Macroeconomic Policy for a Substantial Transfer of Resources

during a Defense Emergency

Robert E. Hall

Hoover Institution and Department of Economics,
Stanford University

1. Introduction and Summary

What would happen to the U.S. economy in the course of a serious defense emergency in which military spending rose by 20 percent of current GNP? What macroeconomic policies might accompany the emergency and which policy would be best? In this paper, I attempt to answer these questions from the perspective of modern macroeconomic analysis.

Though the paper has a great deal to say about how markets can be used to redirect resources, the paper begins with a discussion of the fundamental resource allocation problems that would arise in any economy, whether operated by direct controls or pure markets. The resources for a major defense buildup can come from six major sources: decreased consumption, decreased investment, decreased non-defense government spending, borrowing from the rest of the world, increased work effort, and decreased slack in the economy. The paper focuses on five cases, each involving a different combination of the six sources. The cases where resources are drawn from all sources look manageable; they are consistent with our experience in World War II. I point out that the target in most discussions--reductions in consumption--is not capable by itself of yielding the resources needed. A feasible plan must provide for increased work effort, diminished slack, reduced non-defense government spending, and reduced private investment.

The next topic is incentives needed to bring about the

reallocation of resources necessary for the emergency. The incentives can be provided by a combination of changes in market prices and by taxes and subsidies put in place by the federal government. To make room for higher defense spending by depressing consumption alone would require consumption taxes at prohibitive rates. Instead, incentives for increased work effort and deferred investment and non-defense spending must be an important part of the incentive package. Temporary consumption taxes during the emergency should be accompanied by wage subsidies at equal rates to avoid undesirable disincentives for work. The appropriate incentive for deferring private investment is high interest rates. I point out that high interest rates also provide the right incentives for deferring consumption while preserving incentives for increased work effort during the emergency.

The choice of policy instruments is the subject of the next part of the paper. The three major fiscal instruments that have been recommended for defense emergencies are borrowing, consumption taxes, and income taxes. A policy of pure deficit finance is considered first. Deficit finance has been the major approach to wartime diversion of resources throughout U.S. history. The paper concludes that this choice has been appropriate; most of the funds for a future emergency should be borrowed. Mammoth federal borrowing sets in motion an economic mechanism that frees up the necessary resources through market incentives. Sharp increases in interest rates are at the core of this mechanism. Higher interest rates cause families to

defer consumption and accelerate work effort. They depress private investment and state and local spending. They stimulate imports of resources from abroad. Some of these effects have occurred in the past few years as a result of heavy federal borrowing, which has been criticized as inappropriate in peacetime. But in a time of a serious emergency, the same policy is amply justified.

Temporary consumption or spending taxes have been widely advocated by economists as a way to divert resources from consumption to defense. The rationing system imposed in World War II can be interpreted as a consumption tax. Because a consumption tax is an alternative way to provide an incentive to defer consumption, it would make possible a smaller increase in interest rates than would occur under a policy of pure deficit finance. However, consumption taxes or consumer rationing may weaken the crucial incentives for work effort that will bring a substantial increase in GNP during an emergency.

Providing those incentives is a major challenge to the designers of consumption taxes or rationing systems. It would be a serious error to impose large effective consumption tax rates without offsetting work incentives.

The third financing policy considered is increase in the income tax. Though this policy, too, has been an important part of the U.S. response to past emergencies, it has almost nothing to recommend it. Income taxes interfere with work incentives without generating improved incentives for deferring consumption. Reliance on income taxes will bring high interest

rates even though it will bring a smaller deficit than will a policy of pure deficit finance.

The paper examines the issues of economic equity that arise during a mobilization. Foremost is the requirement that the burden of diverted resources fall reasonably evenly on the population; in particular, nobody should be forced into privation. The public's desire to achieve this goal may lead to a system of rationing with roughly equal distribution of rationing coupons. Such a system need not interfere with the efficient operation of the economy provided that it does not impose too high an effective tax on consumption. In such a rationing system, the government should monitor the market price of ration coupons and issue enough coupons to keep their price at a moderate level.

High interest rates may raise issues of equity as well, though they would not affect the poor appreciably. Rising interest would create capital gains and losses for debtors and creditors. The paper notes that a well designed interest stabilization tax could eliminate these capital gains and losses without interfering with economic efficiency.

A major defect of U.S. macroeconomic policy in past emergencies has been the creation of explicit or suppressed inflation. Inflation has not been the goal of policy; rather, it has been a byproduct of mistaken attempts to lower federal borrowing costs by controlling interest rates. In order to provide the proper incentives for deferring consumption and accelerating work effort, it is essential that the public have

confidence in the future purchasing power of the savings they accumulate during the emergency. During the emergency, monetary policy should concern itself exclusively with maintaining a stable price level. As far as practical, monetary policy should be insulated from pressures to keep interest rates down. Existing monetary targeting procedures, based on the money stock, would be undesirable during an emergency, when rapidly rising GNP would call for rapid increases in the money stock. As long as monetary policy restricts as necessary to keep a stable price level, the public need have no fear of inflation. As recent experience has shown, large federal deficits need not be inflationary if monetary policy is adequately restrictive.

The paper argues that price controls are inappropriate as an element of policy to deal with a major defense emergency. Price controls create shortages. The rationing system required to deal with the shortages makes the original price controls unnecessary. Instead of price controls, resource allocation techniques of the type considered in this paper should be employed, along with a monetary policy targeted on the single goal of stable overall prices.

The last section of the paper deals with the question of the techniques by which the defense effort exerts its claim on the resources made available by macro policy. In past emergencies, and surely in any future one, most resources are obtained by cash purchase in the open market. One important exception is conscription of military manpower. Highly favorable recent experience with the all-volunteer army suggests

that market incentives can be used to obtain at least the great bulk of the necessary manpower. In major wars in the past, the government has involved itself in the allocation of strategic materials and equipment. With an intelligent macroeconomic policy, relying primarily on market-wide incentives for redirecting resources, direct allocation can be kept to a minimum, in the interest of economic efficiency.

The basic resource allocation issues

In order to make the discussion concrete, I will spell out some assumptions about resource allocation before the hypothetical emergency and about the magnitude of the transfer of resources for defense purposes. GNP and its components will be taken at roughly their 1983 levels:

Gross national product (1983 dollars)	3250
Consumption	2050
Private investment	500
Local, state, and federal non-defense government spending	475
Defense	225

The government spending figures used here are on the national income accounts basis and do not include transfers and a number of other items. The concept that is appropriate here is the government's use of resources and should not include its diversion of resources. The purchases of goods and services made by individuals receiving government transfers are included in consumption, not government spending.

I will investigate a transfer of resources to defense spending in the amount of 20 percent of the base level of GNP, or 650 billion 1983 dollars. Total defense spending during the hypothetical emergency will be $875 billion. The emergency will last three years, so its total cost will be $1950 billion. For

comparison, defense spending reached its peak for World War II in 1944 at 41.5 percent of GNP. The emergency considered here is about half as big and half as long as World War II.

Where do the resources come from to support an increment of $650 billion in defense? It is well to start with a complete list, though discussion of some of the entries on the list will be deferred. The list is:

1. Decreased consumption

2. Decreased investment

3. Decreased non-defense government spending

4. Borrowing from the rest of the world

5. Increased work effort

6. Decreased slack in the economy

A quick review of our experience during World War II will help set the stage for the discussion. The figures are given in Table 1. First, consumption did not fall at all; rather, it increased by about 5 percent, after adjustment for inflation, from 1941 to 1944. Of course, consumption declined dramatically as a fraction of total GNP. Second, investment fell a great deal, to well under half its 1941 level in 1944. Third, federal non-defense spending was very low--only 2.5 percent of GNP--in 1941, but fell to about half that level in 1944. State and local spending declined by about 20 percent. Fourth, in 1941 the U.S. was a net exporter to the rest of the world to the tune of 0.8 percent of GNP; in 1944 the U.S. was a net importer to

Table 1. Data on the Economic Mobilization in World War II

	1941	1944
Grosss national product	400.4	569.1
Consumption	243.6	255.2
Private investment	55.8	19.7
Federal non-defense spending	11.5	6.0
State and local spending	36.8	30.7
Net exports	3.2	-6.2
Labor force participation rate	57%	63%
Unemployment rate	9.9%	1.2%
Employment rate	51%	62%

Notes: Quantities are in constant dollars of 1972.

the extent of one percent of GNP.   Fifth, the fraction of the total population in the labor force (military and civilian) rose from 57 percent in 1941 to 63 percent in 1944.   Sixth, unemployment fell from 9.9 percent in 1941 to 1.2 percent in 1944.   The combined effect of the last two influences was particularly dramatic--the fraction of the population at work increased from 51 percent in 1941 to 62 percent in 1944.

To discuss the resource allocation issues associated with the hypothetical 3-year emergency with an increment to defense spending of 20 percent of GNP, I will consider five cases, each differing in the shares of resources obtained from the sources listed above.

Case 1.   All resources obtained from reduced comsumption

In Case 1, I posit that the economy starts at full employment before the emergency and remains at full employment during the emergency.   I will assume that despite emergency conditions, the economy will not move to overfull employment, in contrast to the conditions during the most stressful years of World War II.   I will suppose, in addition, that it is not practical to shift resources from categories 2, 3, and 4 in the list above--investment and non-defense spending are immovable, and the rest of the world is not prepared to lend to the United States.   The latter assumption amounts to saying that the emergency is world-wide.   The two remaining categories for

obtaining the resources are diminished consumption and increased willingness to work.

Unless incentives for added work effort are provided by market forces or fiscal actions, the entire increment of $650 billion in defense spending would be absorbed as reduced consumption. Consumption would fall for $2050 billion to $1400 billion, a decline of 32 percent. At no time in U.S. history has the pblic incurred such a large reduction in its economic well being. Even in the disaster of the Great Depression, consumption fell only 21 percent from 1929 to 1933. A policy which concentrated all of its effects on reducing consumption in order to free up $650 billion in resources per year for the emergency would encounter severe public resistance. Certainly it would be a great contrast to the situation in World War II, when consumption was not reduced at all throughout the war.

Case 2. Reduced consumption and increased work effort

A resource allocation technique that reduces consumption will make the public want to work harder, provided that the technique for reducing consumption does not interfere with the work incentives provided by the market. The phenomenon of increased work effort in response to diminished consumption is the direct counterpart of the well-documented proposition that

providing families with outside income will diminish their interest in working. A careful study of the economics of labor supply carried out recently by Jerry Hausman of MIT reached the following conclusion about the strength of this income effect in labor supply: For every dollar of outside income, the average family voluntarily lowers its labor earnings by 57 cents. To put it another way, the family chooses to spend 43 cents of the dollar on increased purchases of goods and services in the market and 57 cents on increased use of its own time at home rather than in the market.

For the present purposes, Hausman's finding has the following interpretation: For every dollar in resources devoted to the defense emergency, the public will seek to raise its earnings by 57 cents through increased hours of work. Increased work effort can take many forms--second jobs, increased hours on part-time jobs, or more weeks of work per year.

In case 2, of the total diversion of resources to defense spending of $650 billion, 43 percent, or $280 billion, will come from decreased consumption and 57 percent, or $370 billion, will come from increased work effort. Total GNP will rise by the $370 billion, about 11 percent, well within the range that occurred during World War II. One very clear lesson is that, even with the full-employment assumption, planning for an emergency should not take GNP as a given quantity. GNP can rise significantly as a direct consquence of the increased use of resources for defense, provided policy does not interfere with work incentives. Policies to provide appropriate work

incentives should be an important part of the resource allocation policy adopted in response to a defense emergency.

Case 3. Some resources obtained by reducing non-defense spending and by reducing investment

One of the important differences between today's economy and the economy of 1941 is the importance of federal, state, and local government use of resources for non-defense purposes. In 1981, government non-defense use of resources was 15 percent of GNP. This figure counts only government employment and purchases of goods and services for government use; it excludes the large amount of government spending that takes the form of transfers to families and businesses. In Case 3, I posit that government non-defense spending could reasonably be reduced by $100 billion, from its hypothesized base level of $475 billion. Most of this reduction would be in state and local spending.

Another area where a diversion of resources could occur is private investment. Business purchases of plant and equipment and construction of new housing could decline. Previous wartime experience suggests that housing construction can be cut to low levels during an emergency. Plant and equipment investment can fall dramatically for non-defense purposes, but presumably must rise for defense purposes. I assume that a net reduction of $100 billion is fesible for private investment from its level of

$500 billion in the baseline case. There is a significant issue of timing in investment--much of the investment that occurs in a given year was committed one, two, or three yeas earlier. If there is no advance warning of the hypothetical 3-year emergency, it will be much more difficult to cut investment in the first year than in later years.

Case 4. Resources obtained by borrowing from the rest of the world

If an emergency were to affect the U.S. alone, and not the other major free-market economies, then resources could be drawn from those economies by borrowing. The nation has the world's best credit rating and could reasonably expect to borrow large amounts in world credit markets. In terms of the flows of resources, borrowing makes possible an inflow of resources in the form of imports in excess of the outflow of resources in the form of exports. In almost all years since World War II, the net flow of resources has been from the U.S. to the rest of the worl, but this could change dramatically in the case of an amergency that affected mainly the U.S. In Case 4, the U.S. is assumed to be able to borrow $100 billion per year from the rest of the world. The $100 billion would come from a combination of increases in imports from their base level of about $350 billion and decreases in exports from their base level of about $370 billion.

Case 5.   Some resources obtained from reduced slack in the
ecomomy

The U.S. economy in peacetime generally operates with
considerable slack--since World War II, unemployment has
averaged over six percent and unused industrial capacity over 10
percent.   Currently, slack is mcuh more extensive, with
unemployment over 10 percent and unused capacity over 30
percent. If the emergency strikes at a time of slack, then some
of the resources needed can be obtained by moving to fuller
employment.   In Case 5, resources equal to 5 percent of GNP, or
$160 billion, are assumed to be available from this source.

It is important not to double count the increased
employment that occurs during a defense emergency.   Part comes
from the response to improved work incentives that generally
occurs in wartime, and part from improved utilization of the
existing labor force.

Table 2. Summary of the five cases

	Case				
Resources obtained from	1	2	3	4	5
Reduced consumption	650	280	194	168	150
Increased work effort	0	370	256	222	200
Nondefense government spending plus investment	0	0	200	160	140
Borrowing abroad	0	0	0	100	0
Reduced slack	0	0	0	0	160
Total	650	650	650	650	650

Incentives

Incentives for the public to alter economic behavior are needed to reallocate resources for the emergency. These incentives are provided by the various markets in the economy, and may be altered by the tax system or by rationing. This section will lay out the incentives that would have to accompany the various cases listed in the previous section.

In Case 1, only consumption is to be affected, so the incentives should bear on consumption alone. What is needed is a financial reward to the public for postponing consumption during the emergency until after its conclusion. Research on the magnitude of the necessary incentive has not yet reached a complete consensus, but a reasonable summary of the evidence suggests that current consumption must be made about 4 percent more expensive the the present relative to the future to induce the public to defer one percent of its consumption to the future. Applying this rule to the necessary decline in consumption for Case 1 yields the conclusion that the public must face a situation in which consumption during the emergency is 4.6 times as expensive as consumption after the emergency. This is a truly dramatic shift in incentives, probably one that would be feasible only within some kind of rationing system.

In Case 2, incentives need to be provided for the public to defer consumption and also to put in extra work effort during the emergency. The case was deliberately set up so that the

necessary incentive is the same for both deferring consumption and accelerating work: Consumption during the emergency should be made about 1.8 times as expensive as consumption after the emergency and work during the emergency should be made 1.8 times as rewarding as work after the emergency. The magnitude of the incentive is much smaller than in the case of reduced consumption--this is a reflection of the dramatically increased leverage of incentives that operate both on consumption and work effort.

Note one critically important feature of the combination of incentives that bring diminished consumption and increased work effort: The current purchasing power of earnings is the same during the emergency as before or after. That is, the real wage, or the amount of goods that can be bought by each hour of work is left unchanged by the special incentives associated with the emergency. The purpose of the incentives is to make the public defer consumption and speed up work, and this does not call for any change in the real wage.

In Case 3, both of the incentives already discussed continue to be relevant, plus two more--incentives for state and local governments to defer spending and incentives for firms and the public to defer investment in plant, equipment, and new homes. Little is known about the sensitivity of government spending to incentives for deferral. For investment, the relevant incentive is provided by the interest rate. In the longer run, it is well documented that investment is quite sensitive to the interest rate. In the shorter run of a 3-year

defense emergency, there is more uncertainty. Still, an increase in long-term interest rates of 5 percentage points probably would bring a reduction in private investment of the amount called for in Case 3, namely $100 billion out of a base level of $500 billion. The necessary incentive to reduce consumption and stimulate work for Case 3 is to make consumption during the emergency 1.5 times as expensive as after the emergency and to make work 1.5 times as rewarding. I assume, without much confidence, that applying the same incentive to state and local governments would defer their spending by the $100 billion (out of a base level of $475 billion) called for in Case 3.

In Case 4, an incentive is needed to induce the rest of the world to loan the U.S. an extra $100 billion per year. I assume that an increase of 4 percentage points in U.S. long-term interest rates will draw in an increased flow of foreign capital at a rate of $100 billion per year. Evidence on the response of capital flows to interest rates is weak, simply because we have not had a major emergency in the U.S. alone which would have brought the kind of movements of U.S. and world interest rates that would have stimulated large capital movements. Net exports did decline during the years of the Viet Nam war.

The increase of 4 percentage points in long-term real interest rates should depress private investment by about $80 billion during the emergency. The consumption and work incentives needed to achieve the shifts in resources in Case 4 make consumption during the emergency 1.4 times as expensive and

work 1.4 times as rewarding as later.

In Case 5, part of the resources needed for dealing with the emergency come from economic slack. What is unique about this source of resources is that no special incentives appear to be necessary to bring idle resources into employment. When the economy is below full employment, it is lack of effective demand, not lack of incentives, that brings low employment and output. When increased military spending contributes to higher effective demand, unemployment falls and resources become available without changes in incentives. As a result, the incentives needed to free up the total flow of resources to meet the emergency are more moderate--consumption during the emergency should be 1.35 times as expensive as later, and work 1.35 times more rewarding. Long-term real interest rates need to rise about 3.5 percentage points to discourage private investment as discussed above.

Table 3 summarizes the incentives needed to achieve the reallocations of resources for the five cases.

Table 3. Incentives needed for the five cases

			Case		
Incentive	1	2	3	4	5
Ratio of price of consumption now to later	4.6	1.8	1.5	1.4	1.3
Ratio of real wage now to real wage later	0	1.8	1.5	1.4	1.3
Increase in long-term interest rate	0	0	5%	4%	3.5%

Note:

Cases are:

1: Reduce consumption only

2: Reduce consumption and increase work

3: Reduce consumption, increase work, and reduce nondefense spending and investment

4: Reduce consumption, increase work, reduce nondefense spending and investment, and borrow abroad

5: Reduce consumption, increase work, reduce nondefense spending and investment, and reduce slack

Policies to provide incentives and to direct resources for the
emergency

Fiscal policy instruments can be used into two ways in
response to a defense emergency. First, they can alter the
incentives provided by market prices, wages, and interest rates.
Second, they can raise the revenue to finance the expenditures
made necessary by the emergency. There can be conflict between
these roles. In particular, if expenditures are financed
through high tax rates during the emergency, those taxes may
interfere with incentives to work and produce.

The primary fiscal policy instruments tht have been or
might be used in response to a defense emergency are:

1. **Income tax.** An income tax bears equally on wage and
investment income. It attenuates incentives for work and
saving, but is capable of raising large amounts of revenue.
Because the U.S. already has an income tax in place, it offers a
significant administrative advantage.

2. **Comsumptiom tax.** A consumption tax has a narrower base
than an income tax, and so raises less revenue than an income
tax at equal tax rates. It has the same adverse incentives for
work as an income tax, but better incentives for saving. In
World War II, very high consumption taxes were levied through
the rationing system. In order to purchase goods, consumers

paid not only a dollar price, but also a valuable ration coupon. Because the seller did not receive the value of the coupon, it was effectively a consumption tax, like a sales tax. A consumption tax operated as a rationaing system does not generate any revenue, however. All of its proceeds are received by families in the form of the value of their allocations of ration coupons. Because coupons are distributed much more evenly among families than are wages and investment earnings, a consumption tax administered as a rationing system is one of the ways to insure an equitable distribution of economic well being during a defense emergency. But it is essential to recognize that the consumption tax effect of a rationing system erodes crucial work incentives and may interfere with the increased work effort that should be an important part of the overall economic response to an emergency.

A consumption tax does not have to be administered as a rationing system. It could be achieved as a federal sales tax, a value-added tax with a deduction for investment, or as a tax on family income with a deduction for saving. All have the same disadvantage of requiring new administrative machinery. The sales and value-added approaches would be easier to set up, but could not be made progressive--they would, in effect, tax away the same proportion of consumption from all families, rich and poor.

3. **Borrowing.** Expenditures during a defense emergency can be financed by issuing federal debt, and, indeed, this has been

a central feature of the response to every past emergency. Borrowing diverts resources by altering market incentives rather than changing incentives directly through taxes. As recent experience has shown, federal borrowing raises interest rates. Higher interest discourages private spending, especially investment, and also stimulates an inflow of capital from abroad. On all accounts, room is made for greater federal use of resources. In today's economy, this process is widely condemned as "crowding out" of desirable private use of resources, especially for capital formation, but it is a desirble process in the case of a defense emergency. I will argue that substantial budget deficits are an integral part of the efficient economic response to an emergency.

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Incentive effects of alternative policies

Policy A: Pure deficit finance

Because deficit finance always has been, and should be, an important part of the response to a defense emergency, I will begin the discussion with the case of pure deficit finance. Under this policy, federal spending would rise by $650 billion without any change in tax rates and without the use of consumer rationing. The federal deficit would rise substantially, though not by as much as $650 billion, since increased activity stimulated by the emergency would bring higher federal tax revenue.

The huge increase in federal borrowing would drive up interest rates sharply. How large would be the increase? The answer has already been given in Table 3, columns 3, 4, and 5. Higher interest rates provided incentives for all of the resource reallocations considered earlier in the paper:

Deferring comsumption: With higher interest rates, consumers have an added incentive to deger consumption. Every dollar of foregone consumption during the emergency can be invested and will ultimately finance will over a dollar of consumption after the emergency. Incentives provided by altenative interest rates are presented in Table 4.

Table 4. Incentives and interest rates.

Effective price of consumption during emergency relative to after emergency	Increase in interest rate Maturity (years)		
	5	10	20
4.6	22.8	17.3	11.7
1.8	10.8	6.4	3.6
1.5	7.7	4.3	2.3
1.4	6.4	3.6	1.9
1.3	5.1	2.7	1.4

Notes: Increases in interest rates are in percentage points. For derivation, see Appendix.

In other words, the interest-rate increases listed in the last column of Table 3 are of the right magnitude to bring the changes in the prie of consumption during the emergency relative to the price after the emergency, as listed in the first column.

If interest rates affected only conumption, the magnitude of the increase in interest rates needed to depress consumption by enought to permit an increase of $650 billion in defense spending would be substantial. This is the message of the first line of Table 4. To raise the relative price of consumption during the emergency by a factor of nearly 5, the amount needed to squeeze the entire $650 billion out of consumption, requires an increase in interest rates of 23 percent in short maturities and 12 percent in long maturities.

On the other hand, if only a fraction of the $650 billion comes from consumption, then manageable increases in interest rates can accomplish the job, according to the lower lines of Table 4.

Increased work: High interest rates also provide an incentive for added work effort during an emergency. Earnings received during the emergency can be invested at favorable rates to finance consumption after the emergency. This route provides a higher-thn-normal real reward to work, and so simulates effort during the emergency, without attempting to raise the purchasing power of wages during the emergency. The latter would be inappropriate in view of the need to defer consumption during the emergency.

Deferring nom-defense government spending: State and local governments respond to the same incentives as do individual families. High interest rates would discourage non-defense spending of all types, most notably spending financed by borrowing. In a high-interest environment, voters would be aware of the opportunities to earn a high personal return from their funds, and would increase their resistance to state and local taxes, which have to be paid out of these personal funds.

Deferring private investment in plant, equipment, and housing: As discussed earlier, interest rates are already the explicit method by which the economy allocates funds for investment. Recent experience has amply demonstrated the sensitivity of investment to interest rates. What is a defect of current policies of high interest rates in peacetime--their discouragement of private investment--is a virtue during a defense emergency.

Stimulating borrowing from abroad: Again, interest rates are the explicit method for allocating resources in the world economy. Whether the U.S. can draw in resources during an emergency depends on the nature of the emergency. If every major free-world economy is under the same pressure as the U.S. economy, then capital inflows would not be a resaonable way to obtain resources in the U.S., and would not occur if interest rates in the other countries rose by the same amount as in the

U.S.

Market incentives under a policy of pure deficit finance operate entirely through interest rates. As government spending expands, and government borrowing rises to cover the spending, interest rates rise through the mechanism of crowding out. Obviously, the exact magnitude of the increase in interest rates is uncertain, but there is no doubt that rates will rise by enougth to gree up the necessary resources for the emergency. Some of the problems that might accompany a policy of high interest rates, and possible solutions to these problems, are considered in a later section of the paper.

Policy B: Temporary comsumptiom tax

During World War II, interest rates were kept at low levels and the mechanism of crowding out through high interest rates had no role in the process for putting a huge increment of resources into the hands of the federal government. Instead, the prime fiscal tool for controlling private spending was a consumption tax, administered as a rationing system. The consumption tax raised no revenue, but by controlling consumption, it made possible large increases in government

spending and borrowing without driving up interest rates.

We do not know what effective tax rate was applied to consumption throught the rationing system in World War II, but it must have been substantial. Buying and selling ration coupons was unlawful, so the effective rate cannot be inferred from an open market price of coupons. However, the rationing system very dramatically depressed consumption relative to income and employment, as shown earlier in Table 1.

A consumption tax for the duration of the emergency creates a strong incentive to defer consumption. This incentive replaces the incentive that would otherwise appear through market forces in the form of high interest rates. As the experience in World War II demonstrated, a high enough consumption tax rate can eliminate interest rate effects altogether.

The consumption tax has a serious defect. It seriously undermines incentives for work effort. It is true that, under a consumption tax, the public has the normal incentive to work during the emergency and to consume the proceeds after the end of the emergency, when the special consumption tax is removed. However, there is no special incentive to work harder than usual during the emergency. Further, a temporary consumption tax depresses the purchasing power of wages during the emergency, and accordingly lowers that element of the incentive to work.

If fiscal policy were to rely entirely on a consumption tax to free up the resources necessary to respond to an emergency of the magnitude considered in this paper, extraordinarily high tax

rates would be required. Specifically, if the tax rate were chose so s to prevent any increase in interest rates, then the entire $650 billion in added government spending would be obtained from deferred consumption, as in the first line of Table 2. The tax rate can be infereed from the corresponding line of Table 3, which shows that the necessary incentive would make consumption during the emergency 4.6 times as expensive as consumption after the emergency. The tax rate, stated as, say, a sales tax rate, would be 360 percent! Or, if the consumption tax took the form of a rationing system, the market price of a coupon good for purchasing $1 worth of goods would be $3.60.

Putting exclusive reliance on a consumption tax would have a number of undesirable consequences. All of the other methods for accommodating higher defense spending listed at the beginning of the paper would be neglected. There would be no added incentive for extra work effort. Private investment would not be scaled back by higher interest rates. State and local governments would have no incentive to limit spending. No extra resources would be attracted from abroad by higher U.S. interest rates.

The central issue of work incentives has not escaped the attention of the designers of rationing systems. The typical rationing plan is not merely a consumption tax of the type just analyzed. Instead, work incentives are built into rationing systems by distributing coupons to workers. From the point of view of incentives, the ideal rationing system would provided coupons in strict proportion to earnings--for example, workers

might be paid $2 worth of coupons for each $1 in earnings. To put it another way, the ideal consumption tax would pay a wage subsidy at the same rate as the consumption tax rate.

Rationing systems will always fall short of the ideal work incentive because providing coupons in proportion to earnings defeats the distributional purpose of rationing. That purpose is to equalize the distribution of economic well-being during the emergency. A system that gave the largest volume of coupons to the highest-paid individuals and nothing at all to those unable to work would be completely unacceptable to the American public. Any practical rationing system embodies a compromise between work incentives and equitable distribution. The best that probably can be done for incentives id denying coupons to able-bodied adults who choose not to work and providing extra allocations for those who work above a full-time schedule.

Policy C: Income Tax

From the point of view of incentives, there is nothing desirable about raising income taxes during a defense emergency. An income tax attenuates the incentive to work and does nothing to induce the public to defer consumption. Accordingly, an attempt to finance emergency spending by temporary high income tax rates would rive up interest rates even further than would a

policy of deficit finance.

Revenue effects of alternative fiscal responses

Taxes generally raise revenue as well as alter incentives. An important issue of fiscal policy during a defense emergency is what fraction of the cost of the emergency to finance with current tax revenue and what fraction to finance through borrowing. It should be clear that any practical policy will involve a mixture. The tax rates necessary to balance the budget with an increase of $650 billion in defense spending would be prohibitive. Of all times, a major defense emergency is the one that most clearly calls for a substantial budget deficit. On the other hand, federal revenues can and should rise during an emergency. When market or tax incentives draw forth higher rates of economic activity, or when the economy moves to a position of full employment from one of slack, tax revenues will increase even if tax rates are constant. On the average, about 20 cents of each dollar in higher GNP makes its way to the federal government through the tax system. Revenue increases corresponding to the various cases laid out in Table 2 vary from zero (Case 1--all defense resources obtained from deferred consumption) to about $75 billion (either Case 2, increased work effort, or Case 5, increased work effort and decreased economic slack). If non-defense federal spending were trimmed by, say, $150 billion, in the form of diminshed unemployment compensation, lower case loads in income transfer programs, and elimination of business subsidies, the federal

deficit would rise by $425 billion in the face of the $650 billion increase. As a fraction of GNP, this deficit increase of 12 percent would compare favorably to the peak deficit of World War II of 22 percent of GNP.

Increases in tax rates of modest amounts would also be appropriate during the emergency. These increases should be permanent; their purpose whould be to spread the cost of the emergency evenly over the yeas of the emergency and the ensuing decades. The total net cost of the emergency is hypothesized to be:

3 years x $425 billion per year = $1275 billion

The revenue increase need to pay, say, seven percent of this amount each year is about $90 billion. A permanent increase in tax rates equivalent to about 2.5 percent of GNP would provide the appropriate revenue. With this tax increase, the deficit would be about $335 billion, not an alarming figure for a major defense emergency. For comparison, a deficit of the magnitude of the one incurred in 1944, restated at the scale of the economy in 1983, would be $807 billion.

Further revenue increases to limit the deficit could be obtained from temporary consumption or income taxes. Such taxes would have the adverse incentives discussed in the earlier section. It is true that certain taxes, notably temporary consumption taxes, could reduce the high interest rates that would accompany a policy of deficit finance. They would do so at the cost of diminished incentives for work. The consequence

would be a lower standard of living for the American public
during the emergency.

Equity

A major defense emergency raises significant issues of economic equity no matter what policy is chosen to deal with it. The most important principle of equity is that the allocation of consumption during the emergency not depress any part of the population to hardship levels. In World War II, concern about this issue more than anything else gave rise to a comprehensive rationing system. Rationing guarantees every citizen his share of the dminished resources available for consumption. Rationing is a likely potential response to any serious future emergency.

When the resources needed to deal with an emergency are freed up by high interest rates rather than heavy taxes, equity issues with respect to the poor are much less acute. Whereas a steep federal sales tax would raise the legitimate question that some individuals would not have enough income to sustain an adequte standard of living in the face of the tax, it is hard to see how any important part of the population would encounter actual deprivation from high interest rates.

If a rationing system is a political necessity on grounds of equity, then it should be designed to impose low tax rates. Consider the type of rationing system generally advocated by economists: Coupons are issued to the public in accord with a distribution rule that guarantees each citizen a base level, and then additional coupons re issued to workers to enhance work incentives. Each coupon entitles the owner to purchase $1 worth of goods. Coupons can be bought and sold freely in a white

market. The government monitors the open market price of coupons, and issues a sufficient volume of coupons to keep the price near a prescribed target of, say, fifteen cents each. The effect of the system is to put a 15 percent tax on consumption and to use its proceeds partly to provide a guaranteed income to all citizens and partly to subsidize wages. If the price of coupons is kept in the range of fifteen cents per dollar of consumption, and if the distribution of coupons rewards work effort, then a rationing system poses no important threat to efficient resource allocation and may help reassure the nation that the government is dealing effectively and fairly with the emergency.

A second equity issue is of little consequence to the poort but is politically equally important. A sudden jump in interest rates would impose significant capital gains and losses in stock, bond, and mortgage markets. Sotck and bond prices would fall substantially, just as they have in recent episodes of high interest rates. Throughout the economy, debtors would gain, in the sense that the market value of their liabilities would fall, and creditors would lose. The process would have no important net economic consequences but would be politically significant.

Some of the capital gains and losses from high interest rates could be eliminated in an economically efficient way through an interest stabilization tax. Under this tax, debtors would pay a tax of, say, fifty cents for each dollar of interest they paid. Creditors would receive a subsidy of the same amount on interest earnings. The higher the tax and subsidy rate, the

lower would be the market interest rate on new debt--the tax would reduce the willingness of the borrower to apy interest and the subsidy would reduce the required return to the lender's investment by the same amount. The government could adjust the tax rate periodically to keep market interest rates at a reasonable level--say a point or two above the level before the emergency. The effect of the tax would be to eliminate capital gains and losses on existing debt. It would leave the incentives for deferring consumption and accelerating work effort exactly the same as they would be in the absence of the interest equalization tax. Savers would receive part of their return from market interst and part from the subsidy feature. Prospective borrowers would be deterred by the conbination of the market interest rate and the interest tax.

Inflation

All of the discussion in the paper so far has dealt with purchasing power and real quantities. However, a major problem in past emergencies, or even periods of modest defense buildups like the Viet Nam War, has been sharp increases in prices. Though the process of reallocation of resources outlined so far in the paper can take place under mild inflation almost as well as under complete price stability, it is important to keep inflation under control. Runaway inflation plainly interferes with efficient resource allocation.

Wars have invariably been periods of easy money and explicit or suppressed inflation throughout U.S. history. In effect, issuing excessive money is seen as an inexpensive source of funds for the government. Further, monetary policy has usually tried to depress interest rates in order to limit the costs to the federal government of the large increase in debt that generally occurs in wartime.

Keeping the price level stable should be a top priority during a defense emergency. Moreover, the public must be assured that prices will remain stable after the conclusion of the emergency. The incentives I have stressed earlier in this paper for deferral of consumption and acceleration of work effort rest fundamentally on the ability of families to work hard during the emergency, accumulate financial wealth, and spend the wealth advantageously after the emergency. If the

public loses faith in the stability of the price level, they will question the future purchasing power of the wealth they are accumulating. Ultimately, they will disregard incentives that are provided by future opportunities to purchase goods, because they will have no reason to believe that these opportunities will not be dissipated by inflation during and after the emergency.

The conduct of monetary policy during an emergency is particularly difficult. Normal rules based on growth of the money stock or the level of interest rates will provide little guidance during an emergency. Because GNP will grow rapidly, high rates of money growth are probably consistent with stable prices. Wide fluctuations in money demand are likely to occur. Very high interest rates are part of the response of the economy to the stress of an emergency and should not be offset by monetary expansion.

There is a straightforward rule for conducting monetary policy which will give good economic results, though it may encounter political objections. That rule is to adjust the instruments of monetary policy as necessary in order to keep the price level stable. If prices begin to creep up, monetary policy should raise interest rates and reduce money growth to push prices back down to the stable level. On the other hand, if the policy is too restrictive and prices fall below target, policy should turn a little toward ease. During an emergency of the magnitude considered in this paper, monetary policy should be able to keep the price level within five percent of target,

assuming it is free to operate without political interference.

Earlier writers on the economics of mobilization, notably Scitovsky, Shaw, and Tarshis, have mistakenly assumed that large deficits from mobilization are so inflationary that price level stabilization through monetary policy is impractical. They recommend a combination of heavy taxation during wartime and price controls to prevent inflation. But recent experience in the U.S. economy has amply demonstrated that large deficits are not necessarily inflationary. Inflation has receded sharply during a period of record peacetime deficits. The reason is simple. For the first time, large deficits have been accompanied by restrictive monetary policy. The result has been effective control of inflation, with the important related effect of high interest rates. Much the same would occur under a mobilization policy based on extensive government borrowing and restrictive monetary policy.

Again, high interest rates are the principal obstacle to the recommended policy. As interest rates rise during the mobilization, political pressures will build for relief. Within the government, the pressure for lower interest will come from those concerned about the budgetary burden of interest on federal debt. In the business and household sectors, borrowers will press for diminution of the burden of high rates.

Two policies will be advocated by those opposing high interest rates: consumer rationing and price controls. Rationing takes pressure off credit markets by limiting private demand through a method other than high interest rates. The

defects of rationing have been enumerated earlier in the paper. Foremost is its interference with incentives for work effort. Still, a rationing system that is not too aggressive in limiting consumption and that pays close attention to work incentives is acceptable as part of a mobilization plan. Such a rationing system would only reduce interest rates by a small part of the total rise that will occur during the defense emergency.

Price controls were a feature of every defense buildup of the twentieth century except Viet Nam. In addition, the nation accumulated additional experience with controls during the 1970s, with general controls from 1971 through 1974, and continuing controls on oil products until 1981. It is a fair summary of all of our experience to say that price controls cause shortages. Controls bring the reduction in private demand needed during an emergency by making it difficult for people to find goods to purchase. The public is dissuaded from current spending by having to wait in long lines or by having to deal in black markets. Though our experience in World War II demonstrated that price controls coupled with rationing will work in an emergency, controls are economically highly undesirable.

Under price controls, the public has an incentive to devote time and effort to locating scarce goods and waiting in line, when this effort ought better to be devoted to market employment. Shortages of consumer goods seriously erode incentives to work, in other words. In the extreme, the money paid to workers becomes meaningless as an incentive if there are

no goods for sale. In the Soviet economy, where price controls and shortages are chronic, diminished work incentives are a serious obstacle to higher productivity.

Shortages brought about by price controls can be alleviated by rationing, as in World War II, but then the controls become irrelevant. There really is no good reason for the government to try to set the prices of each of the millions of consumer goods available in the United States. Of all the policies available for limiting consumption during an emergency, creation of shortages is by far the least desirable.

Obtaining the resources for the defense effort

The discussion up to this point has focussed on releasing resources from consumption and other private uses in order to make them available to the federal government during the defense emergency. It is appropriate as well to look at the problem from the other point of view: How will the government actually exert its claim on the additional resources?

In past emergencies, the government has used two techniques, purchasing goods and services in the open market, and issuing commands to the private economy to shift production. From the point of view of narrow economic efficiency, purchasing is the desirable approach, but politics and issues of equity are likely to make the government rely partly on direct intervention through commands. If intervention is kept to a reasonable minimum and used only in cases where paying open market prices would provide sellers with outrageous profits, then overall economic efficiency need not be serious compromised.

The success of the all-volunteer army in the past decade is ample documentation of the workability of a market solution to the key problem of military manpower. The U.S. now maintains a substantial standing military force based entirely on high-quality recruits attracted by paying market wages. Of course, the budgetary cost of the market approach is higher. The burden of supporting military manpower is being shared by taxpayers in general rather than being concentrated on unlucky

draftees.

A market solution to the problem of building up military manpower in an emergency of the magnitude contemplated in this paper involves the same issues as the all-volunteer army, on a much larger scale. Further improvements in wages and benefits would be needed to attract millions of new recruits. The defense budget would rise by tens of billions of dollars more than it would if the new manpower were conscripted. The macroeconomic consequences--high interest rates most notably--would be more severe under a market solution than with the draft. The draft is a way to limit private spending by direct force rather than by market incentives. As such it is economically inefficient, but politics may dictate its use.

With respect to purchases of equipment and supplies, the great bulk of the purchases of the Defense Department during a buildup are for routine products of the private economy--food, uniforms, standard hardware items, and the like. For these purchases, the private economy will adapt quickly to the changed composition of demand. With private demand off and defense demand up substantially, sellers will switch easily to meeting the slightly different requirements of defense products.

For specialized military hardware, the situation is not so simple. Whatever resource allocation technique is used, it is not an easy matter to produce hundreds of billions of dollars worth of ships, planes, tanks, and missiles. Bottlenecks will develop at many stages of production. Neither a market approach nor direct intervention can magically overcome the fundamental

obstacles to a speedy buildup.

In World War II, the War Production Board intervened in many details of military production. It should not be taken for granted that similar powers be granted and used for the type of emergency considered in this paper. If price controls are avoided, so the private economy continues to function normally, the Defense Department can procure from the private economy just as it does today, by assigning contracts to the lowest qualified bidder. Of course, when it is asking for large quantities of materiel on an accelerated schedule, it will have to pay a steep price. It would be an illusion to think that these costs could be avoided by issuing direct commands; rather, they will be borne by the unlucky targets of the commands rather than by present and future taxpayers in general.

Recommendations

The federal government needs to be prepared for a major defense emergency. Standby policies should be selected today so that unwise policies are not adopted in the heat of the emergency. In summary these standby policies should be:

1. The Treasury should be prepared to increase the volume of federal borrowing as much as necessary to finance the increased requirements for federal spending.

2. The Office of Management and Budget should be prepared to cut non-defense purchases of goods and services by $25 to $50 billion.

3. The Internal Revenue Service should have a standby plan to operate a general rationing system with a low effective consumption tax rate.

4. The Federal Reserve Board should have a standby operating procedure under which it would expand the money supply as necessary to accommodate increased economic activity during the emergency, but not so much as to bring added inflation.

5. The Department of Defense should be prepared to increase its procurement of goods and services through normal

purchasing methods. It should study the minimal intervention needed to divert resources to specialized military production.

1. Funding the deficit during an emergency

The Treasury needs to be prepared to increase the volume of new federal borrowing by a substantial amount during an emergency. Experience in World War II suggests that there are no important obstacle to placing a large amount of new federal debt on the market. The Treasury should choose a maturity structure for the new debt that emphasizes terms that extend beyond the expected end of the emergency; most of the new debt should be medium or long term.

Standby plans should be formulated in anticipation of the significant increase in interest rates that will occur as the economy responds to the increase in federal spending and its counterpart, the increase in the federal debt. In particular, the Treasury should not plan to pressure the Federal Reserve to keep interest rates low during the emergency. High interest rates are the principal incentive for deferred private use of resources and accelerated work effort in the proposed mobilization plan.

2. Lowering federal nom-defense spending

Increased overall economic activity during the emergency will automatically decrease federal spending on unemployment compensation and income maintenance. In addition, the Office of Management and Budget should have standby plans to cut spending in other areas during the emergency. In particular, high levels of activity will make the approximately $100 billion in subsidies to business in the current budget less necessary. At least $25 billion and preferably $50 billion in federal non-defense spending should be programmed for cutting during an emergency.

3. Rationing

From the economic point of view, rationing during an emergency is probably not necessary if the other elements of the proposed policy are adopted. For the reasons elaborated earlier in this paper, high interest rates are preferable as a way to free up the needed resources to respond to the emergency. However, the public will probably feel that the government is not handling the emergency fairly and adequately unless rationing is instituted. Therefore, the Internal Revenue Service should plan the details of a general rationing system. Under this system, merchants who sell to the public are required

to charge one rationing coupon for each dollar's worth of goods or services. Coupons are distributed to the public according to a basic entitlement per person plus a bonus for workers depending on their hours of work. The public is allowed to trade coupons freely. The government should adjust the volume of coupons issued each month as necessary to keep their price to no more than 15 cents per coupon.

4. Stabilizing the price level

Past emergencies have been periods of inflation or suppressed inflation, as monetary policy has succumbed to the pressure to keep interest rates low. As part of the standby plan, the Federal Reserve should be instructed to concern itself with the price level and not with interest rates, which will be expected to rise substantially. The Fed should also be instructed not to limit the growth of the money stock below the growth of economic activity; the two should both growth a good deal, in parallel. The fundamental goal of monetary policy should be price stability. In the standby plan, the Fed should be given wide lattitude to choose whatever policy for money growth it finds necessary to achieve price stability.

5. Diverting resources

The economy will free up the needed resources in response to higher military spending and the corresponding deficit finance. Vastly higher levels of defense spending will not destabilize the economy, except that, as stressed throughout this paper, interest rates will rise substantially. Fundamentally, the Defense Department should plan to place much larger orders for defense supplies and recruit much more manpower, as necessary to respond to the emergency. Political pressure to limit the profitability of firms producing specialized military gear may make it necessary to intervene in the allocation process, but this should be kept to a minimum.

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Appendix. Relation between incentives and interest rates

Let R be the price of consumption during the emergency relative to consumption after the emergency. Let D be the reciprocal of R: $D = 1/R$. Let T_1 be the duration of the emergency and T_2 be the maturity of the bond under consideration. Let the bond pay x dollars of interest per year, as well as returning the principal at maturity. Let x be chosen so that the market value of the bond at the beginning of the emergency is 1.

The bond returns a total of $T_1 x$ during the emergency; to a close approximation, we can assume that this is undiscounted. The bond returns an additional amount $(T_2 - T_1)x + 1$ after the emergency; this is discounted by the factor D. The total market value at the outset of the emergency is

$$T_1 x + D((T_2 - T_1)x + 1)$$

Equating this to one and solving for the yield, x, gives:

$$x = (1-D)/((T_1 + D(T_2 - T_1)))$$

Table 4 gives values for x, expressed as a percent, for $T_1 = 3$ and various values of R and T_2.