

ECONOMIC POLICY OF WATERWAY TRANSPORTATION

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Four advantages that water transportation possesses are discussed: (a) the extremely efficient use of energy per ton-mile (metric-ton-kilometer) of freight moved by water, (b) the ability of water transportation to control operating costs through technological advances in power and design to the extent that the average water transportation rates of today for bulk cargoes are lower than the ceiling rates of World War II, (c) the expanded capacity of water transportation that means low capital costs, and (d) the increased service that water transportation can provide without physical constraints.

•THE foundations of national waterways policy laid in the early years of the United States are clear. They were set forth in the Northwest Ordinance of 1787, which guaranteed the freedom of the navigable waters leading into the Mississippi and the Saint Lawrence Rivers from any taxes, imports, or duties, and in the assumption by Congress in 1824 of responsibility for river improvements. The Rivers and Harbors Act of 1882 marked a significant milestone in the development of the nation's waterways, for it was the first act of Congress that combined appropriations for developing the nation's waterways with a reaffirmation of the policy of freedom from tolls or other user charges. The objective of regulation of transportation as set forth in the Transportation Act of 1940 is the development, coordination, and preservation "of a national transportation system by water, highway and rail, as well as other means adequate to meet the needs of the commerce of the United States, of the Postal Service and the National Defense." More recently, in the Water Resources Planning Act of 1965, Congress declared,

In order to meet the rapidly expanding needs for water throughout the Nation, it is hereby declared to be the policy of Congress to encourage the conservation, development and utilization of water and related land resources of the United States on a comprehensive and coordinated basis.

The intent of Congress in enacting this legislation was succinctly expressed in the Report of the House Committee on Interior and Insular Affairs on HR 1111, which with amendments became the Water Resources Planning Act of 1965. Some relevant comments of the committee are as follows:

Thus, we must plan to use our Nation's water supplies to provide maximum benefits to all purposes . . . controlling floods and preventing pollution, providing water for irrigation, assisting navigation, providing hydroelectric power and energy and providing outdoor recreation opportunities and fish and wildlife conservation and enhancement.

Over the years, Congress has repeatedly reaffirmed its opposition to waterway tolls and operating charges. It has maintained its commitment to improving and maintaining the navigable waterways by authorizing projects and appropriating funds for construction and maintenance because it believed that such improvements benefit the national economy and advance basic objectives of national policy. These objectives have included unifying the country, defeating sectionalism and its internal trade barriers and

discriminatory impositions on commerce, furthering westward expansion, and providing low-cost transportation adequate to the needs of a growing economy to restrain the rates charged by competing overland transport modes. These rates were so exorbitant that they obstructed regional economic development.

In later years, this policy has been effectively applied to aid the economies of underdeveloped regions of the country through navigation improvements that provide market outlets and access to new materials, to assist farm economies through cheaper distribution, and to stimulate industrial expansion and broadened employment opportunities, which is particularly effective in depressed area rehabilitation. No economic policy is more deeply embedded in the fabric of our national life, and it has been a brilliant success. Programs implementing these policies have strengthened the national defense by facilitating dispersion of industry. They have stimulated economic growth as evidenced by the investment of \$42.8 billion in new and expanded plant facilities in the counties bordering the Ohio River and its navigable tributaries from 1950 through 1972. They have released resources that had been locked in by the high charges imposed by other modes of transportation. They have cut costs, stabilized the economy, and held back the forces of inflation, and through rehabilitation of depressed areas they have reduced population pressures on overcrowded metropolitan areas. Under the enlightened policies and programs of the past, the water transportation industry has been able to do an exemplary job of public service, and the carriers continue to put technological innovations into effect. The industry is intensely competitive, so the benefits of new technology are passed directly to the shipping public in improved service.

From 1964 to 1974, the ton-miles (metric-ton-kilometers) carried in domestic commerce by water increased by 19.6 percent; the ton-miles (metric-ton-kilometers) carried by shallow-draft water carriers increased by 68.6 percent.

Water carriage is a mainstay of U.S. energy supply. Any comprehensive energy policy requires major strengthening of this mode's inherent advantages for energy transportation. In 1973, 57.5 percent of the ton-miles (metric-ton-kilometers) of freight carried by water consisted of fuels, and 7.7 percent consisted of chemicals, much of which were products of the petroleum industry.

Rate increases in water transportation have been restrained compared to those for other modes. From 1967 to 1973, the average revenue of U.S. class I railroads increased from 12.7 to 16.2 mills/ton-mile (22.6 to 28.8 mills/metric-ton-km). Water carrier charges increased by less than 1 mill/ton-mile (1.78 mills/metric-ton-km) in 1973. The additional increase of 1 mill/ton-mile (1.78 mills/metric-ton-km) for the first 6 months of 1974 over the cost per ton-mile (metric-ton-kilometer) for the same period in 1973 can be attributed principally to drastic increases in fuel costs.

The U.S. Department of Transportation (DOT) projects an increase of 77.8 percent in ton-miles (metric-ton-kilometers) of domestic commerce to be carried by water from 1970 to 1990.

We have entered a period of energy shortages and high energy costs accompanied by chronic inflation, soaring capital requirements at unprecedented costs, and a serious economic recession. Full development of the potential of U.S. water transportation facilities should have a high priority. Water transportation possesses several advantages that can help preserve our economic well-being and national security.

1. Water transportation is highly efficient in the use of energy, which is important in a time of scarcity and rising fuel costs. William Mooz of the Rand Corporation has stated that it takes only 500 Btu to move 1 ton-mile (950 kJ to move 1 metric-ton-km) of cargo by water. It takes 750 Btu to move 1 ton-mile (1425 kJ to move 1 metric-ton-km) of cargo by rail, 1,850 Btu to move 1 ton-mile (3515 kJ to move 1 metric-ton-km) of cargo by pipeline, 2,400 Btu to move 1 ton-mile (4560 kJ to move 1 metric-ton-km) of cargo by truck, and 6,300 Btu to move 1 ton-mile (11 970 kJ to move 1 metric-ton-km) of cargo by air.

2. Water transportation, through technological advances in power and design, has been able to control operating costs so that, today, average water transportation rates are lower than the ceiling rates of World War II for movements of bulk cargoes, especially petroleum products and coal. This not only favorably influences the cost of

commodities but also eases the burden of huge investments that are required to improve the U.S. energy supply. Congressman Leonor K. Sullivan (1) of Missouri, chairman of the House Committee on Merchant Marine and Fisheries, stated:

The water transportation industry presently carries some 16 percent of the Nation's freight expressed in terms of ton miles of cargo transported. It performs this feat at a cost of less than 2 percent of the Nation's freight bill. For this reason alone, it would appear imperative to maintain water transportation at its maximum output to sustain a healthy economy. Examination of the fuel usage of all transportation shows that the energy crisis will be magnified and intensified if water transportation suffers any loss of fuel needed to perform its task.

3. Expanding water transportation capacity entails relatively low capital costs. In 1972 DOT projected a capital expenditure for the railroads for the decade ending in 1980 of \$32.30/thousand ton-miles (\$57.67/thousand metric-ton-km) of freight estimated for that year (2). This does not consider public funds for railroad rescue and subsidies. The corresponding figure for water carriage is only \$6.84/thousand ton-miles (\$12.21/thousand metric-ton-km) based on DOT estimates of private investment and a projection of public investment in river and harbor improvements and replacements at the average rate of the period 1970 to 1975. A nearly 5-fold advantage in capital requirements for expansion surely entitles the waterways to high priority in the allocation of funds to meet the nation's expanding transportation requirements.

4. Water transportation can greatly increase service without encountering physical constraints except for a few easily removed bottlenecks or limitations, such as out-moded locks and dams on certain portions of the inland waterways system and disposition of dredged material, which has obstructed dredging on the Great Lakes and important segments of the Mississippi River system. Increasing the minimum stage from 9 to 12 ft (2.7 to 3.6 m) on the Ohio River and other segments of the Western rivers also should be considered. This could greatly enhance the service capabilities, efficiency, and economy of river transportation. Extension of the navigation season would provide an enormous addition to the capacity of the Great Lakes and Saint Lawrence Seaway systems.

The logistics of energy supply are such that our transportation facilities will be called on to move ever larger volumes of energy materials, such as coal and petroleum products, over longer distances. In meeting that urgent need, inland water transportation can perform a distinctive service. The economy of water transportation in the use of energy, its inherent low cost, its capacity for expansion, and its capabilities for efficient carriage of massive cargoes can alleviate scarcities of fuel, farm crops, commercial fertilizers, chemicals, and other commodities basic to economic life that would otherwise result from shortages of freight cars and other bottlenecks in overland transportation. In these ways, water transportation sustains the economic life of countless industrial enterprises threatened with scarcities and rising costs. It thereby reduces serious sacrifices in consumer standards of living and mitigates the dislocations of commerce and industry and resulting unemployment that are consequences of the energy shortage.

The National Commission on Materials Policy in its 1973 report summarized the significance of water transportation to the supply of industrial materials, including energy, in these words:

Since much of the raw material required by industry is heavy and bulky, water transportation is of unique importance to the Nation's materials system. The most efficient way to move such material to factories and in some instances to transport finished products, is by barge on inland waterways or by deep-draft vessels on the Great Lakes and oceans. No little share of the success of American industry is due to the great system of harbors and waterways available to it.

Despite the outstanding capabilities and inherent advantages of the U.S. waterway system and the clearly stated policy of Congress to encourage waterway development as a federal responsibility, the executive branch of the government has been profoundly negative in recent years. Arthur Maas of Harvard summarized the condition of the U.S. waterway system before a congressional committee in 1974: "The navigation program . . . has in my view fallen woefully behind national needs in recent years . . . It has been in the Executive doghouse." This conclusion is fully supported by the record of federal investments in waterway improvements, which manifests a determined effort to starve out the waterways program. In 1962 federal appropriations for new work on navigation projects amounted to 37 cents/\$1,000 of the gross national product (GNP). In 1968 this had fallen to 32 cents, and in 1972 it had fallen to 18 cents in currency of depreciated value.

The effect of this penny-wise and pound-foolish policy is costly to the national economy because it is costly to energy supply, costly to food supply, costly to employment in water-based industries, costly to basic materials, such as chemicals, steel, aluminum, and building materials, and conducive to heightened inflation.

The large public investment already made in enlarged river and harbor carrying capacity is being wasted by continued bottlenecks in the system, such as those on the Mississippi and Illinois Rivers, the Ohio River and its tributaries, and the Gulf Intracoastal Waterway. Something of this loss is measured by a recent announcement by Wayne S. Nichols, Ohio River Division Engineer. Nichols stated that the raising of the pools of the new navigation structures at Newburgh and Uniontown on the Ohio River will reduce costs of commercial navigation by \$7 to \$9 million/year. If we take an \$8 million figure and apply it to the traffic moved through these pools in the latest year reported, we could reduce costs by 1 mill/ton-mile (1.78 mills/metric-ton-km) of cargo transited through just these 2 pools. This represents a saving of 20 to 50 percent in the cost of water transportation. If we could achieve this by relieving the various other bottlenecks on the waterway system, the benefit to the national economy would be enormous. This benefit is being withheld by short-sighted and parsimonious negativism.

The philosophy of parsimony takes its most extreme form in the waterway-user-charge campaign. We have seen the reduction over recent years in federal outlays on waterway construction from 37 cents/\$1,000 of GNP to only 18 cents. A waterway-user charge scaled to recover federal costs in their entirety would reduce this to 0. Whatever the government would expend on waterways and harbors it would take back through the user charge. This would be a complete withdrawal from the navigation responsibility the government has carried throughout our history.

In November 1974, the administration submitted a bill to Congress calling for a ton-mile (metric-ton-kilometer) tax that would close numerous branches of the U.S. waterway system to navigation. This would be achieved by taxing each segment of the system at a rate sufficient to recover to the federal government the costs of operation and maintenance for that segment. On some rivers costs would be considerably more than their present level, and industries and shippers simply could not afford any longer to use these waterways. If this tributary traffic is cut off, then the volume of commerce on the main rivers, such as the Illinois, the Mississippi, and the Ohio, would be drastically reduced. Because operation and maintenance costs are largely fixed, the user tax could require rising tax rates per ton-mile (metric-ton-kilometer) to meet the cost-recovery target even on the main rivers, and this would further diminish the volume of commerce. If traffic is eliminated on some waterways and drastically reduced on all waterways, then the benefit-cost test for bottleneck relief would turn negative, and modernization and development of rivers and harbors would be further curtailed.

The philosophy underlying the waterway-user tax proposal reached its logical conclusion in the 1973 report of the National Water Commission. The commission advocated explicit and complete repudiation of all responsibility for future waterway development as a federal cost. They provided instead that federally chartered or non-federal entities enter into agreement with the government to repay construction cost, including interest, over a specified period of years. This would transfer responsibility for waterway and harbor development in its entirety to the states, to localities, and to

private interests. The federal government would act only as a kind of clearinghouse or banker. The expenditure of 18 cents/\$1,000 for 1972 thus would be entirely eliminated.

Impairment of massive investments that are based on continued availability of low-cost water transportation would follow together with competitive dislocations of far-reaching consequence. It is difficult to conceive that even the most doctrinaire economic theorists could propose such a scheme for congressional consideration without making any serious studies to determine its effects on national and regional economies and allocation of transportation resources. I find it difficult to believe that discouraging use of the most efficient mode of transportation through destructive taxation could be regarded as compatible with the nation's interests.

Another fundamental premise of the water resource policy of the executive branch is that future benefits projected for water projects should be discounted sharply to present worth so that any project that is estimated to increase its benefits over time most likely would be rejected. Application of this policy tends to rule out navigation improvements whose benefits take time to develop and other capital-intensive projects such as major multipurpose reservoirs. Here again the views of the theoretical economists are in sharp conflict with the traditional conception that government bears a special responsibility for the welfare of future generations. Such emphasis on immediate returns and the tendency to take the cash and let the credit go, to use up everything today and go begging for tomorrow's needs, seems to be more primitive than civilized. On what rational considerations shall contemporary citizens be called on to make sacrifices for the benefit of future generations? Robert Heilbroner (3) stated, "There is only one possible answer to the question. It lies in our capacity to form a collective bond of identity with those of future generations."

The rate of increase in applied interest-discount factors for evaluating water projects has been slowed down by congressional action in the Water Resource Development Act of 1973. But the battle is only suspended; final victories are rarely won against the Office of Management and Budget. Continued vigilance by all who are concerned is as necessary as ever.

The great economic issue for water transportation may be reduced to 2 questions. Will the nation adhere to the philosophy of waterways development as a federal responsibility under policies and programs designed to bring the full potential of this great natural resource to bear on the grave problems of food and energy shortages, rising costs, and mounting unemployment that beset us? Or will it yield to the alluring generalities of the economic theorists who would cast the government in the role of a shopkeeper selling water resource services on profitable terms and burying the duties of sovereign responsibility for the national welfare in the printouts of benefit-cost ratios narrowly calculated to obstruct investments in the nation's future?

Certain congressional committees will begin this year a series of hearings leading, I believe, to formulation of a national water policy. Will the end product articulate a defeatist philosophy for America's future? Or will it rather reaffirm the philosophy of security and progress based on the wise use and improvement of our national heritage that has guided the nation to prosperity and leadership of the free world?

REFERENCES

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3. R. Heilbroner. An Inquiry Into the Human Prospect. W. W. Norton and Co., New York, 1974.