Chapter IX

ECONOMIC IMPACTS

Chapter IX.– ECONOMIC IMPACTS

TABLES

Chapter IX

ECONOMIC IMPACTS

UNEMPLOYMENT, INFLATION, AND REAL ECONOMIC GROWTH

Home energy conservation may be evaluated for its impact on unemployment, inflation, and the general performance of the domestic economy in the long run. As throughout this report, this chapter assumes that real energy costs are rising and will continue to rise in the future, and that eventually energy consumers or society as a whole will pay prices that reflect these higher real costs. Given these assumptions, it is important to realize that this changing supply situation has a variety of economic impacts that cannot rightly be attributed to energy conservation in the home.

Higher real costs and prices have several effects. They mean that individual energy consumers and the United States as a Nation can buy fewer goods and services than otherwise. Money previously available for other purchases must now go to pay for energy. Higher energy prices also redistribute income from energy consumers to owners and producers of energy resources. Some of this redistributed income now goes abroad to pay for fuel imports and this further reduces domestic income. Higher energy prices also change the mix of job opportunities to reflect the buying patterns of those who benefit from energy sales, including fuel-exporting foreign countries. Finally, real domestic income may fall if energy prices jump too abruptly, causing short-term unemployment and other economic dislocations.

Home energy conservation, by the substitution of more energy-efficient devices and structures or by behavioral changes, is the economic response by the residential sector to higher energy prices and uncertain supplies. This chapter examines the broader economic effects of this response. Besides saving dollars, residential conservation has other economic implications because it redirects expenditures away from fuel to other goods and services.

Production of nonenergy goods and services generates income and it is important to see how this income is distributed compared to the distribution generated by energy production. This comparison will be made in terms of the proportion of national income going to workers, which is determined by the total number of jobs and by labor productivity. After the issue of who benefits, there are important questions about whether these benefits are proper economic incentives. Do they help or hinder the national economy in adjusting to the depletion of oil and gas supplies? Does this redistribution of income improve the utilization of labor and capital or does it aggravate inflation?

THE TOTAL NUMBER OF JOBS

Home energy conservation can increase the number of jobs in three ways:

1. by the substitution of domestic labor for imported fuels;
2. by the substitution of labor-intensive goods and services for capital-intensive, domestically produced energy;
3 by yielding a net return or savings out of which families can increase personal consumption expenditures beyond what they could if old energy consumption patterns had been maintained.

Each of these three factors is discussed below and the order of discussion reflects the sequence in which they arise. When energy-conserving investments are made, employment caused by this investment substitutes for employment in energy production (1 or 2).

After energy-conserving improvements have been installed, consumers begin to accumulate net **income from their profitable investments** and **this can be spent elsewhere** (3).

1. Home energy conservation may reduce the demand for imported fuels directly as in New England where most home heating oil is imported. It may also reduce imports indirectly by freeing up domestically produced fuels that can substitute for imports elsewhere in the economy. In either case, jobs created by conservation are not offset by jobs lost anywhere else in the domestic economy, and total employment clearly increases, assuming there are unemployed people avail able.' Furthermore, keeping income within the country indirectly increases employment by an additional amount due to resending. One dollar of additional (real) domestic income generated by import substitution yields at least another in secondary expenditures, if unemployment is at a high level, and on the average **75** percent of this is spent on wages and salaries.[2]
2. Home energy conservation also reduces the need for more domestically produced energy. This would apply mainly to high-cost supply alternatives since any lower cost supplies saved from residential use would reduce the need for new higher cost alternatives elsewhere in the economy. High-cost energy supplies include electricity and new sources of oil, gas, and coal.

Labor intensities in terms of jobs are either indicated or can be inferred from the data presented in table 73. These are average data for existing enterprise, but it can be safely inferred that new fuel sources would not greatly increase labor utilization over conventional supplies since the former involve technically complex, capital-intensive stages of production added on to present fuel-producing activities.

Table 73.—Full-Time Employment Equivalents per $100,000 Expenditure" (1967 input/output data)

Sector	
Manufacturing household appliances	**8.6**
General maintenance and repair	**8.8**
All investment in fixed capital	9.2
Residential construction	9.2
Personal consumption expenditure (average)	10.2
Natural gas	2.7
Coal	3.2
Fuel oil #2	3.3
Electricity	5.5

● See Donna Amado, "Creation of Labor Data for 1963, 1967, and 1972," Center for Advanced Computation, technical memo No. 77, University of Illinois at Urbana-Champaign, September 1976, pp. 66-72. Data includes both direct and indirect labor Inputs.

Compared to fuel production, home energy-conserving activities are relatively labor intensive. A comparison to home appliance manufacturing is pertinent when conservation is accomplished by more rapid turnover of the stock of heating, ventilating, and air-conditioning equipment as well as other home appliances. A comparison to residential construction is pertinent when conservation is accomplished by more rapid turnover or increased investment in housing stock. Finally, a comparison to general repair and maintenance is pertinent when conservation is accomplished by more rapid turnover or increased investment in housing stock. Finally, a comparison to general repair and maintenance is pertinent when conservation is accomplished by retrofitting homes. In all of these comparisons, based on the actual or inferred information contained in table 73, home energy conservation is relatively labor intensive.

3 After energy-conserving investments begin generating savings for families, private consumption expenditures for all goods and services can increase, offsetting to some extent the loss in real income caused by rising energy prices. These ex-

[1] Of **course payments abroad may be recycled in terms of U.S. exports but on the margin this is probably not important since there is a general dollar surplus among fuel exporting countries.**

[2] For a recent discussion of multiplier **effects, see Albert A. Hirsch, "Policy Multipliers in the BEA Quarterly Econometric Model,"** *Survey of Current Business, June 1977,* **pp. 60-71. The estimate that 75 percent of secondary expenditures goes to labor is based on the fact that the average labor share in national income is 75 percent. See** *Statistical Abstract* **of the** *United States,* **1978, table 718, p. 444.**

penditures create more jobs per dollar than any other type shown in table 73. The size of this third effect depends on the profitability of home energy-conserving investments, and OTA analysis above clearly suggests that these profits may be substantial. (See chapter I I.)

Despite these three positive conclusions about job creation, it should not be implied that home energy conservation will solve the national employment problem. Direct energy expenditures account for only about 5 percent of gross national product and residential consumption only for a fraction of that. However, we can say that some jobs will be created and this should make it easier to reduce the rate of unemployment.

LABOR PRODUCTIVITY AND THE DISTRIBUTION OF JOBS AND INCOME AMONG WORKERS

In analyzing labor productivity, it is important to reemphasize the distinction between rising real energy costs and prices and subsequent conservation efforts. The former clearly reduces average product per worker as it reduces real national production. Energy conservation on the other hand should increase both by moving to a more productive mix of energy, capital, and labor. This overall positive impact of home energy conservation is clear, based entirely on the fact that it is profitable. If prices of capital, labor, and energy all reflect real costs, then profitability is synonymous with getting more total product and larger average product per worker out of the same package of resources.

Not all workers, however, will benefit from reduced energy consumption in the home. In particular, workers in displaced energy supply activities may lose their jobs or be asked to accept lower incomes, and this prospect raises issues that must be resolved politically. However, in these political discussions, two points should be kept in mind.

First, a major advantage of home energy conservation, when compared to increasing energy consumption, is that jobs are less likely to be concentrated at centralized points of production such as at the wellhead, the mine mouth, or at the electric power station. Home energy conservation involves more extensive downstream operations (distribution, sales, construction, installation, and maintenance), which means that employment opportunities are spread out geographically in a pattern determined more by the location of the final consumer. **This decentralization is beneficial because it spreads income from employment more evenly across the country and,** in particular, it reduces the outflow of wealth from energy **poor regions and** districts that have suffered the most due to rising energy prices.

Second, the threat of job or income loss for presently employed people may not be significant if the national economy can reduce its energy consumption per dollar of product and still continue to grow apace with the size of the labor force. If it can, and energy conservation is one of the engines for such growth, then high-cost energy supply activities may not actually contract, but merely not grow as fast, and present workers can stay on the job. In other words, home energy conservation has more impact on the locus and kind of new jobs than on jobs that already exist. This situation obtains in part also because most of the energy-conserving **options** considered here **will require a decade** or more to accomplish.

INFLATION

Home energy conservation, as defined here, is anti-inflationary because it costs less (for roughly the same convenience and comfort) to conserve or save a Btu of energy in the home than to produce it. This saving is partly due to the substitution of less expensive domestic goods and services for imported fuels. Since the United States has a serious balance of payments problem, this reduces downward pressure on the dollar and domestic inflation caused by currency devaluation.

Anti-inflationary savings also derive from the relatively broad geographical distribution of energy-conserving jobs, compared to jobs in energy supply, which makes them accessible to a larger number of potential workers. A large fraction of energy-conserving jobs can also be accomplished by people with skills in maintenance and repair. Such skills are fairly widespread and can be acquired without extensive training. Consequently, it is unnecessary to bid up wages very far before large numbers volunteer for work, including many from the large pool of chronically unemployed.

Finally, labor is substituted for energy without bidding up wages and salaries when families do a better job of housekeeping. The factor of two difference in energy use among people with the same basic energy services (see chapter III) suggests that this form of increased self-employment may be quite important in increasing real incomes while decreasing inflation and energy consumption.

In capital markets, home energy conservation has two distinct advantages when compared to alternative investments that would otherwise have to be made in energy supply. First, home energy-conserving investments are relatively profitable. There are exceptions of course, and new supply technologies might come along which are very profitable, but the current situation is illustrated by comparing investment payoff periods. New electric power-generating stations are commonly amortized over 20 to 30 years because it takes that long to accumulate sufficient revenues above operating costs. Investments in home energy conservation typically pay off within 10 years and may yield revenues above debt service costs right from the very beginning. In other words, a given stock of real resources and finance capital can support a greater total amount of investment activity if home energy conservation reduces Investment in energy supply, and this means less pressure on interest rates to rise.

Second, for the approximately 65 percent of dwelling units that are owner occupied, home energy-conserving investments have many attractive aspects. A dollar of payoff in terms of reduced expenditures for energy is worth more than a dollar of income to buy energy because only the latter is subject to income tax. The home owner/investor, in other words, has a tax incentive to save rather than to buy energy. Also, energy-conserving investments, unlike savings accounts and other securities available to small investors, do not have fixed rates of return that can be wiped out by inflation. Furthermore, rates of return in terms of reduced energy expenditures are very likely to increase faster than inflation because price increments for energy are likely to be above average. Both of these factors are inducements to increase savings beyond what homeowners might otherwise and, again, this takes pressure off of interest rates.

REAL ECONOMIC DEVELOPMENT

As defined in this report, home energy conservation saves money and so it can occur largely as the result of private market behavior. In addition, this profitability also serves as an economic incentive toward reducing unemployment and inflation because it redirects spending toward relatively plentiful supplies of labor and capital, and results in a

situation overall **in which goods and** services are delivered **at a lower total cost. Home energy conservation,** in other words, can be recommended both on the basis of its payoffs to the Nation as a whole as well as its profits for residential consumers.

Qualifications might be made based on short-run adjustment rates for labor and capital markets (e. g., labor must be trained and interest rates may be temporarily very high), but in the long run the progressive economics of home energy conservation cannot be denied. The fundamental point is that energy supplies cannot be expanded without rapidly increasing real costs, while cost increments for the expansion of labor and capital, as substitutes for energy, are much smaller.