Studies in conflict economics and economic growth

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Abstract

“Armanents and Economic Performance”. The literature on military expenditure (milex) is scrutinized with respect to five areas. Investment is reduced when milex increases. Most studies have found economic growth hindered by higher milex. No clear association between milex and employment is found. However, the same amount of other public expenditure creates more jobs. There is some evidence for milex as counter-cyclical instrument in the US. The result for studies if milex is used in electoral cycles in the US is contradictory. Disaggregated data are emphasized as a possible solution to get more definite results.

“The Economic Costs of Civil Wars”. The empirical studies of the economic costs of internal armed conflicts are divided into accounting and modelling methods. Cost is seen as the difference between the counterfactual production without conflict and the actual production. The average economic cost of internal armed conflict is a 3.7% yearly reduction of GDP. There are large differences between the estimates. One of the reasons for pursuing such studies is to give improved basis for more cost-effective post-conflict reconstruction, which is better achieved with an accounting method.

“War and Economic Performance – Different Data, Different Conclusions?” This article studies the importance of armed conflict for economic growth by replicating an earlier analysis with new data on conflicts. The basic model investigates how conflicts in 1960-1974 affect economic growth in 1975-1989. Koubi finds that “wars are conducive to higher growth”. Koubi’s finding is confirmed when different conflict data is used in a similar research design.

“The Role of External Factors in Economic Growth: A Comparative Analysis of Thailand and the Philippines 1950-1990”. Can differences in economic performance be explained by external factors? Both historical and regression analyses are utilised to answer the question. Three external factors are analysed: international trade, foreign direct investment, and external debt. In the regression analysis none of the external factors qualify as statistically significant. The historical analysis finds two external factors discriminating between the two countries. Thus, they might explain the differing growth rates of Thailand and the Philippines: Manufactured exports and external debt.

Keywords: economic growth, economic costs of war, conflict, civil war, military expenditure, Thailand, Philippines, armed conflict

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This dissertation consists of an introduction and four self-contained publications:


Publication 2. Lindgren, Göran “The Economic Costs of Civil Wars”. The first version of this article was prepared for the conference Making Peace Work in Helsinki 4-5 June 2004 arranged by The United Nations University – World Institute for Development Economics Research. The second version was presented to the Ninth Annual International Conference on Economics and Security, 23-25 June 2005 in Bristol arranged by University of the West of England, Bristol, Economists for Peace and Security (UK) and the University of Bristol, submitted to Conflict, security & Development.


Preface

This is the outcome from a long journey. It started with an interest in the question if the large resources used for military expenditures could be used for development. After teaching mostly economics in a folk high school, Nordens folkhögskola Biskops-Arnö, and development economics at Uppsala University I came to the Department of Peace and Conflict Research at the same university.

When I got an opportunity to concentrate on Southeast Asia I developed an interest for that region that I still have. The interactions between economics, politics, and conflicts is an intriguing puzzle that is especially interesting in the diverse Southeast Asian setting. My interest for in particularly Thailand and the Philippines is still strong.

Originally I hoped to be able to connect my interest for military expenditure, conflict economics and Southeast Asia in a study of how conflicts have affected the economic development in that region. The problematic data situation for doing this made me return to slightly more narrow economically centered questions where the interactions between conflicts and economic growth caught my attention and resulted in a study on the economic costs of civil wars. From that I continued to the question of the impact of armed conflict on economic growth. This dissertation is the result of all those studies.

From the very beginning of this exciting journey I have had the privilege of an encouraging and patient adviser. Peter Wallensteen has given good and useful advice on all the publications included here. He has been supportive even when I have allowed my interest for computers and the Internet to distract me into writing books and giving courses on that. Discussions with him have been intellectually challenging, useful and fun. Thank you, Peter!

As my basic training was as an economist I still like measurable units and tables and diagrams. To use them in the best way is not always easy. I am very grateful to my former statistics teacher professor Anders Ågren who patiently have read and commented on almost all of this volume. I am also grateful to arrangers and participants in seminars and conferences in Uppsala, Helsinki and Bristol.
A long journey takes a long time. My doctoral scholarship did not last that long. I am grateful to the Department of Peace and Conflict Research and its former head of department Kjell-Åke Nordquist, the Faculty of Social Science, the Department of Government, and the Personnel Administration Office, all of them of Uppsala University, for providing me with an opportunity to end this part of the journey with a doctoral dissertation.

Publication 4 on Thailand and the Philippines benefited greatly from journeys and seminar in Southeast Asia and many other places. I am grateful to all those I thanked in the preface of that publication and of course also to those institutions there mentioned who helped me to make that study possible.

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Introduction

All the world's a stage,
And all the men and women merely players;

William Shakespeare As You Like It.
Act II, scene VII.

Setting the stage

This dissertation has one lead actor: economic growth. But the leading actor is dependent and has to react to what other actors do. We concentrate on the interaction between economic growth and the more independent actors: military expenditure, armed conflicts and external factors. The drama is of crucial interest for large parts of the world population but the script is vague and contradictory. When the independent actors act the dependent actor does not react in a completely predictable way. The mechanisms for the interactions are unclear and not always consistent.

Some of the audience of this drama will say that the wrong actor is chosen for the lead part. Economic growth is not the main goal, economic development or peace should have been given that role. This might be true but in order to handle the complex interactions we have chosen economic growth since it is more consistently measured than other candidates.

In other words: The central research question is how economic growth is affected by military expenditure, external factors and conflicts.

The drama: Conflict economics and economic growth
Act one: Economic Growth and Military Expenditure – Armaments and Economic Performance
Act two: Economic Growth and Civil War – The Economic Costs of Civil Wars
Act three: Economic Growth and War – War and Economic Performance – Different Data, Different Conclusions?
Act one: Economic growth and military expenditure

Armaments and Economic Performance

In a recent article leading researchers in this field start by saying that “There is now a large body of empirical literature investigating the economic effects of military spending, with little consensus as to what these effects might be.” (Dunne, Smith & Willenbockel 2005, p. 449).

Publication 1 in this volume reviews how military expenditure (milex) affects economic growth and also investment, employment, business cycles and electoral cycles. To fully assess the economic effects of military spending considerable more research is needed. There has been some years since the first version of publication 1 and considerable more research has been carried out, also studying conditions after the Cold War, but the conclusions are still not very clear. The reasons for that are manifold. The primary reason is that this is very complex question with many factors and the results depend on models, research design, estimation method, specifications, operationalisation, data, time period, and case selection.

Reviewing the effects of milex on investment is the starting point since investment is one of the few robust positive influencing factors on economic growth. From the reviewed studies it is clear that there is a negative association between investment and higher milex. Since investment is the part of production that will augment the production capacity this is a disturbing finding. The reviewed studies all build on the statistical association of macroeconomic indicators. With other methods and disaggregated data another picture might emerge.

That lower economic growth is the consequence of reduced investment is not clearly shown. An early study by Benoit in 1973 found a positive correlation between milex and economic growth. His results have been questioned and the conclusion of the critiques is that there is no positive influence of milex on economic growth. A major weakness in most studies is that milex ought to have very different effects in an economy with excess capacity and in an economy with fully utilized resources.

Concentrating on employment the picture is also unclear. Higher milex can help against unemployment in some contexts but studies show that many other public expenditures can do the same thing. Studies indicate that other public spending will generate more employment for the same amount of money. In some political circumstances other types of spending might not be feasible.

Data on employment are less reliable than other economic data since they are not standardized to the same degree. Comparisons based on cross-sectional data is therefore less suitable for this question. In the same way as for economic growth the effects on employment by milex might vary substantially depending on where in the business cycle we study the effect. It is also quite clear that different sectors of the economy, various occupations and geographical regions might be affected in diverse ways. Both in the U.S.
and Sweden the geographical importance of military spending is obvious and politically significant.

Business cycles have been mentioned several times already. Can they be affected by millex? The central reason why millex can be stabilizing is the fact that they consist to a large part of military procurement, which means long-term planning and predictability. It is hard to establish if millex is intentionally changed in order to stabilise the economy. Studies tend to give support for this in the U.S. but there are no studies showing this in other countries.

A related question is if politicians use millex in the electoral cycle to give them better chances in elections. The studies done have differing conclusions. We here also have to deal with the difficult problem if changes in the economy that might be the result of millex actually were intended to do that or were coincidental results. The conclusion is that millex might be used for electoral purposes but the studies are few and concentrated on the U.S.

The studies reviewed all exhibit similar methodological problems. The data has been too general with a high level of aggregation. The phases in the business cycle have not been taken into account. The difference between cross-sectional and time-series data has not been given adequate attention.

The answer to this is still lacking. More disaggregated data according to which parts of millex that changes is still needed. Various parts of millex might have widely different characteristics regarding the size, origin and other specifications of procurement. For instance, expanding the air force has other implications than expanding the navy. All these factors make the need for more disaggregated data important.

The recently article by Dunne et al. (2005) argues that most of the defence economics literature have used one type of model (the so called Feder-Ram model) which is not the most appropriate in their view. They suggest other models which might yield better results (Dunne et al, 2005 p. 459).

Keeping in mind the difficulty of obtaining any data at all from countries in conflict and the many possible variations in samples, specifications, and time periods it is not surprising that the conclusions are contradictory.

After act one the actors leave the stage and the audience is still wondering what really is happening. Who wrote the script and what is in it?

Act two: Economic growth and civil war

The Economic Costs of Civil Wars

In this act we have fewer actors and a bit more straightforward script. The suspected villain in this act is civil war or internal armed conflict. The economic consequences of military expenditure were not altogether clear. One may think that the economic effects of internal armed conflict ought to be
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easier to assess. Yes, in general but the evidence shows considerable differences between various estimates.

The basic idea of all estimates in this area is that war causes a loss of production which can be defined as:

Counterfactual production without conflict – actual production with conflict = loss of production.

The both interesting and difficult with this is how to estimate this counterfactual production without conflict.

There are two main approaches to deal with this. The first is to make a list of all direct and indirect costs and add them up and declare that they together constitute the cost of conflict. In publication 2 this is called the accounting method. In theory it is easy but those who have tried have soon realised that in practice this is much harder. The direct costs have the problem of inadequate data but the indirect costs are even more problematic. Indirect costs are largely in the form of lost opportunities. Conflicts scare tourists and foreign investors away. How many tourists and how much investment there would have been without conflicts cannot be estimated without a number of assumptions. The list of costs have included some items based on theories about how the economy could have behaved without conflict.

We then approach the second method for estimating the costs, the modelling method. The models used have diverse assumptions and are more or less sophisticated. The simplest way is to extrapolate earlier trends and assume that everything would have continued as before if there had not been a conflict.

A more complex way is to use an economic model of the economy. An approach that has been used by several researchers is concentrating on military expenditure (milex) and how milex is affected by conflict. In armed conflict milex is usually increased substantially. The higher level of milex affects investment and we remember one of the few clear results in act one, that higher milex is negatively associated with investment. This is then used to compute what production could have been without conflict.

Another type of modelling estimates a linear regression model built on the economy before conflict. Doing this assumes that almost everything else in the economy would have been the same without conflict.

Some of the most detailed estimates of conflict cost deal with Sri Lanka. One of these estimations finds more than 40% of the costs of conflict emanating from lost foreign direct investment. To reach such a number they had to assume both how much investment there would have been without conflict and also how this would have contributed to economic growth. Especially the former of these assumptions is open to criticism since investment patterns also are influence by many other factors than conflict.

Comparing all the empirical studies trying to establish a cost of civil war expressed in percentage points of lost economic growth we find wide differ-
ences. Including all studies indicating a cost for specific countries we find a maximum of a loss of 90% of GDP for each year in conflict and a minimum of a positive gain of 0.3% of GDP for each year. If the studies with the most extreme values are omitted we have a maximum of 15.8% as cost. The average cost is then 3.7% of GDP. There is some difference according the method used where accounting methods give an average of 10.0% and modelling methods an average of 2.1%. The conflicts in these studies had an average length of 16.8 years, which means that the average costs for these conflicts were 61.7% of GDP for one year. A considerable cost and still most of the researchers state they have made conservative estimates so the actual costs are probably higher.

The varying results could more easily be understood if they concerned many different countries. But those countries which have been studied by several researchers also have dissimilar results. The estimated cost of conflict in Sri Lanka varies from 2.2% to 15.8% per year. Part of the variation is explained by the computation with diverse assumed rates of return for the lost incomes but with the same rate of return the span is still 2.2% to 11.3%. For Nicaragua the variation is larger and figures are reported from 0.8% to 90.0%. As in many other instances the choice of model, specification, and data can result in differing or contradictory conclusions.

What is then the most appropriate way of studying this particular drama, the interaction between civil war and economic growth? There is one major advantage of the accounting method: It can more easily be communicated to non-economists. If the aim of the exercise only is to find the most accurate estimate this aspect is of no importance. But if one reason for the estimations include a need for comparisons of cost with benefits of conflict prevention and another a requirement of data for more cost-effective post-conflict reconstruction this changes the picture. Both these latter purposes can be better fulfilled with an accounting method because it gives a more factual impression. Politicians, bureaucrats and others will see this as more solidly based estimates than those based on econometric equations.

So the second act ends with an appeal for the use of more bookkeeping methods for assessing the costs of internal armed conflicts. This drama has certainly more human tragedy and suffering that is not included very well in this way of estimations.

Act three: Economic growth and war

War and Economic Performance – Different Data, Different Conclusions?

It seemed that the consequences of civil war were quite damaging for the suffering countries even when only rather narrow economic aspects were considered. A more restricted ensemble is chosen for the third act. We study only war and its effects on economic growth. Remembering that the details
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of operationalisation are crucial in explaining the diverging conclusions and large discrepancies in numerical estimates we try to replicate an intriguing attempt to view the data on economic growth and conflicts in a more economic historical way. We follow Vally Koubi (2005) who takes the period 1960-89 and divides it into two parts of equal length, 1960-1974 and 1975-89. Thereby we have two time periods with distinct differentiation but still within the Cold War period. This might give us insights into the possible variations in economic and political mechanisms in periods with similar global conditions.

The most interesting aspect of Koubi’s work is the way she uses the two periods to have a logically convincing method of distinguishing the effects of war in the first period from the influence of conflicts in the second by excluding countries that were in war in both periods.

We tried to replicate her estimation with a similar method and largely the same data except for conflict. Instead of the widely used conflict data from the Correlates of War (COW) project we took conflict data from the more comprehensive and more recent dataset from the Uppsala Conflict Data Program (UCDP).

To obtain the same time period as Koubi the data from UCDP were only partially used. All years before 1960 and after 1989 were omitted. We started with 1808 cases of conflict between 1946 and 2004 and used 973 of them. The four types of conflict were aggregated into two groups: External (including extrasystemic and interstate armed conflict) and internal (including internal and internationalized armed conflict).

The conflict intensity scores were translated into 0, 1, 2 and 3. Each case recorded by UCDP means one year with conflict in one conflict dyad. Both 15 year periods together had conflicts in 77 locations (countries). For each period all conflict scores within each type of conflict were combined. If there were more than one internal conflict in one location in one year the one with the highest intensity scores were kept and the others omitted.

Koubi found that war severity measured in battle deaths in period one had a positive influence on economic growth in period two. She explained this with the theories of Organski & Kugler (1977) and Olson (1982) where resource destruction leading to rebuilding give positive effects on economic growth because of more technologically advanced production and the disruption of hampering structures of vested interests. She also found a positive sign of the coefficient for war duration measured in war months. This was of statistically weaker significance.

Replicating her estimations of linear regression models with the same economic data but with UCDP instead of COW data for conflicts we failed to confirm her findings when using the logically preferable specification of the estimation with countries in conflict in the second period excluded from sample. This was tested with all conflicts in 1960-74 taken together and also divided into external and internal conflicts.
We could however support Koubi’s findings when a similar but logically less satisfying specification was done. If all countries were included we found a positive sign for the combined conflict intensity score for all conflicts in 1960-74 on economic growth in 1975-89. This was statistically significant on the 1 percent level.

When estimations were done with internal conflicts we found also a positive influence of the intensity score on economic growth in the following period. This was even more statistically significant with a p-value of 0.000, meaning a very low probability to obtain this result by chance.

In all our estimation procedures we included also the standard economic variables that also Koubi included. Based on common practice among many economists initial income, investment share of production and educational level were included. In the same manner as for Koubi they were statistically significant with expected signs.

The intuitive impression that armed conflicts only have economically detrimental effects was not supported by Koubi. Her results rather supported the “war renewal” than the “war ruin” schools of thought. Our replication also supported this but only when using a similar research design.

The audience to this drama have to leave also this act with a feeling of concern for how this complicated script is constructed. There might be other actors not named in the programme influencing the play.

Act four: Economic growth and external factors

The Role of External Factors in Economic Growth: A Comparative Analysis of Thailand and the Philippines 1950-1990

In this act we find some actors appearing again. The lead role of economic growth is of course there but some of the minor actors with unquestionable tasks are also there. Investment and work force are hard to leave out since their roles are recognized as crucial.

Three new actors appear: Trade (in the role of exports of manufactured goods), foreign investment (as flows of foreign direct investment) and external debt.

First we discuss theories of economic growth and conclude that domestic investment and growth of workforce are undisputable candidates to be included in also this act. We remember that they have had prominent positions in the earlier acts as well.

The stage for this last act is not global as in earlier acts. We limit the investigation to Thailand and the Philippines. This give us an opportunity to use both an historical analysis and statistical methods. The historical approach would not have been possible with a global view and it allows a more qualitative and probing method where the particular context in a specific country more easily can be utilized in the analysis.
The limits in the first act are not only geographical, we also investigate the period 1950-1990. In an epilogue we discuss what happened after this last act.

The question in this act is not only the relation between external factors and economic growth in general. We want to know if they can explain a situation where Thailand from a similar starting point was able not only to catch up but substantially pass the Philippines in size of GDP. In 1990 the GDP per capita in Thailand was more than twice that of the Philippines.

First we examine trade. Trade is seen by many as an engine of growth. Undoubtedly the benefits of specialization and economies of scale can favour economic growth. In both Thailand and the Philippines we observe strongly expanded trade volumes. Both countries have managed to change both their commodity and partner concentration so this is not enough to explain the differing growth rates.

Both countries have seen export-based industrialization as a rod to enlarged independence and growth. They have both been successful in increasing their exports of manufactured goods and diminishing the share of raw materials. The major difference between them is that Thailand had a dramatic upsurge of exports after 1985 which might be a factor explaining the faster economic growth in Thailand.

They have both acquired a stronger position in the global trading system than they had before. This achievement have been obtained by a policy for greater integration in the global marketplace. The better possibilities to exploit the comparative advantages of world trade also means a greater dependence of the system as a whole: more opportunities and more risks.

We have seen that investment is not only theoretically but also empirically an important positive factor for economic growth. It seems then natural to welcome foreign investment. In Thailand and the Philippines the magnitude of foreign direct investment for the studied period is small compared to total capital formation. The variation between the countries in this respect is small and cannot explain the differing growth rates.

Many countries have large external debt and this is recognized as a serious obstacle to economic growth. The similar magnitude of external debt is not the most important factor. More important is the ability to service the debt. Many countries, including Sweden, have had large external debts for long periods without problems. This ability is often measured as the ratio of debt to export revenues.

The problem for the Philippines is that the debt service ratio was higher than in Thailand and also accompanied by stagnation and decline in GDP per capita. Traditional Philippine exports like sugar and coconut oil experienced unfavourable markets. The external debt infringed on the space for independent economic policy decisions. External borrowing in the Philippines were used to avoid politically unpopular alternatives and to invest in economically dubious projects. The large debt in Thailand did not hinder eco-
nomic growth in this period. External debt is thus a possible explanation for the difference in growth rates between the countries.

After an historical analysis with many tables and diagrams a regression analysis was also executed. The dependent variable was GDP per capita in US$ in PPP-adjusted prices and the independent variables were the three historically analysed external factors: export of manufactured goods; foreign direct investment; and external debt. Two internal factors were also included, domestic investment and size of working population. Similar to the results when exploring economic growth and war we find that investment and employment has statistically significant positive influence on economic growth. The results from the regression analysis gave no clear indication that external factors can explain the difference in economic growth rates between the two countries.

Since regression analysis gave no clear indication we use the historical analysis to draw a conclusion. There are two external factors that might explain the difference in economic growth rates for Thailand and the Philippines. The export of manufactured goods and the external debt.

Epilogue
Since publication 4 was written and presented in 1995 the drama of economic growth has experienced a spectacular turn of events. At that time most of the discussion centred on how other countries could learn form the growth experience in Southeast and East Asia. In 1997 all this changed when the financial crisis hit Thailand and the rest of Southeast Asia.

Since then we have seen a lot of explanations of why and how the crisis occurred. A common account of the Thai crises is that too much off-shore borrowing was done during the 1990s. The loans were used for private investments, partly for real estate (Lauridsen 1998, p. 1576). The rapid liberalisation of short-term financial movements had severe consequences when the Baht exchange rate fell (Dixon 2001, p. 59).

Indonesia, Thailand and Malaysia were the worst affected and Singapore and the Philippines escaped some effects of the crisis. The impact varied considerably across countries. The causes for the crisis have been intensively debated with various conclusions. An observer with long experience of Southeast Asia argues that the crisis “was due to a number of causes, often interacting with one another ... domestic policy weaknesses interacted with external factors” (Booth 2001, p. 20f). The roots of the Asian crisis are political and institutional as well as economic (Bhopal & Hitchcock 2001, p. 180).

The integration into the world market proved to be not only beneficial for growth but also dangerous in times of turbulence. The drama continues...
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Introduction


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