Military expenditures, armament, and disarmament

Jacques Fontanel, Michael Ward

Military Expenditures, Armaments, and Disarmament[1]

Jacques Fontanel
Department of Economics and CEDSI
University of Pierre Mèndes France
Grenoble, France, 38040

Michael D. Ward[2]
Institute of Behavioral Science
University of Colorado
Boulder, USA, 80309-0487

February 20, 1991
Revised September 4, 1991[3]

[1]We thank the members of the *Laboratoire d'économie et de sociologie des organisations de défense* for their comments on an eariler version of this manuscript during the December 1990 meeting on Defense Economics in the New Geopolitical Environment.

[2]Send Proofs and Reprints to Me.

[3]RUNNING TITLE: Disarmament

ABSTRACT

We examine some putative effects of disarmament and strategic realignment in the 1990s. We argue that the political and strategic contexts which resulted in the cold war and the militarization of economies have changed in important ways. Yet, unless specific attempts are made to realign various economies to these new contexts, short term economic benefits of disarmament are likely to be limited and the long term prospects for political, economic, and strategic restructuring will be constrained. We argue further that the costs of "peace" in the short-run may be significant, if that peace is to include disarmament that includes both reductions of military expenditures and physical limitations of armaments. However, we caution against judging the benefits of disarmament in solely economic terms.

KEY WORDS: Defence spending, economic growth, disarmament

INTRODUCTION

In terms of defence expenditures, the decade of the 1980s was exceptional. Beginning with rapid growth and militarization of industrialized and industrializing economies around the world, the decade ended with heady demilitarization of the long-standing East-West conflict. While the U.S. and Soviet economies were facing the potential of a so-called "peace dividend", economic problems, both domestic and international, threatened to overtake putative benefits accruing once the economic consequences of reduced military spending. Ironically, economic difficulties threatened to constrain the economic benefits of political and strategic realignment. Committed to retaining its rôle as a world power and determined to forget the loss of the Vietnam war, under Reagan the United States launched the most largest peacetime military buildup in recent history, increasing its military spending by over ten percent several years in a row. The Soviet Union, perhaps less successfully, until 1985 was committed to matching these efforts. Not only did the U.S. and the Soviet Union pursue parallel courses of military buildup and militarization of the economy, but their respective allies in NATO and WTO also participated, often indirectly or involuntarily. NATO collectively decided to implement a 3 percent per annum minimum growth in military expenditures. Even if this was not universally followed, it had a strong effect in effectively promoting

increased military expenditures.

Industrializing societies of the Third World also intensified their weapons acquisition programs. India, South Korea, Brazil, Pakistan, and also Iran and Iraq were "leaders" in spending money on military hardware and personnel. Through a combination of increased spending in the industrial and industrializing areas of the world, global military expenditures reached and maintained levels exceeding 1 trillion dollars per year, although this began to level off toward the end of the decade owing to currency fluctuations. *World Military Expenditures and Arms Transfers 1989* provides a comprehensive overview of the best publicly available data on these trends.

The late 1980s witnessed the symbolic as well as actual destruction of the Berlin Wall, accompanied by successful and significant arms reduction agreements of both a nuclear and conventional character. At the same time Europe experiences political revolutions in Romania, Czechoslovakia, and East Germany. It wasn't until the end of the 1980s, however, following the initiatives of Gorbachev and their eventual acceptance by the United States, that both the U.S. and the U.S.S.R. began to recognize the extreme economic difficulties each faced on the horizon. Each was pushed to this result at least in part by their armament programs. The Soviet economy and indeed the polity threatened major collapse. It now seems that the two largest military powers, the U.S. and the U.S.S.R., both show interest in effecting a transition to a multipolar world of seven or eight global powers, as witnessed by the so-called "Post-Yalta" meetings in Paris, December, 1990. Thus, in spite of the intrusion of another Middle East crisis of major proportions, it does appear that the idea of assuring mutual security with a minimum of armaments is no longer considered subversive by the decision makers in Washington and Moscow and that control on international arms transfers seems more likely in the near future.

The exact course that this disarmament is likely to take is uncertain. It may be that the current crisis — or the next one —, whether it be economic or political will serve as the basis for another round of military spending. We do know that in spite of disarmament agreements and plans, the Soviet military has received substantial increases in its 1990s budgets. Whether these can solely be attributed to inflationary pressures or not is an important question itself. Although many hope for such a result, it is not at all clear that the course of (partial) disarmament will be rational, durable, and based on the

idea that security cannot be assured by the military consumption of scare resources in an increasingly competitive international economy of at least three economic "superpowers" including Japan, the U.S., and the Europe). Or, is the current atmosphere simply a pause in the long term conflict necessitated by political and economic crises?

In fact it appears that current and new crises — such as the Gulf Crisis of 1990/91 — will be used to redefine the relationship among the great powers. The geopolitics of the cold war were based almost solely on the idea that a global battle between the forces of capitalism and socialism was institutionalized in the competition and rivalry between the U.S. and the U.S.S.R. That this putative zero-sum game necessarily counterpoised the interests and actions of these two nations and their allies is clear. Although the conflict between socialism and capitalism may be buried under the rubble of the Berlin Wall in the same way that the Third Reich was buried under the rubble of Berlin walls, other forms of conflict may quickly emerge, conflicts that do not resonate with the old cleavages of the Yalta world order; the Gulf Crisis of 1990/91 is but one example; South Asia daily threatens to become another.

In this context it seems important to consider the implications and opportunities for reduced military spending in coming years, not simply to assess their macro-economic impact (e.g., Mintz and Huang, 1990; Atesoglu and Mueller, 1990), but also to examine some of the requirements and opportunities for structural change that might accompany such reductions around the world.

The UTILITY OF MILITARY SPENDING DURING DISARMAMENT

Even for Adam Smith, it was necessary to set aside some societal functions to be protected from the vissitudes of the marketplace. Defence, justice, police, education, and communication were among these highly valued social institutions to be set up outside the marketplace. These public expenditures were not substitutable nor were they wisely thought to be valid objects of market forces. The idea of a progressive disarmament may have at least three distinct interpretations in this sense (Fontanel, 1990).

One conception of disarmament focuses on the reduction of "excess" armaments. This argument

is that the growth of arms markets and merchants has been so successful that many modern societies have simply over-consumed this product and have not been protected by such rapacious consumption by an equilibrating market. Under these conditions, global comparisons of military spending among countries will tell us little about their consumption patterns. If the disarmament is to focus on military material, there are unlikely to be any great peace dividends. In fact, such destruction is likely to have significant associated costs attendant to it. Maintenance and surveillance might be reduced in costs but new expenditures relating to the control of destruction of these weapon systems must be borne. It is very difficult to know in advance whether the increased costs are likely to outweigh the savings.

Another conception of disarmament would be oriented to ameliorating the economic difficulties of the great powers, difficulties exacerbated if not caused by large military expenditures over the last decades. Herein economic security and power have become subservient to military power. This in turn has become increasingly dysfunctional with the growth of a more competitive international economy. Under this scenario, the reduction of military spending is embraced primarily by the growing crises in the U.S. and Soviet Union. Thus, the "effect" of disarmament will be seen in reduced military spending, yet it is unclear whether these forgone expenditures will be saved or invested in potentially more productive arena.

A third scenario of disarmament might be predicated on the notion that the goal of disarmament is to reduce the risk of armed conflict, that is to increase security. In this context, the economic aspects take on a secondary or tertiary importance. We analyze disarmament primarily from this perspective, pointing out the pitfalls of analyzing disarmament from either the first or the second perspective.

Military Expenditures and the National Economy

It has been widely suggested (e.g., Kennedy, 1987 and Goldstein, 1988a,b) that the economic decline of the United States has been "caused" its global military overreach and the over consumption of scare resources for the purposes of expanding its military. In the same way, many analysts (including perhaps M. Gorbachev) have concluded that the near collapse of the Soviet economy may be laid at the feet of the Soviet military, which for the past fifty years has commandeered the lion's share of Soviet investment.

According to one widely cited U.S. defence analyst, retired General LaRocque, the deterioration of the economic position has done more damage to U.S. national security than any Soviet arms developments could have hoped.

After the end of the second World War, there was a massive and successful disarmament of the U.S. military, a point often made by Kenneth Boulding. The same was also true of the first World War. In contrast however, during the 1950s the technological efforts launched during the war were continued and served as a major cornerstone of economic development policy, in a nation that avoids national development policies. Merton has illustrated the importance rôle of the military in stimulating science and technology since at least the 17th century (Merton, 1938). Actually this tendency goes much further back in history even to Galileo whose theories were given practical applications in terms of ballistics. Indeed, from Descartes to Papin, through Newton, Bernouilli, Euler or Leibniz the problems of the state (religion and/or the military) provided great opportunities for (funded and supported) scientific studies.

Perhaps the first version of the military industrial complex idea can be traced to Mumford (1934). It was during the years before the second World War that Mumford pointed out that the military sector and war were almost perfect complements for modern industrialized economies. On the one hand they offer almost infinite capacity for absorption of excess capacity. On the other hand the army is a perfect consumer of "high-tech" goods.

If this is true, and we believe that it may be, then the relationship between disarmament and the economy is considerably more complicated than many analyses portray. We elaborate some of these complications in what follows.

Abraham Becker long ago posed the question that "if it is armaments and armies that constitute a menace for peace, why should anyone be concerned with the threat of dollars or roubles" (Becker, 1977: 2). At least as far back as 1899, disarmament conferences have fundamentally been concerned with qualitative and quantitative restrictions on armaments and force levels, leaving the financing of such levels entirely to national government. There are many reasons why there is considerable merit to this long-standing and continuing process. International comparisons of prices are quite problematic and easy to manipulate, as demonstrated in Fontanel (1989).

Beyond price comparison problems, we note that the other side of the same coin may be described as efficiency. One nation may effectively produce high-technology avionics weaponry, while another may effectively produce munitions. Each in its own way can be quite threatening. Price constraints developed on the basis of munitions may totally undermine avionics production in another country; similarly, constraints developed for avionics might leave totally untouched munitions productions. Arms negotiators know what scholars have frequently lost sight of; namely, it is the weapons system that poses a threat, with its cost being largely irrelevant to the extent of threat.

Economists concerned with macro-economic policy have been successful in convincing national governments to collect and widely disseminate data on the macroeconomy. So successful have professional economists been, that these data are widely utilized not only to monitor and putatively manage the economy, but they also serve as a major point of legitimization for the decision makers themselves. In creating national accounts and other data, the institutionalization of reliance on economic data generated by national governments has become almost complete. In fact, the success of this movement has reinforced the tendency to rely on data expressed in currency units for a wide variety of issues, including defence economics. In relying — overly we would argue — too heavily on expenditures and planned expenditures for professional analyses of defence issues, it is easy to miss the forrest for the trees, something arms control negotiators are loathe to do. Thus, we believe, many policy and scholarly analyses of the economic benefits of the end of the cold war and the promised disarmament of the 1990s may have missed surveying some parts of the forest in their concern to detail the potential growth of a few of the trees.

Disarmament via Reduced Defence Spending

A disarmament predicated on the notion of cost-savings will also have as a primary goal the increased efficiency of reduced expenditures. On the one hand, military-industrial institutions will try to find ways to produce the same level of weapon stocks with a reduced budget. In the first instance this might be done by giving greater attention to waste, fraud, theft, and mismanagement. Further, we might expect attempts to exploit economies of scale in order to reduce unit costs. This means that some drastic choices

must be made because, *ceteris paribus* unit costs are growing. Another approach, certain to be followed especially in the wake of the high-technology combat of January and February 1991, will be to attempt to produce "better" weaponry. In such a scenario, we might expect the resurrection of a modified SDI initiative to counter-balance reduced budgets for replacing trident warheads, for example.

In responding to cost-saving measures, states will tend to specialize their defences in areas in which they may have the greatest economic leverage. For the United States, that might be in the area of high-technology systems. For other countries, such as France for example, it might well lead to increased support for a nuclear option as being the most cost effective. In fact, 1991 defence plans in France called for large reductions in spending based in large part on the sufficient defence provided by the nuclear force. For countries around the world that have fewer resources, a general reduction in spending levels however motivated or enforced might serve to make "cheap" weapons systems, such as chemical and biological systems, even more cost effective. Accordingly, states will establish defence strategies that are not organized around specific threats. In the case of actual conflict, the likelihood of having a constrained menu of response is likely to lead to greater reliance of very destructive weapon systems. Thus, the flexibility to respond flexibly may be eliminated by across the board cuts in spending.

Accordingly, it may be that if all countries were to pursue reduced military spending programs as part of some global disarmament program, the actual result might be a disarticulation of the global arms market and its stimulation as each country tried to find the most potent and economically feasible weapons array. In such a fashion, a disarmament predicated on responding to an economic crisis, may well lead toward a less stable and more dangerous global environment. Simply constraining the flow of resources to military purposes will be insufficient to insure a disarmament that increases global security.

Disarmament via Physical Reductions in Forces

If, on the other hand, disarmament is seen as a way of reducing the stockpile of destructive power arrayed around the world, what conclusions are evident? Suppose we reach limits that are both qualitative and quantitative in nature. The U.S. might find an acceptable level of weaponry that it believes insures its security. And in a similar fashion, so might the Soviet Union. These acceptable levels of armaments

might well be below current levels. If this level is reached by a negotiated agreement to which both parties agree, it is likely that both parties will have to abide a single limit in each category. This is accompanied by two fundamental problems.

First, by fixing the specifics of weapon systems to be limited, it is impossible to fix the specifics of weapon systems yet to be developed. A precursor of this problem was seen in the debate during the early 1970s over the treaty to limit ballistic missile defences, and then again with the introduction of the strategic defence initiative (SDI) by the U.S. in the 1980s. Thus, especially by leaving military spending untouched, quantitative limits to armaments must focus on currently developed weapon systems, and in so doing may actually release resources to develop new and more destructive weapon systems that are not covered by the vision of any particular treaty. This has the possiblity of being quite destablizing and increasing rather than decreasing national security. Thus, it is quite possible to envision a disarmament which has greater costs, if part of the disarmament process involves a redesign of strategic doctrine. It is, therefore, useful to control research and development and to establish reductions of most weapons systems. However, it should be recognized that below certain thresholds physical weapons stockpiles have little utility, either in battle or in preventing it.

Second, by limiting the outcome of the military production process, you will introduce different effects into the economies of the parties to any quantitative limitation of armaments. Consider the comparative structure of defence spending in the U.S. and U.S.S.R. in 1990 that is presented in Table 1. In addition to these differences, there is the important difference that the U.S.S.R. has conscription.

It is possible to examine the correspondence between the factors of production for collective and private goods, given these data. How would a state make the pertinent choices? What is the product of a soldier? Some products might include "militarism", dissemination of education, augmentation of a state's power, or even victory in a war. In addition, one might add to such a characterization the interesting question of how specialization of the production of defence goods among allies affects the mix of defence goods, public and private. This specialization might also be applied across the globe. In particular, if the U.S. were to chose between a high-tech security policy and a low-tech security policy, at equivalent costs, it would be possible to minimize the conjoint costs of defence if the U.S.S.R. were

Table 1:

Percentage Breakdown of Military Expenditures, 1990

Expenditures	U.S.	U.S.S.R
Procurement	27.1	43.7
R & D	12.8	18.6
Military Construction	2.0	3.8
Other Construction	1.1	1.5
Operation & Maint.	29.2	17.7
Personnel	26.8	9.6
Pensions	7.1	3.4

to chose the complementary approach. But even in the changed atmosphere of a post-Yalta world, one wonders whether the U.S. has in mind to choose the method of defence least expensive for the Soviet Union, and vice versa? If each country is attempting to produce both security and prosperity, each will pay special attention to understanding the factors of production and the elasticities most favorable to each other. Herein the factors of production which favor prosperity may part company with those favoring greater security.

For a long time, the U.S. has been convinced that one of the Stalinist goals of the Soviet Union has been to push the U.S. in such a way that a global balance of forces favoring the U.S. may be overturned. At the same time, Soviet leaders have been convinced that the free world would not be able to preserve its standard of living and its military advantage. Corollary to this, many in the U.S. have felt that pressure on the Soviet Union's military would bring about a final blow to the Soviet economy. Similiarly, the Soviets have long felt that attaining a "superpower" status required a large military. These considerations have brought about a "rational" arms race only when security has been defined as zero-sum. See Williams and McGinnis (1988) and McGinnis and Williams (1989) for recent examinations of rationality in the context of arms races models.

For these reasons, military spending constitutes an excellent indicator of disarmament in the medium

term, since it is able to capture many important aspects of national security policy. We emphasize three reasons for this assertion. First, military expenditures provide evidence of the price that is collectively attached to security in the contemporary situation; that is, they provide a crude indicator of the utility of security. Second, military expenditures provide an indicator of burden sharing of the provision of these goods among allies. Third, disarmament for development is a very popular idea, which is correlated with the idea of peace; policy makers judge these items largely in terms of expenditures.

Neither quantitative arms restrictions nor quantitative spending restrictions are sufficient to insure a progressive disarmament. Restricting the flow of resources to the military encourages decision makers to seek more efficient ways of producing destructive weapon systems. Simply restricting current weapon systems, encourages the development of new destructive systems rearranged to take better advantage of national factors of production.

RULES FOR EFFECTIVE DISARMAMENT

Coupled with the above considerations, current discussions of the potential of disarmament lead us to propose fourteen generalizations that we believe will play an important rôle in governing the relationship between disarmament and economic processes.

Rule 1: The quantitative control of armaments entails no necessary implications for the reduction of financial efforts of states to insure their national security. We believe that this is well-known and demonstrated by efforts by military and national decision-makers to reduce waste, fraud, and theft in all government contracting, in an attempt to gain a bigger "bang for the buck." It is also clear that militaries are generally large bureaucracies with considerable power not only to influence policies but also to adapt to them. Not only will military planners find ways to protect their budget shares, but their budget totals. It may in fact be that new policies entailing reduction imply greater costs. Further, not only the military but the industrial complex built up over the past four decades to supply modern armaments to the militaries of the world have considerable powers of their own to influence fiscal planning in relation to defence procurement.

In short, the new costs of a restructured defence, the inertial power of the military industrial complex,

and the significant political costs to decision makers of disarmament will not necessarily bring about a lower bill for national security, even in the face of greatly reduced levels of conventional and nuclear armaments around the globe.

Quantity of weaponry and quality of weaponry are imperfect substitutes for one another. But at a certain level they are substitutes. This fungibility of this substitution can be constrained by reductions in spending levels, since at both more and better weapons can be purchased by more money. However, there is a paradox here. The quantitative reduction of weaponry may oblige states to increase the quality of their weapon systems, which in turn is likely to drive up defence costs. This increase will be magnified if economies of scale are not available to the defence programs (the first Abrams tank was very expensive, the 1000th only expensive). Under such conditions, a fiscal limitation on spending will singularly reduce the perverse effects of negotiated quantitative reductions in armaments.

Rule 2: Fiscal restrictions will encompass all activities, but physical limitations will precisely determine the composition of military power. Reductions in spending levels will permit governments a sufficient flexibility to put in place a defence policy adapted to the perceived needs of a specific country. While specific weapon system agreements — such as nonproliferation accords for nuclear and chemical weapons — are of great benefit, the costs of abrogating these agreements are weak compared to the strategic benefits of so doing. Therefore, without a precise analysis of defence concerns, a general reduction in defence expenditures has the potential to be disequilibrating. For example, England spends less than 10 percent of its military budget on nuclear forces. Thus, it would be quite easy to reduce its expenditures without touching any of its main defensive capabilities (Fontanel and Smith, 1987). For other countries, especially arms producers, important reductions could probably be achieved in the short-term simply through strong efforts at increasing economic efficiency. It is even conceivable that such efforts might offset some of the reduced income from fewer arms sales, but in the end even higher unit costs might replace the lost revenue.

Rule 3: Reducing any given military program by one-half, is unlikely to reduce the costs of the program by more than 20-30 percent. Inversely, a reduction of spending by 50 percent is likely to reduce the functioning of the program by considerably more than one-

half. Defence stocks, like all goods, tend to decline over time without new investment. Equipment wears out or becomes obsolete. Finding the exact equilibrium level of investment is a very tricky business, and most defence planners have, in the past, hedged their bets considerably by "over-investment" to insure adequate defence stocks. Reductions, even it they only affected, investment would require careful management of the kind unfamiliar to many defence policy makers. Even if a 50 percent reduction in armaments could be effected with equilibrium levels of investment, maintenance and operation of that military program might not easily accomplished with equal facility. Economies of scale affect labor costs — part time armed forces are the exception, not the rule — as well as the cost of maintenance and operations. Thus, to keep a particular weapon system maintained, staffed, and updated when necessary — i.e., to keep it operational, its system costs may actually increase proportionally when its quantity is reduced by one- half. By a similar logic, a 50 percent reduction in spending — as opposed to weapon system numbers — is likely to result in a greater than 50 reduction of the number of operational weapon systems that can be produced and maintained. Economies of scale may ease the process of arming by reducing unit costs, but they have opposite effects on the process of disarmament by increasing them.

Rule 4: Military technology, in and of itself, promotes a growth in the cost of defence. Thus, disarmament implies control of military technology. Two factors exert a strong pressure on the growth of military expenditures. One of these is the incorporation of new technologies in weaponry. New technology has higher costs in the short-term than old technology, although the presumed benefits are substantial. Second, new technology not only costs more in and of itself, but it typically entails costlier materials. While there have been some spin-offs from military technology to civilian products, satellites being perhaps the best example, some military technology is so specialized that it is difficult to think of commercial uses for it. Accordingly, these increased costs must be borne, if at all, by the military budget.

Rule 5: Because of its nonproductive character, at the global level at least, it is incontestable that military spending has negative long term economic effects. Such effects in the short term, however, may not be universally expected. A wide variety of general studies (for example, Fontanel and Smith, 1985; Chan, 1987; and Gold, 1990) has examined the relationship between

defence expenditures and the economy. In addition to the broader surveys, a variety of specific studies exists including Russett (1982), Mintz and Huang (1990), Atesoglu and Mueller (1990), and Fontanel (1990). This literature has not yet resolved whether a positive or negative short or long-term relationship between economic productivity and growth and military spending is present in most situations. Most of the theoretical evidence would suggest a trade-off between military spending and economic productivity and growth, owing to the non economically productive nature of all government spending, including the military. However, most of the empirical evidence fails to show this and there is considerable evidence to suggest that governmental spending often has positive economic effects (e.g., Ram, 1986). Yet, from a theoretical viewpoint it seems certain that the economic benefits of military spending must be negative in terms of long-term economic growth, a point well made by Kennedy (1987) and Goldstein (1988a), whatever the national security implications may be. Clearly, Japan's small defence burden is one important aspect of its phenomenal economic growth. Yet it is easy to overstate the importance of the defence burden in Japan. Japan has also greatly benefitted from a benign international environment, supported in part by international security over the last four decades.

Thus, it appears that in the short-term military expenditures are not uniformly unsupportive of economic growth, and in circumstances may promote increases in economic productivity. This discussion steps around the important long- term opportunity costs that may be associated with not spending on, for example, schools instead of submarines. However, in terms of economic costs and benefits, and in the short run it seems safe to conclude that the impacts of defence cuts in most western economies are likely to be small, but not uniformly positive.

Rule 6: Large arms stockpiles and large armies provoke crises in three realms: economic, political, and strategic. If one accepts this contention, then the important question is transformed into determining what part of the military establishment is the "offensive excess"? This will certainly depend upon the period and the countries of concern, but fundamentally this question is determined by the degree of social consensus and the weight given to military over other forms of national security. A popular statement of this law is given by Kennedy (1987); a thorough conceptual and empirical treatment may be found in Goldstein (1988). Basically, two lines of thought are important.

In the first instance, there is perceived to be a predator-prey relationship between the military and the economy in the very long term. It may be the case that in some periods both can increase or decrease together, but over the long sweep of history, military commitments will erode the competitiveness of the economy. The contemporary Soviet economy is an example of this, as many would argue does the debt and deficit plagued U.S. economy. Economic decline is likely to provoke either a political crisis within the state, or support a greater likelihood for international involvement, or both. As a state becomes less competitive economically, it becomes more threatened by outside forces with lower military forces and may be an easier target for long-standing enemies. In the same way, as the economy weakens, military power is increased in salience and a state may perceive that foreign conflict is more likely to be successful in the present than in the future.

Rule 7: Disarmament by reduction of defence spending constraints will not be decided by a rule of proportionality. Although proportionality is long established as a norm of negotiations, it will not serve as a very good guide to effective disarmament negotiations for defence spending. The reasons for this are easy to illustrate. As an example, it seems quite plausible for the U.S. and the Soviet Union to reduce their nuclear stockpiles by one-half without significantly altering the credibility of their nuclear deterrent. However, if England or France made proportional reductions, it has been argued they would risk all of their potential nuclear credibility.

Consider the following scenario. The U.S. and the U.S.S.R. reduce their financial effort on the order of 20 percent, consisting of a 25 percent reduction in the nuclear realm, 20 percent in the conventional realm, and about 15 percent in personnel. France, for example, might reduce its armaments by 15 percent, consisting of only 5 percent reductions in the nuclear realm in order to preserve, if France so desires, the credibility of its strategic doctrine, followed by approximately 20 percent conventional and personnel reductions. Rapidly industrializing societies, such as South Korea, Taiwan, and Argentina might be able to effect larger reductions, while societies that are industrializing with greater difficulty might be expected to exhibit quite modest reductions in their spending patterns. Such a pattern does not abide any necessary principles of proportionality, but is more realistic and plausible, in our opinion.

Different nations have different strategic doctrines, not all of which would be equally affected by

proportional cost reductions. For exactly the same reasons we should not expect disarmament to be global. Military reductions, especially in the context of a wide spread disarmament, should be undertaken in the context of national and international strategies of security assurance and applied intelligently to the real programs that support those structures. Across the board reductions — while symbolically the most potent — are likely to be ineffectual and disequilibrating.

Rule 8: Reduction of military spending should be gradual. There is widespread empirical evidence to suggest that macro-economic policy is best able to deal most stably with changes at the margin. Given the greater coupling of the international commercial markets, it is widely recognized that small changes in the global economic environment are easier to deal with than are large changes. The oil shocks after the 1973 Arab-Israeli War and the attendant oil embargo, the mini-recession brought on again in 1979 by conflict in the Middle East, the so-called global stock market "Big-Bang" of October 1979, as well as many other more localized economic trauma have all suggested to the major economic policy makers that big changes have big consequences, not all of which can be foreseen or controlled once recognized.

In a similar way economic changes perceived to be national have major consequences that may prove to be international, and the source of potential conflict that itself might undermine the process of amity and reciprocity on which much of the current disarmament discussions are ultimately based. The rapid build-up of U.S. military forces during the first half of the 1980s helped to create a major credit problem, for example. This problem was massive debt. In large part this debt was financed in the short run and in the long run by borrowing from the Japanese. In spite of the strong relationships between the U.S. and Japan, this has caused considerable friction. Eastern Europe, to look briefly at another example, may appear to be a "great opportunity for entrepreneurs" when viewed from Bonn. But like all great sales, unless both sides perceive an actual benefit once the transaction is completed, each party to the sale is likely to be greatly disappointed. While you can live quite comfortably with a car that doesn't start in the morning, you can't live so comfortably with an economy that doesn't start in the Spring. Rapid demobilization and the particularly strong negative effects that this might have in some economies may usher in opportunities for other societies to take great advantage. This has the potential to be very

disfunction for regional and even global peace in the long run.

Rule 9: The various disarmament accords that imply movement toward defence force structures, away from offensive ones, may have the consequence of increasing military spending for some countries, in part by making obsolete their current force structures. This point was well made by Thomas Shelling long ago (1966). If offensive strategies succeed in defeating their opponents, whether through military, political, or economic means, the successful armies ought to be able to undergo large transformation toward defensive strategies, thereby bringing about large and important savings that could be invested for economic development. However, it is widely accepted that defensive strategies are much more costly to implement than offensive ones. Moreover, it is difficult to establish that defensive strategies are very effective against offensive ones. All of this has blurred a little with the birth, adolescence, and maturity of the nuclear world. However, chemical weapons are very inexpensive to produce in relation to effective defences against them, a point that may reestablish the larger point. From the Maginot Line, through the ABM, to the SDI program, large scale defensively oriented defence programs have tended to provoke superior strategic responses. Simply defensive strategies are more costly to pursue. This is not to imply that it will always be so, nor that the increased costs of defensive strategies may not ultimately be worth the price. We illustrate this point simply to underscore the important paradoxes posed by disarmament.

Rule 10: Real disarmament has implications for the control of military research and development. It is conceivable that, in the absence of local or regional conflict, nations will seek ways to reduce their weapons purchases and to limit the importance of the armed forces. Thus, absent oversight and control of military technology and research may bring about a quantitative reduction in forces coupled with an intensification of research and technology to improve the quality of weaponry. Much has been said in various fora about the conversion process — implying a conversion of military effort to civilian effort. However, it is important to note that civilian research(ers) may need to be converted to military research(ers) in order to effect real structural change. Conceiving the change in the opposite direction may simply expand the structural basis of current military efforts rather than restructure them.

Rule 11: It is necessary to bear in mind the costs of peace as well as the dividend of peace. Much of what we have asserted to this point leads to this rule. We must not only account the real dividends attendant to disarmament, but we must also keep track of the economic costs of peace. We must do this not to choose the less costly option, but rather so that we have realistic expectations about progress of disarmament. We note that:

1. A disarmament decision implies putting in place controls and verification mechanisms for the destruction of arms, the closure of military bases, and the modification of local force structures. Each of these necessary procedures will require the allocation of resources.

2. Subventions and assistance for restructuring the arms industry will be important aspects of the conversion process, if it is to succeed.

3. To the detriment of the Third World, we might expect changes in international economic relations. Western countries will begin to purchase raw materials from the Soviet Union, and the Soviets — if they hold the nation-state together in the short-run — will little by little be integrated into the international capitalist world. This will make some Third World economies even less competitive than they are currently and may bring with it new economic crises in the Third World that will further threaten fragile societies (Fontanel, 1990). Such threat may not be solely absorbed domestically, as the Iraqi seizure of Kuwait illustrated.

The principal economic powers may reduce their interest in the world, generally and more strongly defend their perceived national interests more starkly. With Japan and Germany poised clearly to benefit strongly from a global political reorganization, so too are they — along with the U.S. and other Western powers — poised to recreate a global economic order that is vastly more unequal than that of the last forty years. Japan currently accounts for about one-quarter of the world's economic productivity. It also accounts for roughly five percent of the global population.

If the industrialized world is able to free up resources that have until the present been devoted to the military and to invest these resources productively in the civilian global economy, this too may further accentuate the difference in international competitiveness between "North" and "South." On the other

hand, if a sizable portion of the so-called dividend is used as aid, either in the South and/or the East, how will the perverse effects of aid be avoided?

Rule 12: The economic dividends of peace are likely to be small, at best, in the short term. In the long term, they may be very significant, however, if economic restructuring can be accomplished along with political and strategic restructuration. The peace dividend will not be available for distribution in the short term. The economic benefits will be weak and by some accounts possibly negative. In the United States, the dividend check — if it is issued at all — may be seized to effect a small reduction in public debt. For the Europeans, these resources will be smaller and most likely will be devoted to restructuring the European economy, East and West, a process underway in the West prior to the recent global political warming. Some of this restructuring will now include the Soviet Union. It has not been lost on the European business community that the Soviet Union has a sizable and relatively productive military industrial sector. This industry was already capable of supplying domestic products (especially toward the end of economic plan periods). Thus, while in the short-term the Soviet economy is likely to remain relatively weak by global norms, European, Korean, Japanese, and U.S. investments may well pay large dividends for the longer term. For Third World arms importers, reduced military expenditures are likely to have positive economic effects in the short term, where it is likely that "pent up demand" in the civilian sector could be more effectively satisfied without a large arms bill to pay every year.

Rule 13: Military spending is at best a weak and incomplete indicator of the strategic strength of a state. Accordingly, spending alone should not serve as the sole basis for constructing or for monitoring the process of disarmament. With more or less the same amount of defence expenditures, nations ought to be able to have national security, insured by a very different defence structure. However, a reduction of military spending, without a corresponding reduction in the stock and production of armaments, as well as their restructuring, is likely to be dangerous for peace.

Rule 14: Reduction of military spending is a major political decision based on the premise of reciprocity among states. Budgetary constraints and price considerations determine the upper limit of what a government or a society is able to supply. This is true for rich and poor countries

alike: the question of the costs of defence poses itself annually to the decision making community, and indeed ultimately to the citizenry. These two constraints push toward unilateral limitations in the acquisition of arms and favor the control of weapons. The press of new technology and the imbalance of competitive forces constitute forces that limit involuntarily the number of players that prefer to cut their losses. Thus, it is a political will that creates political conflict and a political will that is required to end it. Peace and arms control both will be embraced if at all for political and not for economic reasons.

CONCLUSION

The current détente is the result of the conjuncture of a military and political situation that may be transitory, not the result of a voluntarily chosen policy on each side. In a sense, the world has forced détente on the Soviet Union and the United States, in part by economically circumventing their economic superiority and eroding their political leadership. That is to say that the current détente is reversible. It is supported by amity and reciprocity that has built up over a short period of five years. Yet, old and new antagonisms are not far submerged below the surface. Economic crises around the world have the potential of (re)generating considerable international conflict.

A disarmament that is progressive and attends to the issue of increasing global security will be one that attends not only to the issue of military expenditures but also to the issue of weapon stockpiles. Disarmament that focuses on one issue to the exclusion of the other will leave the door wide-open for disarmament to be de-stabilizing and increasing rather than reducing international security. Just as the armament process is best understood by examining both weapons stocks and military expenditures, a stabilizing disarmament process will also attend to both the stock and flow of weapons.

REFERENCES

Atesoglu, H.S. and Mueller, M.J. (1990) Defence spending and economic growth. *Defence Economics* 2 (1), 19-27.

Becker, A. (1977) *Military Expenditure Limitation for Arms Control: Problems and Prospects.* Cam-

bridge Mass: Ballinger Books.

Chan, S. (1987) Military expenditures and economic performance. In *World Military Expenditures and Arms Transfers 1986*, U.S. Arms Control and Disarmament Agency (editor), Washington, D.C.: U.S. Government Printing Office, pages 29- 38.

Fontanel, J. (1990) *Incidences pour les pays en voie de développement de la procédure de désarmement entre l'Est et L'Ouest.* Presented to the working group on the Economic Consequences of Disarmament, Leningrad, 17-19 July.

Fontanel, J. (1990) *Aspects économiques de la militarisation et de la déilitarisation dans l'Hémisphère Sud.* Unpublished manuscript.

Fontanel, J. (1990) *Les comparaisons des dépenses militaires.* In *Défense et Économie.* Proceedings of the Nice Conference, 14-15 September, 1990. Paris: *Sécrétariat Général de la Défense Nationale.*

Fontanel, J. (1990) *Économie du désarmement. Stratégique, Foundation pour les Études de Défense Nationale.* Paris.

Fontanel, J. (1989) *Les technologies militares et le développment économique contemporain*, In *La Vérification du Désarmement*, edited by J. Fontanel and J.-F. Guilhaudis. ARES: Grenoble and Lyon.

Fontanel, J. (1989) *Les estimations des dépenses militaires. ARES, Défense et Sécurité*: Grenoble and Lyon.

Fontanel, J. (1988) *L'impact économique du programme IDS. ARES, Défense et Sécurité*: Grenoble and Lyon.

Fontanel, J. and Guilhaudis, J.-F. (1986) *Le désarmement pour le développement.* In *Course auz armements et désarmement*, edited by J. Fontanel and J.-F. Guilhaudis. ARES: Grenoble and Lyon.

Fontanel, J. and Smith, R. (1990) The impact of strategy and measurement on models of French Military expenditure. *Defence Economics* (1) 4, 261-274.

Fontanel, J. and Smith, R. (1987) The creation of an international disarmament fund for development. In *Defense Security and Development*, edited by S. Deger and R. West. London: Frances Pinter Publishers.

Fontanel, J. and Smith, R. (1985) *Analyse économique des dépenses militaires. Stratégique* 4.

Gold, D. (1990) *The Impact of Defense Spending on Investment, Productivity, and Economic Growth.* Washington, D.C.: Defense Budget Project, 236 Mass Ave NE.

Goldstein, J. (1988a) *Long Cycles: Prosperity and War in the Modern Age.* New Haven: Yale.

Goldstein, J. (1988b) How military might robs an economy. *The New York Times.*

Kennedy, P. (1987) *The Rise and Fall of the Great Powers.* New York: Random House.

Kissinger, H. (1969) *Nuclear Weapons and Foreign Policy.* New York: W.W. Norton.

Korb, L.J. (1990) The end of the cold war and declining military expenditures. *Disarmament,* (XIII) 3, page 4.

Lichtenberg, F. (1990) U.S. Government subsidies to private military R&D investment. *Defence Economics* (1) 2.

McGinnis, M. D. and Williams, J. T. (1989) Change and stability in superpower rivalry. *American Political Science Review,* 83, 1101-1123.

Mintz, A. and Huang, C. (1990) Defense expenditures, economic growth, and the 'peace dividend.' *American Political Science Review* 84 (4), 1283-1293.

Merton, R. (1938) Science, technology, and society in seventeenth-century England. *Osiris* (IV).

Mumford, L. (1934) *Technics and Civilization.* New York: Harcourt Brace.

Ram, R. (1986) Government size and economic growth: a new framework and some evidence from cross-section and time series data. *American Economic Review,* 76 (1), 191-203.

Russett, B.M. (1982) Defense expenditures and national well-being. *American Political Science Review* 76, 767-777.

Shelling, T. (1966) *Arms and Influence.* New Haven: Yale University Press.

Smith, R. (1989) Models of military expenditure. *Journal of Applied Econometrics* 4, 345-359.

U.S. Arms Control and Disarmament Agency. (1989) *World Military Expenditures and Arms Transfers 1989.* Washington, D.C.: U.S. Government Printing Office.

Williams, J.T. and M.D. McGinnis (1989). Sophisticated reaction in the U.S.–Soviet arms race: evidence of rational expectations. *American Journal of Political Science,* 32 (4), 968–995.