by the States. Regional variations are substantial.

Figure 1
Federal income tax rates, by industry and region



Aggregate tax rates differ across regions because there is uneven tax treatment of production inputs, across asset and industry types, corporate and noncorporate business. Industry and asset composition vary across regions. The implications of this unevenness are extensive. Producers, wage earners, and investors will adjust their reliance on each income source accordingly. To the extent that substitution is feasible, those income sources that are taxed more heavily will be used less intensely, and vice versa.

Industry revenues. Both Federal and State/local governments target specific industries for excise, severance, and other forms of taxes and fees. These taxes are generally based on the level of industry output. Federal output taxes mainly target fuels, alcohol, and tobacco. State/local governments target alcohol, tobacco, and natural resource extraction. Predictably, those regions of the country that have larger shares of their industrial output in these targeted industries—notably Appalachia and the Northeast—have higher industrial output marginal tax burdens (table 1, part B).

Similarly, for retail sales taxes (exclusively State/local), industry targets vary by region. Many States allow food exemptions, and most States have a prescription drug exemption. While every region gives some break for home food consumption, some regions—such as the Delta and Appalachia—levy a substantial sales tax on all consumption (table 1, part C).

Tax Impacts in Food Markets

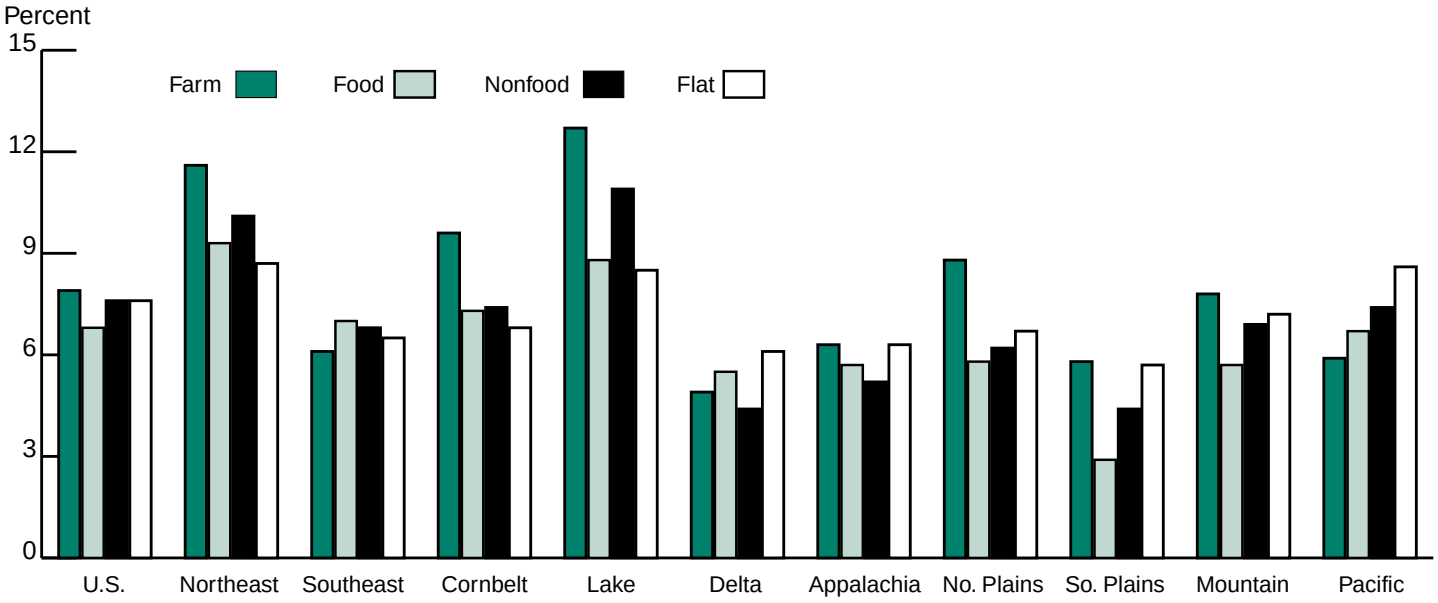
The data on production and consumption activities under current tax policy are denoted as our benchmark equilibrium (see box). For our alternative equilibrium, all Federal taxes, as depicted in table 1, are abolished except Federal output taxes (section B), since these are not normally used as general revenue taxes. In their place, a 13.22-percent income tax is applied to all income, on all industries, in every region—the Federal flat income tax. This rate will produce the same tax revenues as are produced by the current Federal tax system in our benchmark equilibrium.

The new tax structure will induce reallocation of labor and capital among industries, the recalculation of incomes to households, and changes to both the level and patterns of consumption by these households. We examine how taxes affect producer and consumer food prices, calculate the level of farm and food output, and determine how taxes affect savings and investment. Patterns of international food trade are also examined. Values in table 2 depict percentage

Method

The tax policies in table 1 can be combined with detailed, economywide production and household consumption accounts published by various statistical agencies. These data can be allocated to U.S. regions and a region representing the rest of the world. The regional production and consumption accounts can then be reconciled with behavioral/technical parameters that contain information about the economic behavior of private households (e.g., the proportional change in demand for a good due to a change in its market price) and producers in different industries (e.g., the ability of industries to combine and substitute between labor and capital inputs in their production process). Such a framework can be used to estimate how households and industry would respond to changes in tax policy. The assessments made in this report are based on such an approach, which is fully documented in *Regionalism, Federalism, and Taxation: A Food and Farm Perspective*, TB-1882, ERS, USDA, March 2000, available on the web from www.ers.usda.gov/epubs/pdf/tb1882.

Figure 2
State income tax rates, by industry and region



changes from the benchmark equilibrium induced by the application of a Federal flat income tax.

Food prices. By eliminating the favorable Federal tax treatment of farm industries, relative to food and nonfood industries, the cost of farm production in every region increases by an average of 1.3 percent. This increased cost is reflected in the farm producer price index in table 2. Farm output is also an input for food manufacturers, but represents only a small share of input costs for these industries. The producer price index for food indicates the cost of producing food for home consumption inches down in most regions, but is barely affected overall under a Federal flat income tax.

To understand this result, refer to figure 1. At a Federal flat income tax rate of 13.22 percent, farm industries will face a lower overall tax rate on factor incomes. All other industries, particularly food, will have substantially lower tax rates. Initially, all nonfarm industries will want to take advantage of the lower tax rates to employ more labor and capital. So these industries will bid up wages and

Table 2—Impacts of Federal tax flattening on U.S. and regional food markets[1]

Economic indicator/Industry	U.S.	North-east	South-east	Cornbelt	Lake	Delta	Appala-chia	No. Plains	So. Plains	Moun-tain	Pacific
					Percentage change						
Producer price index:											
Farm	1.3	1.9	1.6	1.3	0.8	1.5	1.9	0.9	0.6	0.8	1.6
Food	-0.2	-0.4	-0.2	-0.2	-0.1	-0.2	-0.1	0.0	-0.1	-0.2	-0.5
Consumer price index:											
Farm	1.2	1.2	1.4	0.9	0.8	0.7	1.4	0.7	0.7	0.9	1.4
Food	-0.3	-0.4	-0.3	-0.3	-0.3	-0.3	-0.4	-0.3	-0.3	-0.3	-0.3
Industrial output:											
Farm	-0.4	-5.1	-1.9	-0.1	2.4	-1.3	-4.1	1.9	2.9	1.4	-2.8
Food	0.7	2.1	-0.3	0.2	-0.2	0.5	0.5	-0.6	0.0	-0.8	2.5
Net investment:											
All industries	2.3	2.8	0.8	3.0	2.9	0.3	5.8	1.5	0.3	1.5	1.2
Farm	1.3	-1.3	-0.6	2.0	4.1	-1.2	2.7	2.2	1.4	1.9	0.2
Food	2.6	4.4	-0.1	2.4	3.2	1.0	3.2	1.8	0.9	-1.0	1.7
Net foreign trade:[2]											
Farm	-3.5	-20.3	11.7	-0.6	-7.0	1.4	-2.4	-13.7	0.2	-21.4	-2.6
Food	(14.2)	(3.2)	(4.4)	(10.3)	(10.0)	21.6	(38.9)	17.9	(13.1)	(3.4)	(22.5)

[1] To infer the impact of current tax policy, divide the percentage changes reported by 1 minus this reported change and reverse the sign.

[2] Value of exports minus value of imports. Where impacts are given in parentheses, it indicates a region was a net importer in the benchmark equilibrium. For example, a positive number in parentheses suggests a decline in net imports.

rents to attract factors away from those industries that benefited less from the new tax rates. The net effect is that food industries expand in most U.S. regions, with tax cost savings going to higher wages and rents. Further, since farm products are an intermediate input in food production, and the new tax rates make farm production more costly (since they drive up wages and tax-inclusive rents), overall costs of food production decline only slightly in all U.S. regions.

Consumer food prices are affected little (-0.3 percent) by the change in Federal taxes. Consumer demand for goods and services increases only slightly with their increased income under the Federal flat tax rate, and what little increases they make are mostly allocated to nonfood goods and to increased savings. Further, these households and U.S. food producers will import more foreign farm products, which are now relatively cheaper to buy. Foreign producers and households will pay for part of the increased cost of U.S. food production through their purchases of farm output.

Food output. Overall food production increases by 0.7 percent, even as U.S. farm production declines. Foreign farm products replace reduced domestic production and accommodate the increase in U.S. food production. Regional impacts of the new tax rates vary widely. Farm output declines enough in six regions (Northeast, Southeast, Delta, Cornbelt, Appalachia, and Pacific) to offset gains in other U.S. regions (table 2). Food production declines in four regions: Southeast, Lake States, Northern Plains, and Mountain.

Investment. If a Federal flat tax on income is implemented, the rate of return on capital assets (excluding land) increases in all regions (except the Delta). As a result, investment expenditures, by all industries, increase in all regions by an average of 2.3 percent, ranging from 0.8 to 5.8 percent (table 2). However, changes in industry investment are different from aggregate regional investment. Given that farm industries decline in several regions, and that capital becomes relatively more expensive for farm industries, we conclude that farm investment would increase at a slower rate of 1.3 percent, ranging from -1.3 to 4.1 percent. Investment in food production increases at twice the rate of farm investment (2.6 percent) due to the sharp declines in that industry's income tax rates.

The current tax system attracts a larger share of investment into farm production than would occur under a flat tax, and an even greater share of investment is driven out of food manufacturing industries.

Trade. Currently, the United States is a net exporter of farm products overall and in each of the 10 regions. Under a Federal flat income tax, the price of U.S.-produced farm output increases, making it a less attractive export. Further, with food production increasing, U.S. food producers will buy more farm products, and switch to the relatively cheaper foreign farm products. Net farm exports decline by 3.5 percent. The United States is a net importer of food overall, as are all regions but the Delta and Northern Plains (as indicated by the parentheses in the last row of table 2).

Under the Federal flat income tax, domestic consumer food prices inch down while imported food prices inch up (due to higher costs of U.S. farm products purchased by foreign food producers, who don't enjoy offsetting tax reductions). So even as U.S. food producers expand production, U.S. consumers increase their share of domestically produced food, leading to a 14.2-percent reduction in net food imports (shown in table 2 as a 14.2-percent increase to a less negative value). Considerable variation in both farm and food trade exists among regions.

By inference (see footnote 1 in table 2) the present Federal tax system slightly increases the cost of food production in the United States compared with costs under a Federal flat income tax, primarily due to unfavorable tax treatment of income from food industries. Since food producers are currently taxed at a relatively high rate, most of the cost savings in farm production under the current system is exported to foreign customers of farm products—farm exports are 4 percent higher due to current Federal tax policy.

While the current tax system discourages food production generally, regional variations exist. For example, food production in the Pacific region is reduced by around 3 percent under current tax policy, while it is almost 1 percent higher in the Northern Plains, the region with the highest per capita food production. Farm production, on the other hand, is greater overall under current tax policies, but not uniformly so. In the Northeast, farm production is more than 5 percent higher, but is between 1 and 3 percent lower in four farm production regions (table 2).

The current tax system attracts a larger share of new investment into farm production than would occur under a flat tax, and an even greater share of investment is driven out of food manufacturing industries. For example, investment in Northeast farm production is around 1.5 percent higher (from footnote 1 in table 2: $-1.3\% \div [1-0.013] \times [-1] \approx 1.53\%$) due to current tax policies, while investment in that region's food manufacturing is reduced by 4.6 percent.

What If States Flattened Taxes?

The Federal flat income tax simulation was carried out without any modifications to State tax policy (table 1). But many States base their income tax system on the Federal system. In table 3, we report the outcome of a simulation whereby all States adopt the flat income tax system to replace all other revenue sources—the U.S. flat income tax. Again, we exclude the output taxes (section B in table 1) since they are normally not part of general tax revenues. This produces a pure U.S. income tax system with uniform relative burdens on all sources of income within each region.

In this simulation (fig. 2), the U.S. flat income tax rates vary by region—between 5.9 percent for the Southern Plains and 8.7 percent for the Northeast. The Federal flat income tax rate is 12.7 percent, slightly lower than when only

Table 3—Impacts of harmonized Federal and State tax reform on retail food prices and balance of trade[1]

Economic indicator	U.S.	North-east	South-east	Cornbelt	Lake	Delta	Appala-chia	No. Plains	So. Plains	Moun-tain	Pacific
						Percentage change					
Consumer food price index	-2.2	-0.8	-5.0	-1.7	-0.7	-5.3	-5.1	-3.3	-1.4	-2.2	-0.9
Net foreign trade:											
Farm	-2.4	-16.1	25.6	2.4	-8.5	0.3	0.3	-19.6	-4.1	-28.9	0.3
Food	(21.3)	(5.6)	(6.7)	(16.5)	(15.5)	32.0	(55.3)	32.2	(20.7)	(5.1)	(31.2)

[1] To infer the impact of current tax policy, divide the percentage change reported by 1 plus this reported change and reverse the sign.
[2] Value of exports minus value of imports. Where impacts are given in parentheses, it indicates a region was a net importer in the benchmark equilibrium. For example, a positive number in parentheses suggests a decline in net imports.

the Federal tax system is flattened. While this would represent a dramatic shift in State tax policy, it completes our consideration of impacts from a conversion to a flat income tax system.

Consumers in all U.S. regions pay lower prices (as much as 5 percent lower) for food at home under the U.S. (Federal plus State) flat income tax, compared with the benchmark equilibrium (table 3). Consumer food prices decline partly due to a more favorable treatment of farm income by States; the flattening of State income taxes removes the extra State taxes farms face under the current system. Under a U.S. flat income tax, retail taxes (table 1, part C) are eliminated, and this reduces costs beyond the farm gate for food at home. Since foreign customers of U.S.-produced food do not pay a U.S. sales tax, the elimination of sales taxes directly benefits only domestic food-at-home consumers. So U.S. households will purchase more of the domestic food supply and less will be exported.

U.S. farm production increases by just under 1 percent compared with the current benchmark income tax. Even so, net exports of farm products drop 2.4 percent under a U.S. flat tax, reflecting a more favorable domestic market for U.S.-produced farm products. The primary domestic customer for farm products is food producers, and food production is up in most U.S. regions. With the consumer price of food down substantially in most regions, households switch to domestic food products. This leads to a 21.3-percent improvement in the negative trade balance. As with the Federal flat income tax, the balance of food trade varies greatly by region.

Conclusions

This report examined the consequences of current U.S. tax policy relative to two alternative flat income tax policies—a Federal flat income tax and a U.S. (Federal plus State) flat income tax. Our analysis distinguishes between the Federal and State/local tax systems and accounts for the regional elements of the U.S. economy.

Net investment in new capital goods would increase overall if a Federal flat income tax were to replace the current Federal tax system. Even so, regional households are better off only slightly, and the average household may actually be worse off in many regions. In the near term (before new investments add to the stock of capital), farm industry output declines overall and in 6 of the 10 regions analyzed. However, food production expands under a Federal flat income tax. To reconcile a smaller farm output with a higher food output, net farm exports and net food imports decline under a Federal flat tax.

Nor is economic growth universal. Under a Federal flat income tax, net investment in farm capital increases by an average of 1.3 percent. The rate of net capital investment in food industries increases by 2.6 percent. These results suggest even further reductions in net farm exports and net food imports in subsequent years under a Federal flat tax.

The addition of a State flat income tax is most notable in that consumer food prices decline by 2.2 percent overall and by as much as 5.3 percent regionally. This result is surprising, considering that most States rely heavily on sales tax revenues but exempt food purchases from this tax. ■

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