

**AN ECONOMIC BASIS FOR THE "NATIONAL
DEFENSE ARGUMENT" FOR PROTECTING
CERTAIN DOMESTIC INDUSTRIES**

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An Economic Basis for the "National
Defense Argument" for Protecting
Certain Domestic Industries

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The "National Defense Argument" has long been of a favorite of those supporting special subsidies to various domestic industries. Yet the argument has been traditionally framed as an appeal to emotions of patriotism, amounting to little more than the statement that the military would have an unusually high wartime demand for the products of the subsidized industry. As such, we can hardly accept it as a sufficient economic argument for subsidizing an industry.

This paper is an attempt to specify an economically rational national defense argument and to apply the argument where it appears to be most appropriate.

An important result of our analysis is a specification of the form of the efficient subsidy -- whether, for example, the efficient subsidy is an output subsidy, a particular input subsidy, or a protective tariff. Another important result is a quantification of the subsidy justified by the National Defense Argument. Our applications will illustrate this latter distinguishing characteristic of our theory.

I. National Defense as an Economic Activity

Not surprisingly, our national defense argument will come from a model of an economy with national defense expenditures. Describing this basic environment constitutes the starting point of our analysis.

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The model of national defense used here builds upon an aggregative simplification of a previous general equilibrium model of the author (1974). We shall outline this simplified model before proceeding to the generalizations which permit national defense arguments.

In our world, each "nation," or given subgroup of economic agents, must defend its assets in order to own them, and each capital good is owned by some nation. In such a world, national defense is a necessary social expenditure rather than a waste of the world's resources. Given a distribution of property between nations, there is a set of defense efforts of the various nations which will be the minimal defense levels required to prevent one nation from taking the property of another. When property is distributed so that rationally chosen defenses reach these levels, there is an equilibrium distribution of property across the various nations. We assume the presence of such an equilibrium in the model which follows. (The existence of such an equilibrium is proved in Thompson - Faith (1975).) Thus a particular nation at a time t in this world will have a capital stock, K^t , part of which, K_D^t , is devoted to national defense, D^t , another part, K_C^t , to consumption, C^t , and the remaining part, K_I^t , to the creation of future capital, or investment, I^t . Thus, for a particular country,

$$(1) \quad K_D^t + K_C^t + K_I^t = K^t,$$

$$(2) \quad D^t (K_D^t) = D^t,$$

$$(3) \quad C^t (K_C^t) = C^t, \text{ and}$$

$$(4) \quad I^t (K_I^t) = K^{t+1}$$

We assume that all of the above three production functions are differentiable and monotonically increasing.

Since we are at a distributional equilibrium, the country will undertake the defense effort required to deter all foreign aggressors. That is, D^t is set so that it is just sufficient to keep the highest aggressor profit, Π_A , from becoming positive. That is, letting $f(D^t)$ be the aggressor's cost of successful current aggression in terms of capital, where $f'(D^t) > 0$,

$$(5) \quad \Pi_A = K^t - f^t(D^t) = 0. \frac{1}{/}$$

Giving consumers in the country under consideration a differentiable, quasi-concave utility function, $U(C^1, C^2, C^3, \dots)$, we can determine a socially optimal allocation by maximizing it subject to (1) - (5). Substituting (2) into (5), this yields the following marginal condition for social efficiency:

$$(6) \quad \frac{\partial U}{\partial C_t} / \frac{\partial U}{\partial C_{t+1}} = \left[\left(\frac{\partial C^{t+1}}{\partial K_c^{t+1}} \cdot \frac{\partial I^t}{\partial K_I^t} \right) / \frac{\partial C^t}{\partial K^t} \right] \cdot \left[1 - \frac{dK_D^t}{dK^t} \right],$$

where $\frac{dK_D^t}{dK^t} > 0$ in view of the monotonic increasing nature of $f^t(\cdot)$ and $D^t(\cdot)$.

Inspection of (6) reveals the left side to be the familiar, Fisherian marginal rate of time preference while the first term in brackets on the right side is the marginal rate of time transformation. In competitive markets, these two terms are equated by rational individuals, as the former is set equal to one plus the market's real rate of interest by utility maximizing consumers while the latter is set equal to the same rate by profit maximizing producers.

^{1/} We are assuming here, for simplification, that the successful foreign aggressor obtains all of his victim's capital. It is clear that he cannot do this in the real world, that only a certain part of a nation's capital stock is "coveted" (Thompson.)

The fact that capital which is produced for the next period generates an extra defense requirement is irrelevant to individuals in a standard competitive model because the government will bear the extra defense cost (their share of the extra cost in terms of lump-sum taxes being insignificant when the number of individuals is large). In this way an inefficiency would exist in a competitive economy with neutral, or lump-sum, taxes (such as a simple consumption tax in every period). This competitive inefficiency is easily cured through the introduction of a tax on capital in all future periods, a tax on I^t , so that the returns to producing K^{t+1} is brought down by a factor of dk_D^t/dk^t .

In summary, an asset accumulator in a competitive, private property system in which the government provides for the collective defense of the nation's capital creates an external diseconomy in that he increases the level of defense expenditures his nation requires to protect its capital stock. A periodic, ad valorem, capital tax is thus rationalized by the above argument. An equivalent to such a tax on non-human capital is a tax on profits with depreciation and depletion allowances. (This basic equivalence is demonstrated in Thompson, 1974, Part II.)

II. The Two Distinct "National Defense Arguments."

Two distinct "National Defense Arguments," i.e., reasons for subsidizing certain activities based on the special nature of national defense, emerge from a two-step generalization of the above model of national defense. We shall now take the first step.

A. Argument Number 1: Private Capital Deters Foreign Aggressors.

The first argument is the result of an extension of the above model in which capital used in the private sector simultaneously aids in the provision

of national defense as a joint product. Thus, equation 2 becomes:

$$(2') \quad D^t = D^t(K_D^t, K^t),$$

where the partial derivatives of (2') are always positive. This occurs because the costs of successful foreign aggression against a nation depend upon the resources that the nation has on hand to mobilize in order to withstand an enemy attack. Combining (2') with (5) will, in general, yield a simple relationship between K^t and K_D^t as was used in (6). However, we now have little prior reason to believe that $\frac{dK_D^t}{dK^t} > 0$ given (2') and (5). That is, an increase in the nation's capital stock may now decrease its national defense requirement as an increase in the capital stock may provide a greater deterrent than an attraction to the foreign aggressor given (2') and (5). If this is the case, a subsidy to capital based on this first national defense argument is in order. If the opposite is the case, then this first national defense argument simply reduces the magnitude of the efficient capital tax and does not rationalize any general subsidy.

Assuming observed defense expenditures are rationally undertaken, we can test which is in fact the case by relating observed defense expenditures to the observed capital stock. If there is a positive relation, then the positive external value of private-sector capital resulting from its ability to discourage foreign aggressors would fall short of the negative value of private-sector capital resulting from its attractiveness to foreign aggressors. There would be no net subsidy justified by our first national defense argument. In fact, this is what we observed in a linear regression equation fitted to a 1970 cross section of national defense expenditures and national income for 96 countries taken from data published by the Stockholm International Peace Research Institute.^{2/}

The least squares fitted equation, where Y is income and P is population, is

$$D = .07Y - 8.49P ; R^2 = .96.$$

(t = 43.10) (t = -2.53)

The addition of a constant term had no noticeable effect on the regression, nor did the exclusion of various groups of the poorest countries. The significance of the Y coefficient is ample evidence for us to confidently reject our first national defense argument.

B. National Defense Argument Number 2.

Our second national defense argument is based on the fact that price controls and rationing are periodically imposed on certain products during certain, recurrent, "national emergencies," which we call "wars". An obvious consequence of these controls is that certain producers are unable to capture the social value of their products during these wars. This in turn implies that the capital which produces such outputs is undervalued by private producers in peacetime. That is, since the products of such capital have a social value in wartime which exceeds their private value, the private value of this capital during peacetime is below its social value. A policy which raises this private up to the social capital value is a peacetime subsidy to this capital. (We assume that during the war, the controls succeed in efficiently allocating what capital there is at the start of the war, an assumption which we shall discuss

^{2/}We standardized for population, obtaining our data from the UN Statistical Yearbook (1973), as a country's subsistence income, which depends upon its population size, is not coveted (see footnote 1) and so requires no defense. Our estimate of per capital subsistence income based upon this estimated equation, the income per capital which would make defense expenditures zero, is $8.49/.07 = \$121.29$. As subsistence would probably be higher than this for the highly developed countries, we can improve the model by making the coefficient on population rise in a linear fashion with income per capita. This would yield the same estimation form but would change our interpretation of the Y coefficient to the effect of income on defense minus the effect of per capita income on subsistence. Since the latter term is positive, our estimated Y coefficient is a downward-biased estimate of the effect of income on defense in a nation for a given level of subsistence.

at the end of this section.) This capital subsidy applies to all future peacetime periods rather than to capital only the initial period (a subsidy of the latter variety being equivalent to a subsidy to the gross income, product, or cash flow from capital) because the malincentive resulting from anticipated wartime controls is a continual, peacetime undervaluation of accumulating capital which yields products which will be undervalued during wartime. In terms of the above notation, the proper subsidy is to $K^{t+1} = I^t$ of a particular kind for all peacetime years rather than a subsidy to the C_t which the capital produces in peacetime. Hence, the term, $\frac{dI^t}{dK_I^t}$, as perceived by private producers, is increased by the efficient subsidy.

In other words, under the second national defense argument, the "marginal rate of substitution" which the market communicates to current private producers of certain goods during peacetime is below the true marginal rate of substitution defined in (6). Since a corrective peacetime subsidy must then increase the private rate of transformation of present into future goods of the kind which will suffer from wartime controls, the corrective subsidy is a continual peacetime subsidy to investments in the capital inputs which produce these goods.

Since there is already a tax on capital in every period when we apply the argument of Parts I and II, this special national defense subsidy is achievable by simply reducing the tax rate on capital which produces the goods which are undervalued during a war (assuming that the subsidy rate does not exceed the tax rate of Parts I and II above). Since the capital tax was achieved by taxing the return to capital via an ordinary income tax (in which capital costs are written off in the future according to the rate of depreciation or depletion of the capital), a natural method of achieving this subsidy is to allow purchasers of such capital to expense a portion of the

capital cost in the year of the initial investment. A 100% initial write-off would completely neutralize the capital tax, as the tax rate on the future income produced by the capital would then be completely offset by the equal subsidy rate on the capital through the 100% initial write-off of the investment. Similarly, allowing p percent of the initial investment to be expensed, with the rest depreciated at the rate of depreciation of the entire investment times $(1-p)$, would be equivalent to a special capital subsidy of p percent. Observed U.S. tax policies corresponding to this theoretical policy are the immediate write-off of intangible drilling expenses granted to oil and gas drillers and the immediate write-off of certain investment expenditures given to breeders of livestock. These will be discussed in greater detail in Section III.

An inefficient policy would be to allow a depreciation allowance on the entire investment and a subsidy to the original investment. This was the case for several decades in the U.S. oil industry, where the percentage depletion allowance approximated a realistic depreciation allowance on the entire investment [Thompson, 1974]. This allowance provided an overly large subsidy to early withdrawal, although the resulting incentive to over-deplete was moderated by then-monopolistic state prorationing regulations and severance taxes.

Another inefficient policy would be a peacetime subsidy to the products which suffer wartime price controls. This policy would encourage original investment in the capital that produces goods which are controlled in the wartime, but would fail to encourage investment in subsequent years by failing to encourage the original adoption of relatively durable forms of capital. In terms of our notation, an output subsidy has the effect of proportionately increasing both the $\partial C^{t+1}/\partial K_c^{t+1}$ and $\partial C^t/\partial K_c^t$ terms that appear to the private

producers, leaving unaffected the $\partial I^t / \partial K_c^t$ term which also goes into determining the rate of time transformation, thereby leaving the rate of time transformation at the same allocation unaffected. The violation of the efficiency condition in (6) resulting from the undervaluation of future relative to present outputs would remain with simple output subsidies.

For the same reason, we can reject the use of protective tariffs on goods whose wartime production is undervalued by the use of price controls and rationing. These tariffs, like output subsidies, are beneficial to the extent that they serve to increase the incentive to produce the capital which produces the controlled wartime outputs. But they fail to increase the incentive to conserve such capital in wait for a national emergency.

Thus, while output subsidies and protective tariffs are frequently supported as devices which allow a country to build its capacity to produce wartime products, the argument cannot be economically rationalized (unless we assume an unrealistically fixed relationship between capital and outputs.) The problem is that an optimal tax encouragement must subsidize the use of such capital in peacetime to produce itself in the next period relative to producing other outputs. Such a subsidy is provided by the reduction in the normal depreciation allowance on such capital which accompanies the expensing of certain capital expenditures as discussed above but is not provided by protective tariffs or output subsidies.

This is not to say that there is no rationale for protective tariffs. The "optimal tariff" argument still applies against countries which are sufficiently difficult to contract with that lump-sum payments cannot be made in payment for free trade policies. The superiority of tariffs over other forms of taxation for the purpose of benefiting from terms-of-trade effects in competitive economies has been pointed out by Baghwati (1963). For example,

because contractual restraints seems to be especially clear for dealings with the oil-rich Persian Gulf countries, protective tariffs applied on oil imports according to the classical optimal tariff argument seem justified.

3. Why Argument Number 2 is Not a Second Best Argument.

It may appear that our national defense argument, resting as it does on the existence of special wartime controls, is a second-best policy. That is, it may appear more efficient to simply remove the wartime controls and so end the peacetime capital subsidy. However, as we shall argue in this section, efficient wartime policy requires a system of price controls. This argument is provided by the following generalization of our national defense model in which individually rational decisions about the level of national defense are determined: A nation protects its capital by committing itself to devote sufficient resources to the punishment of foreign aggressors that the cost of aggression to all potential aggressors is never below the returns. Such protection generally requires that the protecting nation commit itself to lose more utility in punishing an act of foreign aggression against it than the gain in utility from having the protected capital. National defense expenditures K_D^t , are necessary for a nation to have the ability to sufficiently punish a foreign aggressor. But the defending nation must also display its willingness to apply the requisite, highly expensive punishment in case of actual foreign aggression. A nation's willingness may be periodically tested by its potential aggressors. These test periods are the "national emergencies," or "wars," referred to above. A nation's required defense expenditures are abnormally high during such periods. Now we assume that decisions with respect to the magnitude of peacetime defense expenditures to be made in the respective periods by the citizens, say by a majority vote. During peacetime, when there

is no act of foreign aggression against the country, defense expenditures are rationally chosen to be K_D^t . Any lower level would mean that country would surrender its capital and extra expenditure level would be a 100% deadweight loss of resources. But during wartime, when there is an act of aggression against the country to test its willingness to devote sufficient resources to protect its capital, the citizenry cannot be counted on to choose the level of K_D^t which would display a commitment to protection. This is because it is not in the interest of the citizens to defend its capital against a foreign aggressor which commits itself to imposing more damage on the citizens than their capital is worth to them if they do not surrender the capital. The only way for the protecting nation to defend itself against a commitment of the latter kind is to pre-commit itself to fight the foreign aggressor anyway, and the citizens cannot be so committed if they are free to choose any level of K_D^t during wartime. So we introduce a military decision maker to determine K_D^t during a war. The decision maker maintains his share of the nation's capital if and only if he defends it and pays no part of the cost of the war. He is willing for his nation to lose more in utility defending its capital than the capital is worth to them because he personally does not pay the costs of war. The military leader thus will choose K_D^t during a war, thus demonstrating the nation's defense commitment. This display of willingness to fight can normally be achieved without making the citizens actually suffer more in the war than the nation's capital is worth to them.

Now a defense expenditure level which is democratically determined by the citizens is achieved by a familiar tax expenditure process. However, a defense expenditure level which is militarily determined is achieved in a democracy by other means because the military has no direct power of taxation

in a democracy. In particular, the military leaders, living within a dollar expenditure budget set by the voters, set their real expenditure level by establishing a system of price controls, where the government forces private producers to sell to them at government-determined prices, or rationing, where the government forces market prices down by requiring private consumers to have government supplied coupons as well as money to purchase goods from private producers. Without such a system of controls (recognizing the limitations of alternatives such as money creation, debt financing, and conscription) it is likely that the military's confiscatory wartime powers would be too limited to provide the requisite level of defense.

For the above reason, then, we can assume that price controls and rationing during a war are efficient economic policies, inspite of the inevitable misallocations between various private individuals that are generated by the controls.

III. Application of the Second National Defense Argument.

A. The Nature of Wartime Price Controls and Rationing.

Since the prices of virtually all marketed products were formally controlled during our last defensive war in the U.S. (1941-1945), it might be tempting to apply the second national defense argument to all capital goods. But it would be grossly naïve to accept blanket price controls as a generally effective policy. This is made abundantly clear in a book of the sociologist, Marshall Clinard (1952), which is the source for most of the empirical observations below on the nature of wartime price controls.

As we have argued, the purpose of the controls is to cheapen certain goods to the government. If private buyers must pay a higher, free-market price through tie-in sales, hidden charges, and quality deterioration, the price controls

may still be achieving their basic purpose. We assume that these evasive devices do, in fact work this way for most industries. However, in certain, exceptional industries, where the use of these evasive tactics becomes very costly due to the sheer magnitude of the wartime shortage, we observe the development of rationing systems or direct production controls. With rationing systems, private product demand is limited by ration coupons so that the real free market price paid to producers by private as well as government customers is significantly below their real values to the private customers. In World War II, significant rationing programs existed for gasoline, meat, shoes, dairy products, sugar, and various consumer durables. With production controls, the government directly restricts the production of certain consumer durables in order to keep down the prices of the capital that produces them. In World War II, the government restricted the production of numerous consumer durables, (e.g. autos and copper and nylon products).

Thus we shall assume that industries hit by rationing or direct production controls were the only industries which were significantly affected by the wartime controls. While industries which merely had their prices controlled were also affected somewhat, we will hold our specific analysis of those industries until the end of this Section of the paper.

Wartime controls do not harm all wartime producers within an industry faced with price controls or rationing. Intermediate producers, wholesalers, and retailers, all of whose purchases of price controlled products during the war are a significant fraction of their wartime sales, may easily benefit from the controls. This appears to be the case for World War II as the price-control administrators fixed prices so that the mark-ups to processors were at least sufficient to keep an honest business earning a normal profit given

the quantities that it could legitimately buy and sell at the controlled prices. The numerous evasion techniques such as exaggerating processing costs and requisite mark-ups and black-market possibilities, thus served to enrich the normal, imperfectly honest processor. The burden of the wartime controls are thus felt by primary industrial producers. Thus while industrial production and manufacturing profits rose dramatically from 1941 to 1943, after the introduction of rationing in 1943, industrial production and manufacturing profits fell precipitously from 1943 to 1945. (See Tables 1 and 2.) In contrast, reported profits from wholesale and retail trade increased from 1943 to 1945. (See Table 2.)

The decline in manufacturing in the middle of the war is perhaps evidence against our assumption that controls are managed efficiently during a war. It appears that the controls hit the basic sectors so hard that the ability of the U.S. to sustain a lengthy war is in doubt. The same, however, may be true of the foreign aggressor. Germany, which also had severe price controls and direct production restraints, had decreasing oil production in the later stages of the war while their armament production had expanded at a tremendous rate (See Graph III), indicating the truth of the German field generals' complaints that they had plenty of weapons but no gasoline to move them. (See Klein (1959).)

In any case, our second national defense argument, when applied to an industry facing wartime rationing, should be applied only to the primary sectors of the industry. The argument thus applies not to gasoline refining or retailing but to crude oil production. It applies not to slaughterhouses, dairies, and shoemakers, but to breeders of livestock.

TABLE 1

Industrial Production Index, 1941-1945
(1935-1939 = 100)

YEAR	TOTAL INDUSTRIAL PRODUCTION	MANUFACTURERS		
		TOTAL	DURABLE	NONDURABLE
1941	162	168	201	142
1942	199	212	279	158
1943	239	258	360	176
1944	235	252	353	171
1945	203	214	274	166

SOURCE: Data from The Economic Report of the President, January, 1949 (Washington: Government Printing Office, 1949).

TABLE 2

Corporation Net Profits, before Taxes, by Major Industrial Groups, 1941-1945

(Index numbers: 1939 = 100; all money figures in millions of dollars)

YEAR	MANUFACTURING		WHOLESALE		RETAIL	
	PROFITS	INDEX NUMBER	PROFITS	INDEX NUMBER	PROFITS	INDEX NUMBER
1941	\$10,439.3	292	\$ 904.4	274	\$ 997.0	246
1942	13,659.6	382	1,037.0	314	1,326.5	327
1943	16,593.7	463	1,190.5	361	1,647.8	406
1944	14,864.3	415	1,215.5	368	1,787.9	441
1945	10,256.8	286	1,216.3	368	1,889.5	467

SOURCE: Computed from Statistical Abstract of the United States, 1942-1948.

In the real world, we observe special subsidies to both crude oil producers and livestock breeders in their optimal form, viz. , immediate tax write-offs on a large part of the capital expenditures in these industries. But are the magnitudes of these subsidies optimal?

B. Rough Estimates of Optimal and Actual Subsidy Rates for Industries Facing Wartime Rationing.

The magnitude of the optimal peacetime subsidies are those which will give the crude oil or livestock investor the same return that he would have earned if there were no emergency price controls or rationing. We again use World War II as a model of a typical national emergency. Conservative estimates of the implicit, average black market prices of crude oil and meat during World War II are about three times the respective controlled prices (from Clinard), and a conservative estimate is that emergencies of like magnitude occur in about one out of every twenty years. Hence we can estimate conservatively the expected loss to a peacetime investor in an oil drilling or livestock breeding project due to the presence of emergency price controls and rationing to be about $3/20$ of the market value of the total return or $3/20$ of the cost of the project in a competitive economy.

How do actual subsidy rates compare to this conservative estimate of the optimal rate? First we consider an oil and gas investment. Since about $2/3$ of the capital costs of a typical oil and gas drilling project are expensed as "intangible drilling expenses," and since the value of an immediate tax write-off on an oil drilling investment over a realistic depreciation allowance on the investment is about one-half of the marginal tax rate times the investment, the value of a typical write-off of intangible drilling expenses, using a marginal tax rate of 50%, is about $\frac{2}{3} \cdot \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{6}$ of the cost of the oil drilling

investment. This rough estimate of the actual rate is just slightly over our conservative estimate of the optimal subsidy rate.

The breeding of livestock is a well-known "tax shelter" as a breeder of a herd can write-off a large portion of his investment expenditures, largely feeding and labor expenditures, as current expenses. As the magnitude of these expenses relative to total capital expenditures is similar to the magnitude of intangible drilling expenses relative to total capital expenditures in the oil industry, the investment subsidy resulting from this "loophole" is similar in magnitude to that of the intangible drilling expense for the oil industry. (While the average length of life of such an investment is typically less than the average length of life of an oil and gas investment so that the value of the subsidy through the early write-off is less than in oil and gas, a capital gains treatment is afforded the income, which somewhat increases the magnitude of the subsidy to both the initial investment and the subsequent accumulation of livestock, although the magnitude of the increased subsidy is moderate because the capital gains break leads investors from the highest tax-markets investors to drive out the others.)

Sugar was also rationed in the U.S. during World War II, but the relatively small extent of the black market here indicates a relatively small problem compared to meat and oil. Correspondingly, we find little special policy to subsidize U.S. sugar investment. However, until very recently, there was a system of tariff protection for the domestic sugar industry. It is possible that the small magnitude of the problem resulted in its being handled by simply raising the subsidy above that justified by the familiar "optimal tariff" argument, incurring slight misallocation costs in return for not having to set up a special tax treatment for developers of sugar crops.

D. Industries Facing Only Price Controls or Direct Allocation Controls

We have stated that industries which face only price controls during national emergencies suffer only to the extent that they must sell their products to the government at the controlled prices. Of course, they also suffer administrative costs of avoiding the price controls in sales to private customers. But neither kind of cost will make a processor suffer given our assumption that price controllers set prices so as to keep honest men earning at least normal profits. These industry costs must be borne by firms which purchase relatively small amounts of goods from other firms. Consequently, a peacetime subsidy is in order to the capital of firms which purchase small amounts of resources from other firms and sell their products largely to other firms. These are primary intermediate firms such as mining, farming, and forestry. The natural resource capital in these firms such as mineral, agricultural, and forest resources were substantially undervalued in World War II as a result of the price controls. We thus find it optimal to subsidize activities such as mineral, agricultural, and forestry development. We see this done in the U.S. through the special tax sheltered treatment given these activities, but our quantitative analysis and data in this general area are so sketchy that we shall not attempt any quantitative work along these lines at this time.

Finally, as mentioned above, the production of several kinds of durable consumer goods was restricted by fiat through direct allocation controls during World War II. The salutary effect of these controls was again to reduce the cost of primary resources so as to artificially lower the cost of the defensive war. It may appear that an additional peacetime subsidy is due several consumer durables industries based on our second national defense argument.

However, the demand for consumer durables, taken as a group, is known to substantially "pent up." Indeed, the post-World War II pent-up demand for consumer durables is widely considered to be the primary cause of the macroeconomic boom that followed World War II. Under such a condition, it is not likely that any significant subsidy is in order based on the second national defense argument. In particular, while the primary producers are in line for a small subsidy based on the somewhat higher receipts they would have earned during the war if competitive resource price rises were allowed as the method of discouraging the production of consumer durables, the final goods producers may be in line for a small tax as the cost of the delay in some of their sales may well be overshadowed by their benefit in receiving higher average product prices through the concentration of demand into a shorter time span.

IV. Summary

We have developed two independent "national defense arguments." The first states that an increase in the private sector capital stock of a nation raises the costs of successful aggression to foreign aggressors and thus lowers a country's required level of national defense. Since this effect is external to the private holders of such capital, the argument implies the optimality of a capital subsidy. But an increase in the nation's capital stock may also increase the return to successful aggression to foreign aggressors. The latter effect implies efficiency of a capital tax. Furthermore, the latter effect appears to exceed the former, as we find empirically that an increase in a nation's measured private capital stock increases rather than decreases its national defense expenditures. Hence, the first national defense argument does not imply any net subsidy.

The second national defense argument is that certain kinds of capital are undervalued by private investors during peacetime because the products of the capital are subject to wartime rationing or price controls and hence have a greater social than private value during wartime. This argument applies only to a very special set of domestic industries and rationalizes only special forms of subsidy. For industries facing wartime rationing, the efficient subsidy is given by treating a certain part of its primary capital expenditures as ordinary business expenses rather than capital expenditures for tax purposes. Other forms of subsidy such as final output subsidies or protective tariffs are inefficient forms of subsidy. The products which were the most significantly affected by World War II rationing were gasoline and meat. Correspondingly, significant tax write-offs of primary capital expenditures in these industries are justified. In fact, we observe such tax breaks, and the magnitudes of the observed tax breaks approximates conservative estimates of the optimal rates.

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