Defense Allocation, Inflation, and Unemployment in South Korea and Taiwan: A Granger Analysis

Steve Chan and David R. Davis

There has been much concern in the relevant literature about the possible deleterious economic effects of large military expenditures. This concern seems justified in view of the recent economic collapse of the Soviet Union, and the declining industrial and commercial competitiveness of the United States. Thus, for example, it has been argued that a heavy defense burden can have economic consequences such as inflation and unemployment. However, it also seems to be the case that the conditions of a country’s political economy can affect decisions regarding the level and nature of resources devoted to the military sector. Therefore, the relationship between defense burden and economic performance may well be characterized by reciprocal influences.

This paper studies the interactions among the defense and economic variables in two newly-industrializing Asian countries: South Korea and Taiwan. These two countries have arguably the most successful economies in the developing world. At the same time, they have borne a much heavier defense burden than other developing countries. Thus, South Korea and Taiwan seem to have escaped the cross-national tendency for defense spending to undermine economic performance. Their apparent achievement of successfully combining the pursuit of security and growth makes these Asian cases especially interesting for policy as well as theoretical reasons.

We apply vector autoregression to time series data from South Korea and Taiwan in order to determine the existence and, if so, the extent of Granger causality involved. This method has become
increasingly popular among political scientists and economists for exploring the possible reciprocal relationships in the overtime interactions of variables. In this study we use it to examine the relationships between South Korea’s and Taiwan’s allocations of defense manpower and dollars on the one hand, and their unemployment and inflation rates on the other. With one exception in the South Korean case, our results fail to indicate direct and simple causal connections between these variables during the time period analyzed, thereby suggesting that these two newly-industrializing East Asian countries have been largely successful in dampening the negative economic consequences of a comparatively heavy defense burden. Future research should attempt to determine whether defense allocations have indirect costs for the economy and should search for the policy as well as structural reasons that account for the relatively successful performance of South Korea and Taiwan in combining “guns” and “butter.”
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It is widely supposed that a heavy defense burden can have a variety of negative consequences on economic performance. For example, a large military budget is often seen to abet inflation, discourage investment, hamper trade competitiveness, and impair economic growth. Much of the literature on this question of defense-versus-growth tradeoffs tends to assume a unidirectional causal relationship that flows from defense allocations to economic distortions.

However, to the extent that the economic effects of financing a large military establishment can be foreseen, policy makers are apt to engage in anticipatory adjustment in their deliberation of a proper level of resources to be committed to the defense sector. It does not seem to be very reasonable to assume that officials are somehow oblivious to the negative economic consequences attributed to defense, or that they make defense-related resource allocations without considering such consequences. Indeed, it would be far more realistic to assume the opposite; that is, to expect officials to use the defense budget and establishment as an instrument for managing the political economy, if resources devoted to them actually have or are perceived to have such effects.

It behooves us therefore to consider the possibility of reciprocal influences in the relationship between defense burden and economic
performance. Just as defense spending can result in general price increases, the history of recent inflation and/or the expectation of further inflation can affect defense spending. Officials may either raise this spending in order to adjust for past, current, and/or future price hikes, or reduce it in order to dampen such price hikes. Correlational statistics, especially those based on cross-sectional data, do not help to clarify the existence or direction of causality under such circumstances.

In this paper we offer a preliminary attempt at deciphering the causal possibilities regarding the relationships between defense manpower and dollar commitments on the one hand, and unemployment and inflation rates on the other. Our immediate concern in this paper is to test for Granger causality among the pertinent time series from South Korea and Taiwan. The rest of this paper is organized in sections dealing respectively with (1) the rationale for choosing these cases, (2) the expectations for alternative causal possibilities among our variables, (3) the Granger approach to causal analysis, and (4) the discussion of the analysis results.

South Korea and Taiwan as Atypical Cases

Ever since Russett's pioneering work on the impact of defense burden on economic performance, there has been a growing literature on this subject. A number of excellent quantitative analyses are available regarding this impact in the advanced industrialized countries. Although similar studies have also been undertaken with

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regard to the developing countries, most of them have had to rely on the more problematic cross-sectional (as opposed to the longitudinal) research design due to data constraints. Indeed, there exist only a handful of overtime analyses of the armament dynamics in individual developing countries.

We have a rather comprehensive set of time series data on South Korea's and Taiwan's economic performance extending back to the early 1950s, although, unfortunately, our source for defense allocations offers data only since 1961. Accordingly, our analysis covers the period of 1961-88, which coincides roughly with the rapid economic take-off of these two newly industrializing countries.

For substantive as well as theoretical reasons, South Korea and Taiwan present interesting cases for analysis. They have seemingly been able to lessen, if not entirely escape, the various negative economic consequences of having to bear a heavy defense burden.

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Although they have historically had to finance a much larger fighting force and defense budget in comparison with most other countries, their economies have featured very rapid rates of growth and export expansion in the past three decades. They have also achieved comparatively low inflation and unemployment rates, and rather high savings rates in the recent past.

Indeed, South Korea's and Taiwan's accomplishments in achieving rapid economic take-off on the basis of sustained export expansion and continuous upward movement in the international product cycle have put them among a very select group of newly industrializing countries. However, in contrast to other members of this group (e.g., Singapore, Hong Kong, Brazil, Argentina), South Korea and Taiwan have been further distinguished by military threats from hostile neighbors as a legacy of their respective civil war. As a consequence, these two East Asian countries have had to divert much more capital and human resources to national security. Their ability to achieve rapid and sustained economic development despite this handicap therefore appears even more remarkable.

This accomplishment in successfully pursuing both national security and industrial modernization tends to set South Korea and Taiwan apart as "deviant cases," because much of the available cross-national evidence paints a pessimistic picture regarding the impact of defense burden on economic performance. Their records of achieving both "defense" and "growth" seemingly present an enigma to several prevailing views suggesting important tradeoffs between these two desiderata. Accordingly, learning from South Korea's and Taiwan's historical experiences can make major contributions to the scholarly and policy understanding of this important topic.

Although several previous studies have examined empirically the influence of defense burden on the economic performance of South Korea and Taiwan, they have generally not considered the possible impact of economic performance on their respective governments'  

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The allocation of resources to the military sector.\(^7\) The overtime relationship between these factors may in fact form a two-way feedback process. With few exceptions,\(^8\) this possibility of reciprocal causal influences has been largely ignored in the empirical literature on this topic.

This paper therefore seeks to address the two issues raised in the preceding two paragraphs. First, it tries to determine whether South Korea's and Taiwan's past allocations of capital and human resources to the military sector have indeed successfully skirted the alleged adverse economic consequences in terms of inflation and unemployment. Has the relative size of these countries' defense budget and of their armed forces personnel affected their inflation and unemployment rates? Second, this analysis tries to ascertain whether Seoul's and Taipei's past resource allocations to the military sector have been affected by economic conditions. That is, is there any evidence to suggest that the changes in inflation and unemployment rates have influenced these governments' defense allocations? Evidence of the existence of such influence would indicate that defense allocations have responded to and/or have been constrained by economic conditions. We sketch the possible reasons for these linkages in the next section.

**Causal Expectations**

Defense allocations take the form of both capital and human resources. They refer respectively to financial (i.e., fiscal budget) or manpower (i.e., armed forces personnel) commitments. We specif-

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\(^8\) Rasler and Thompson, "Defense Burdens"; and Starr et al., "Defense Spending and Inflation."
ically consider the following four causal possibilities regarding the relationship between these allocations and two measures of economic performance (i.e., inflation and unemployment). First, has the unemployment rate affected the relative size of military personnel in South Korea and Taiwan? Second, has the relative size of military personnel affected the unemployment rate in these two countries? Third, has the inflation rate affected the relative size of their military expenditures? And fourth, has their respective military spending level been affected by the inflation rate?

The relationships between defense allocations and economic performance feature four causal possibilities. First, the former can affect the latter (e.g., the size of military personnel influences the unemployment rate). Second, the latter can affect the former (e.g., the unemployment rate influences the size of military personnel). Third, there can be mutual influences between the two variables (e.g., both of the preceding examples are true). Fourth, neither affects the other (e.g., both of these examples are untrue). The rationale underlying each possibility is presented in the following paragraphs.

A large military establishment may influence the unemployment level. Everything else being equal, the higher the rate of conscription of young males into the military, the tighter will be the labor pool. At the same time, the increased defense expenditures implied by a large military establishment are apt to stimulate the economy in the short run. Through their multiplier effect on demand, more jobs would be created due to these additional government expenditures than would otherwise be the case. It is rather doubtful, however, that defense expenditures are as efficient as other forms of public spending on civilian programs in generating new jobs. Moreover, the longer-term impact of a persistently heavy defense burden on employment is still rather imperfectly understood. Some have argued that this heavy burden is necessary in the advanced capitalist countries as a countercyclical policy for combatting recurrent economic downswings. Others suggest or imply that this burden, in the long run, can result in a high level of structural unemployment due
to its undesirable effects on investment, trade competitiveness, and GNP growth.\(^9\)

The available evidence regarding the impact of defense burden on employment, however, is not entirely conclusive.\(^10\) The research on this topic has often been affected by small-country samples (usually restricted to the developed countries), selective outliers (the United States and Britain at one extreme, and Japan at the other), and the adoption of cross-sectional designs. It does seem, however, that whereas heavier defense dollar expenditures are negatively correlated with economic growth in the developing countries, larger military establishments (in terms of the size of armed forces personnel proportional to population size) are positively correlated with economic growth.\(^11\) The reasons for the latter pattern are not yet well understood.

It is also possible that defense manpower (and/or dollar) allocations are undertaken by officials in response to the recent, current, and/or anticipated level of unemployment. This view is quite congenial and familiar to those perspectives that stress political (i.e., electoral) or economic cycles as key determinants of defense allo-

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According to it, defense-related resource allocations are an integral and, indeed, essential part of the policy ensemble for managing political economy. Thus, for instance, the military draft in a developing country can be seen in this light to serve major nonmilitary purposes such as to stabilize the wage structure (through the draft’s effect on the labor pool), to alleviate overcrowding at institutions of higher learning, and to curtail demographic expansion (as compulsory conscription forces young bachelors to postpone marriage during the period of their military service).

Naturally, the causal inferences sketched above are not mutually exclusive. That is, the causal flow can operate in both directions in the relationship between defense manpower allocation and unemployment. The variables may be mutually sensitive.

Finally, there is the possibility that policies on defense manpower and the unemployment level are unrelated or only weakly related. For instance, the defense burden could be determined exclusively by perceptions of external threat, and it could be overwhelmingly capital-intensive rather than labor-intensive (and thus have only a limited direct impact on the labor supply).

Turning to the relationship between defense dollar allocations and inflation, we can again entertain four causal possibilities. Some have argued that defense spending stimulates the demand for goods and services without expanding their supply. Consequently, it is seen to be particularly inflationary, especially if increases in this spending are financed through budget deficits and public borrowing and especially if defense procurement is sought on a cost-plus basis. On the other hand, at least one analyst has argued that the resulting


inflation can actually facilitate faster growth in the less developed countries, because it encourages fuller utilization of the existing production capacities. If true, this faster economic growth could in turn mitigate the inflationary pressure.

Of course, experience with recent inflation and/or anticipation of future inflation can affect current defense dollar allocations. Officials may include an inflation adjuster in such allocations in order to provide for a real increase in military expenditures. These expenditures may be raised or lowered as a means of stimulating the economy or of avoiding overheating it.

And, as before, there can be reciprocal influences between the defense budget and the inflation rate. In other words, there can be a two-way feedback process between these variables. Alternatively, these variables can be unrelated in general, or for particular countries or periods. The inflationary impact of defense spending is mitigated to the extent that increases in this spending are offset by cutbacks in other government programs, that these increases are financed more at the expense of consumption than investment, and/or that there is substantial economic slack to accommodate these increases. It also seems that countries commanding "key currencies" (i.e., the US dollar and the British pound, the dominant currencies for settling international exchanges) can resort to balance-of-payments deficits as a way of exporting and thus relieving their domestic inflation.

As a final possibility, defense spending may be poorly indexed to the inflation rate. At least till the 1970s, US defense expenditures, defined in a variety of manners, had actually been falling in real terms.

14 Benoit, Defense and Economic Growth in Developing Countries.


Data and Method

We examine the data from South Korea and Taiwan for the 1961–88 period. We exclude the 1950s because of data unavailability and because they predated the onset of rapid industrialization, export expansion, and the emergence of developmentalist regimes in these countries.

We explore the degree to which South Korea’s and Taiwan’s inflation (expressed in terms of the consumer price index) and unemployment rates may be related to two measures of defense allocations. The first is defense expenditures as a percentage of current GNP. The second is military participation as reflected by the number of armed forces personnel per 1,000 citizens. The choice of these two operational indicators of defense burden follows the conventional norm in this research area. Controlling for the size of a country’s economy and population enables us to gauge the relative degree of resource strain or burden resulting from defense allocations.

We employ the vector autoregression (VAR) approach. In contrast to the structural equation (SEQ) approach, the VAR approach does not entail the a priori stipulation or acceptance of a particular empirical structure. Whereas in the SEQ approach the analyst is guided by his or her theoretical expectations to postulate and therefore to restrict the nature of causal relationships, in the VAR approach he or she is assumed to have a rather poor understanding of the substantive problem being investigated.

In particular, the VAR approach relaxes two requirements of the SEQ approach. First, it does not require the a priori designation of endogenous and exogenous variables, but rather treats all variables as endogenous. It allows each variable to be a function of its own past values as well as the past values of the other variables in the system. In other words, causal relationships are determined on the basis of statistical evidence rather than theoretical specification. Second, the temporal relationships among the variables are again a matter of empirical determination rather than a priori imposition by the analyst. Neither of these more “forgiving” features of the VAR approach, however, can save the analyst from the threats to validity posed by the usual assortment of errors of omission or commission,
such as failing to include a relevant variable in the empirical system, faulty operationalization of a concept, and biased data measurement.

The VAR approach adopts a particular technical definition of causation. According to this Granger definition, "variable X 'causes' another variable Y, if by incorporating the past history of X one can improve a prediction of Y over a prediction of Y based solely on the history of Y alone." Therefore, Granger causality takes into account the secular trends of both X and Y(s).

We transformed the raw data for the four variables of interest in order to meet the Granger assumption of jointly covariance stationary time series. We employed the first differences of the natural logarithm values of these variables due to concern regarding stationarity and possible heteroskedasticity. We undertook the Dickey-Fuller tests for checking autocorrelation among our residuals, and found that this was not a problem. Finally, the statistical results reported in the next section traced the lagged effect of independent variables up to four years; that is, the Granger analyses accounted for the values of independent variables at t-1, t-2, t-3, and t-4. Instead of testing empirically for various lag effects, we followed the convention developed in earlier studies using the VAR approach. Lag structures greater than four would have impaired the degrees of freedom for our analyses given the relatively short time series we had to work with.

Analysis Results

We report the results of Granger analyses in Table 1. The absence of significant Q statistics indicates that there is not a problem with autocorrelated error terms.

The F statistics and their respective significance levels are of the most direct interest for our purposes. When the F statistics in Table 1 are insignificant, we accept the respective null hypotheses. On the other hand, when the F statistics are significant, we reject the

respective null hypotheses and, therefore, infer the existence of a causal relationship. When we reject the null hypotheses relating to both equations paired in the same system, we in effect accept the proposition of mutual, or reciprocal, influences between the two variables. Acceptance of both null hypotheses indicates that the two variables are “Granger independent,” that is, neither causes the other.

Table 1
Results of F-Test for Granger Causality in South Korea and Taiwan: 1961–1988

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Dependent Variable</th>
<th>F Statistic</th>
<th>Significance Level</th>
<th>Q Statistic</th>
<th>Q Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Korea</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Armed forces</td>
<td>Armed forces</td>
<td>2.281</td>
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<td>11.88</td>
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<td></td>
<td>Unemployment</td>
<td>.829</td>
<td>.258</td>
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<td></td>
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<tr>
<td>Unemployment</td>
<td>Armed forces</td>
<td>.614</td>
<td>.659</td>
<td>15.527</td>
<td>.159</td>
</tr>
<tr>
<td></td>
<td>Unemployment</td>
<td>.704</td>
<td>.603</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Defense Spending</td>
<td>Defense spending</td>
<td>.388</td>
<td>.813</td>
<td>9.144</td>
<td>.608</td>
</tr>
<tr>
<td></td>
<td>Inflation</td>
<td>.809</td>
<td>.540</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation</td>
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<td>2.623</td>
<td>.079</td>
<td>11.568</td>
<td>.397</td>
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<tr>
<td></td>
<td>Inflation</td>
<td>1.540</td>
<td>.245</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taiwan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Armed forces</td>
<td>Armed forces</td>
<td>1.264</td>
<td>.330</td>
<td>9.702</td>
<td>.485</td>
</tr>
<tr>
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<td>Unemployment</td>
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<td>.438</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployment</td>
<td>Armed forces</td>
<td>.909</td>
<td>.485</td>
<td>3.625</td>
<td>.979</td>
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<tr>
<td></td>
<td>Unemployment</td>
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<td>.620</td>
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<td></td>
</tr>
<tr>
<td>Defense Spending</td>
<td>Defense spending</td>
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<td>.887</td>
<td>6.974</td>
<td>.801</td>
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<tr>
<td></td>
<td>Inflation</td>
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<td>.891</td>
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<tr>
<td>Inflation</td>
<td>Defense spending</td>
<td>.939</td>
<td>.470</td>
<td>1.134</td>
<td>.999</td>
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<td></td>
<td>Inflation</td>
<td>2.721</td>
<td>.073</td>
<td></td>
<td></td>
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</table>

Note: Items in bold are statistically significant at or below the .10 level. Each equation has 14 degrees of freedom.

We turn first to the result for South Korea in Table 1. These results show that the relative size of South Korea’s armed forces and its rate of unemployment have not “Granger caused” each other. That is, these two time series have statistically been independent. Accordingly, South Korea’s historical experience does not indicate any form of a direct and simple causal relationship between these variables. It appears instead that, as in the case of Taiwan (see below), this country’s unemployment rate has been mainly affected by its trade successes and global economic conditions, and not by its defense burden. Parenthetically, the F test shows that the relative size of
South Korea's armed forces tends to be moderately influenced by its own past values (at the .11 significance level). This influence is generally negative, suggesting that there has been a trend of declining relative personnel size for Seoul's military establishment over the years.

Turning to the relationship between South Korea's military expenditures and inflation rate, we found that the latter variable has had little impact on the former variable. However, the former variable turns out to have had a moderately significant effect (at the .08 level) on the latter variable. It appears that increases in defense spending have tended to fuel inflationary pressure after a lag of three years. This finding is partly due to a combination of developments during the mid-1970s and early 1980s when the South Korean government made the “big push” to launch heavy and petrochemical industrialization, continuously raised its defense budget relative to the GNP, and was confronted with the sudden inflationary shocks introduced by the two energy crises. The timing of these events contributed to and perhaps exacerbated the inflationary impact of defense spending.

Moreover, the South Korean government adopted a somewhat different policy than did Taiwan for coping with the adversities brought on by the energy crises. Seoul relied heavily on foreign borrowing to sustain its domestic spending for industrialization and armament, as well as to pay for the country's import bills for more expensive fuels. In contrast, Taipei showed greater monetary restraint. It eschewed foreign debts, reduced credit supply, and generally practiced greater fiscal conservatism. As a consequence, Taiwan was better able to contain inflationary pressure than South Korea.

Turning to the results for Taiwan in Table 1, we notice that the time series for this country's military personnel and its unemployment rate have been “Granger independent”; neither variable has had a statistically significant impact on the other during the historical period being examined. Visual inspection of the unemployment trend for this island suggests that there has been a general decline in the percentage of unemployed people over the years, except for major upturns during the mid-1970s and early 1980s—the two periods of global recession brought on by the energy crises. Thus, it
would appear that fluctuations in the island’s employment performance were more due to external economic conditions than military conscription.

The lagged values of the relative size of Taiwan’s military budget have also not had a statistically significant impact on inflation as reflected by the consumer price index. At the same time, the lagged values of inflation have not had a statistically significant impact on the relative size of the island’s defense expenditures. Therefore, we again accept the null hypotheses in these cases, and conclude that there has been an absence of causal relationship between defense spending and inflation in either direction. However, we did find that Taiwan’s inflation series has been endogenously determined; that is, past inflation rates have influenced (negatively) current inflation rates (at the .07 significance level). Thus, the inflation series has a tendency of “dampening out” after the external shocks mentioned already.

The main conclusion of Granger independence between defense expenditure and inflation in Taiwan is congruent with our suspicion that this island’s inflation rate tends to be driven by external forces, most notably energy prices and trade surpluses. Its export expansion and the resultant foreign revenues tend in turn, to, expand domestic money supply, stimulate consumer demand, and encourage wage hikes (with the exhaustion of relatively unskilled workers in the labor pool as Taiwan’s exports move toward the “up-scale” end of foreign consumer markets). Defense burden seems to have played a rather insignificant role in this regard. Concomitantly, the government’s efforts to manage the inflationary pressure have tended to take place outside the defense sector, and to operate primarily through its control of money supply, its allocation of capital expenditures to large-scale state enterprises, and its manipulation of investment and savings incentives.

Conclusion

Several longitudinal analyses have shown that the relationships between defense burden and economic performance tend to be quite
variable across time and countries. For example, there have been
direct and reciprocal influences between defense spending and
inflation for France and West Germany in the recent past, whereas
no such relationships have existed for Britain and the United
States—probably because these countries were able to use their
status as "key currency" providers to alleviate inflationary pressure.20
This privilege of seignorage allowed Britain and the United States in
effect to export their domestic inflation by running balance-of-pay-
ments deficits.

Naturally, such an option is hardly available to relatively small
and trade-dependent countries such as South Korea and Taiwan.
Instead, the absence of a direct and simple causal relationship
between Taiwan's defense spending and inflation record reported in
this analysis may be more reasonably attributed to another consid-
eration discussed by several authors.21 Inflationary pressure has
been lessened in the Taiwanese case because defense spending
has come more at the expense of consumption than investment. In
fact, Taiwan has been able to achieve one of the highest capital
formation rates in the world. Its savings rate (as a percentage of
GNP) has ranged from 18.4 (in 1961) to 38.5 (in 1987).22 This is a
very high rate of savings by any standard.

In addition, in view of its disastrous past experience on the
Mainland, the Kuomintang government on Taiwan has consistently
practiced very conservative fiscal and monetary policies. It has
therefore avoided thus far the other two main sources—namely,
deficit spending and runaway money supply—of inflationary pres-
sure. This experience offers a rather sharp contrast to the US fiscal
tendency to have both "guns" and "butter." That is, US politicians are

19 See, for example, C. Nardinelli and G.B. Ackerman, "Defense Expenditures
and the Survival of American Capitalism: A Note," Armed Forces and Society,
Vol. 3 (1976), pp. 13-16; Rasler and Thompson, "Defense Burdens"; Starr et
al., "The Relationship between Defense Spending and Inflation."

20 Starr et al.

21 Starr et al.; and Schultze, "Economic Effects."

22 Council for Economic Planning and Development, Taiwan Statistical Data Book,
p. 56.
pressed by various interest groups and have a hard time saying “no” to all forms of government expenditure. Their concomitant reluctance to raise taxes, however, brings about rising deficit spending. Unable or unwilling to “bite the fiscal bullet,” official in Washington in effect opt for more total government spending (military as well as civilian) at the expense of mounting national debt and chronic bouts of inflation. In contrast, Taiwan’s bureaucratic authoritarian state has been in a stronger position to resist societal demands for heavier spending on public welfare. Indeed, this state’s ability to maintain relatively low inflation has been achieved in part because of its low levels of social overhead expenses. What the populace has benefited through a low inflationary environment has been purchased at the cost of low government support for social security, medical aid, and welfare disbursement. More recently, however, this situation has been challenged. Increasing affluence and democratization have brought pressure to bear on the government to undertake “easy money” policies and to raise its fiscal support for various social programs.

Finally and again in sharp contrast to the recent US experience, Taiwan’s trade surpluses have enabled it to compile huge foreign currency reserves. Paradoxically, the sheer size of these reserves has strained the island’s absorptive capacity. In the past few years, the accumulation of the resulting surplus capital has fueled a speculative boom in the stock market and real estate, thereby increasing inflationary pressure. Taiwan’s export success presents a double-edged sword in another respect. Its heavy dependence on foreign trade exposes it to adverse economic conditions abroad, and transforms it into a vulnerable importer of foreign inflation. As mentioned already, it was severely affected by the energy price hikes and the subsequent recessions in 1973–74 and 1979–80.

South Korea, of course, shares Taiwan’s outward economic outlook and has pursued a similar course of export-led growth. In that sense, South Korea has also had to cope with imported inflation (via higher energy prices) and higher unemployment due to the lethargic demand for its exports during periods of global economic downturn. Moreover, like Taiwan, South Korea’s strong developmental state has been relatively able to restrain public spending for social welfare
and to shift the burden of this spending to the private sector—although recent trends of rising social activism and political liberalization have created obvious pressure for the government to alter this traditional stance as well.

Unlike Taipei, however, Seoul seems to be much more committed to rapid heavy industrialization based on a close cooperation between the government and the giant industrial conglomerates. In contrast to Taiwan's economy which is characterized by many small and medium-size firms, South Korea's economy is dominated by a small number of chaebol. Also, unlike Taipei's proclivity to employ indirect means (especially through tax subsidies) to influence the economic incentives of entrepreneurs, Seoul has put more emphasis on direct governmental economic guidance, especially through the bureaucracy's control over credit allocation. Finally, as mentioned before, Seoul has been more willing to take on foreign loans and to raise public spending in order to sustain its programs of heavy industrialization and armament during periods of economic slowdown than has Taipei, which has been generally much more conservative in both its fiscal and monetary policies. For all these reasons, industrial concentration and inflationary pressure have been greater in South Korea than in Taiwan. Especially during the 1970s, rising military spending in combination with increases in other kinds of public as well as private consumption have stimulated higher inflation in South Korea due to both cost push and demand pull.

Based on the analysis conducted for this paper, there has not been any apparent direct causal relationship between defense manpower allocations on the one hand, and the unemployment rate on the other hand for either South Korea or Taiwan. These variables are "Granger independent" during the period examined, even though other analyses on the more advanced capitalist countries have suggested some cross-sectional and possibly quite unstable statistical associations between them.23 As discussed earlier, South

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23 For example, Lindgren, "Armament and Economic Performance"; and
Korea's and Taiwan's unemployment rates have been less affected by the defense burden than by the general health of their economies, which has in turn been mainly determined by the successes of their export industries. Exceptional trade performances have in the past been based on South Korea’s and Taiwan’s comparative advantage in possessing a relatively cheap, trained, and pliable work force. Thus, historically, these countries have not had to face labor shortage as a constraint on their economic growth. A relatively abundant labor pool has helped to avoid the otherwise negative effects of a large military establishment, whereas sustained economic growth based on rapid export expansion has removed the need to resort to conscription as a means of curtailing unemployment.

More recently, however, continued economic progress has increasingly led to a tighter labor market and substantial wage surges in both South Korea and Taiwan. In these developments, their defense burden seems not to have played an adverse role. In fact, for both countries the relative size of their armed forces has been undergoing a persistent pattern of decline. They have been taking fewer recruits from the civilian population, thereby enabling more young male adults to enter the civilian work force. However, the effects of this trend have not been sufficiently significant in our statistical tests.

Naturally, we need more statistical as well as substantive studies to confirm, illuminate, and expand beyond these and the other processes discussed in this paper. These studies should help to clarify whether and, if so, how much the results reported above have been affected by an incomplete theoretical model, a relatively short time series, and/or the rather unusual historical circumstances of South Korea’s and Taiwan’s defense and development experiences.

In conclusion, a number of observers have written about the possible deleterious impact of defense allocations on a country’s inflation and unemployment record, and about the tendency for officials to use defense allocations as a means for dealing with inflation and unemployment problems. We have failed to find evidence supporting such causal interpretations from the Taiwanese

Szymanski, "Military Spending and Economic Stagnation."
and, with one exception, the South Korean cases for the time period specified. Although “null” findings may appear disappointing, they serve the purpose of stimulating the search for critical variables that help to distinguish and explain divergent national policy performances. They also help to identify the scope conditions that undergird one’s theoretical formulations or empirical observations. This paper has sought to contribute to the empirical documentation of the variety of national experiences concerning the causal relationships between defense burden and economic performance by purposefully focusing on two rather atypical cases. The salient characteristics of South Korea’s and Taiwan’s political economies—such as their comparatively high saving rates, low public social overhead, substantial foreign reserves (and foreign aid during an earlier period), and rapid economic expansion based on export promotion—point to fruitful factors that future attempts to account for discrepant national successes in managing national defense and economy should consider.