Poverty, Armed Conflict and Financial Instability

Michelle C Baddeley[1]

1 December 2008

Abstract

Civil conflict has far-reaching effects on underdeveloped economies. Whilst military expenditure may be diverted into projects that encourage human capital accumulation and the construction of essential infrastructure, conflict destroys institutions and infrastructure generating financial instability and exacerbating stagnation and underdevelopment. Vicious circles emerge as socioeconomic instability contributes to ongoing civil unrest and financial instability, in turn increasing the risk of future conflicts. In this paper, the relationships between conflict, finance and poverty are analysed by exploring the hypothesis that poverty and conflict are magnified by financial factors. Interactions between conflict, absolute poverty and finance are estimated using least squares and binary dependent variable techniques adapted to capture simultaneity, with heterogeneity captured using fixed effects techniques. The results suggest a strongly significant positive relationship between poverty and conflict; the risk of war is positively associated with financial factors suggesting that financial resources will influence poverty indirectly by increasing risks of conflict.

Key Words: Civil conflict, absolute poverty, development finance

JEL Classifications: O15, O43, P46

[*]Author contact details: Gonville and Caius College, Cambridge CB2 1TA. Email: mb150@cam.ac.uk

POVERTY, ARMED CONFLICT AND FINANCIAL INSTABILITY

1   INTRODUCTION

In assessing the impacts of military institutions and armed conflict on economic and financial development, a range of questions must be considered. Do military institutions and/or conflict cause poverty and/or does the poverty cause conflict by creating incentives to sustain a strong military presence? Addison, Le Billon and Murshed (2001) and Wallensteen and Sollenberg (2000) observe that almost all the conflicts in the least developed nations during the 1990s were civil wars suggesting that domestic socio-political issues are crucial. The poorest countries confront problems of armed conflict most closely and so the military as an institution does play a key role in the poorest countries. It is important to distinguish between the impacts of military institutions during peacetime and during wartime. Any well-organised and powerful public institution can have positive impacts in countries with otherwise underdeveloped institutions, at least in peacetime, but the real issue is not the scale and power of military institutions but the activities with which they are engaged.

The impacts of military institutions engaged in peaceful activities versus those involved in armed conflict will differ according to the level of development of a country and according to social and institutional factors. Military institutions may also be crucial catalysts in building essential infrastructure and developing human skills; the military can play a role in education, building roads/hospitals and other forms of infrastructure – with broadly based socio-economic benefits. In addition, during peacetime, the military may promote economic growth and development by boosting government expenditure and aggregate demand (Benoit 1972, 1978). However, the extent of the beneficial effects will be dependent on the degree of security threat and military expenditures will have positive output effects when threats are high but negative output effects when threats are low (Dunne, Smith and Willenbockel 2005).

However, these positive impacts of military activities will be overwhelmed by the negative impacts of military institutions' actions when engaged in armed conflict because conflict destroys scarce but essential institutions within poor countries, including financial institutions. War may temporarily diminish the usefulness of natural resources and accumulated improvements generating a loss of income absorbing current savings and depleting consumption, shifting the relative values of capital goods, money and consumable goods in equilibrium (Keynes, 1914, p.484).[2]

During civil wars, the ratio of military expenditure to GDP rises sharply and maintaining high levels of military expenditure may crowd out social expenditure exacerbating stagnation and continuing underdevelopment. Knight, Loayza and Villaneuva (1996) and Collier and Hoeffler (2006) assert that, even during peacetime, military expenditure may reduce growth. Collier (1995) observes that 'conflicts weaken or incapacitate institutions that govern and provide services to facilitate transactions at a low cost for sustained economic development of a civil society, and encourage opportunistic behaviour'. Also, many of the human costs of war are indirect costs, not just the costs associated with physical violence –immediate human costs and long-term development costs reflect the loss of entitlements, particularly amongst vulnerable groups (Stewart and Fitzgerald, 2000, pp. 6-7). Conflict also generates distributional changes intensifying horizontal inequality across different ethnic/ religious / tribal groups as well as vertical inequality down through different income groups. (Stewart and Fitzgerald, 2000, pp. 6-7)

This paper analyses some of these issues by developing a theoretical and empirical analysis of the military institution's role during armed conflicts. It explores the complex interactions between armed conflict, poverty / underdevelopment and financial instability by testing the hypotheses that financial instability exacerbates poverty, increasing a country's

---

[2] See Keynes (1940) and Fitzgerald (1997) for further detail on Keynes's analyses of the economic implications of war.

vulnerability to conflict with continuing underdevelopment and stagnation feeding back into an increased probabilities of conflicts in the future. These hypotheses are developed with a theoretical framework and then tested using a combination of econometric techniques.

The paper continues as follows: in Section 2 the relationships between war and finance are explored and in Section 3 these are set in the context of poorer countries via an analysis of the feedback effects between conflict, financial factors and underdevelopment. In Section 4, a model is developed which uses the reaction functions of incumbent governments and insurgent groups to identify the interactions between conflict, poverty and finance. This model is estimated using a combination of techniques designed to control for heterogeneity and simultaneity in the context of limited dependent variable estimations. The conclusions and policy implications are presented in Section 5.

2   WAR AND FINANCE

In any country, developed or developing, war will have some crucial impacts on the macro economy. Keynes argues that war affects the macroeconomy in two ways: by affecting the state of finance and by affecting the state of consumption. The collapse of financial markets destroys paper value generating the *appearance* of a widespread loss in accumulated capital. There is a shift towards consumption during war-time and this reflects the urgency of needs for present goods to reduce distress and poverty in the present and near future, eroding the value of capital goods. "Not even the Prussian army can eat rails and embankments or clothe itself in bricks and mortar" (Keynes, 1914, p.486). But this does not mean that "we are ruined for life" though wars do lead to changes in the distribution of wealth. Essentially war raises the discount rate reflecting shifts in people's inter-temporal preferences (*ibid*, p. 486).

War may necessitate the sale of real assets to finance a war effort because government liabilities become difficult if not impossible to sell and so liquidity preferences will be

shifting and unstable (Collier and Gunning, 1995). The pessimism and uncertainty that emerge in times of conflict will also contribute to financial instability. These forces will complicate monetary policy; it is difficult to target money supply when money demand is erratic (Collier and Gunning, 1995). War also has negative impacts on business confidence and pessimism and uncertainty will be magnified within a highly liquid financial sector. Collier & Gunning (1995) explore the interactions between conflict and propensities to hold money in describing the process by which investors save profits in liquid form during wars, switching them to fixed investment projects in peace-time. Historically, some wars have been periods of financial innovation (Kindleberger, 1993). The need to finance wars may introduce institutional change as states increase control over banking to generate funds for war efforts. There may be compulsory purchases of government debt and nationalization of financial institutions, creating periods of financial innovation, e.g. in Angola and Croatia (Addison *et al.*, 2001). But financial innovations have also made it easier to work around the fact that domestic infrastructure may be weak; globalisation has encouraged war financing even in the poorest countries and this operates on an international scale, making it harder to track financial flows.

Armed conflict does not always contribute to financial instability. Magnusson and Wydick (2001) discuss efficiency of markets in 8 largest African stock markets in comparison with emerging stock markets in South East Asia and Latin America; their results suggest that emerging African markets are no less efficient than other emerging markets. However, one of the key problems emerging from repeated conflict in developing countries is the financing constraint. The availability of external and internal finance determines length and outcome of wars and conflicts (Addison, Le Billon and Murshed, 2001). Addison *et al* (2001) argue that, in funding wars, external capital inflows in the form of legitimate diasporas (e.g. payroll tax on Kosofvar Albanians working in Germany, also Tamil Tigers and in

Eritrea) are crucial but moving money internationally requires knowledge and, sometimes illegal, technical assistance (e.g. from organised crime). Systems can be designed to circumvent exchange controls on international transfers – e.g. Hawala systems in South Asia (Addison *et al*, 2001, p. 3).

Natural resources will play a crucial role when internal sources of war finance are limited. In terms of commercial borrowing, it is often based on mortgaging of future returns from resource wealth, tapping into influential international private interests. For example, Angolan war funding was on the basis of oil reserves and diamonds, which led to 95% of Angola's oil share being used in debt servicing of loans to finance arms and mercenaries. Similar patterns were observed in Somalia and Zaire. This sort of expenditure deflects finances away from social uses, promoting dualism and narrow development rather than broad based development. The development of national and sub-national currencies is crucial because currencies provide a means of raising revenue via seigniorage (e.g. in Eritrea). These devices may be used at unofficial level as well with rebel groups running financial systems and informal currencies in occupied areas, sometimes instigated under duress. (Addison *et al*. 2001, Collier 2008).

Collier and Hoeffler (2006) analyse some of the interactions between conflict and finance in a game theoretic context, arguing that dynamic inconsistency problems affect the interactions between military spending and repeated conflict / fragile peacetimes.[3] They argue that military expenditure can be used as a signal by governments or a screen by insurgents to indicate a commitment to peace agreements - with a low level of post-conflict spending signalling intentions to honour peace agreements and a high level of post-conflict spending signalling intentions to renege on peace agreements. Governments have incentives to renege

---

[3] This type of game will not necessarily take place in a world of rational agents. Collier and Hoeffler (2006) cite Hirschleifer (2001), who notes the problem of different and imperfect perceptions of military success with a tendency for over-optimism in perception of military prospects.

on peace agreements because the military capability and therefore bargaining power of rebel groups decays during peacetime; this means that their threat diminishes over time and the resultant incentives to renege by the incumbent government can contribute to the fragility of peace settlements (Collier and Hoeffler, 2006, p. 6).

There are however incentives not to renege, for example the fear of losing access to foreign aid. So a separating equilibrium emerges. On one hand, peace-loving governments honour peace agreements, signalling their intention to do so by lowering military expenditure, reducing the probability of further conflict. On the other hand, governments that want to pursue a reneging strategy will maintain military spending at a high level in the immediate post-conflict stage and. because this signals a government's intention to renege, this will increase the probability of further conflict (Collier and Hoeffler, 2004, pp. 7-8). The selection of strategies is is determined by the relative benefits and costs of reversion to conflict (Collier and Hoeffler, 2004, pp. 8-10). High levels of military spending are associated with increased risk of renewed conflict.

3   POVERTY, CONFLICT AND FINANCIAL INSTABILITY

How does the relationship between conflict and finance affect poverty and underdevelopment? Conflict generates financial strains particularly if it is associated with an increase in military expenditure and arms imports. In theories of greed and grievance, poverty and discrimination emerge in dual economies as elites seek to protect their interests and quash protest using violent techniques. Elites often control financial systems and state banking will therefore evolve to finance private accumulation, particularly in agrarian economies, exacerbating economic inequality and discrimination.

Problems of regulatory capture are common in conflict ridden countries; the democratic institutions needed to protect impartial financial regulation do not exist. So, with

the exception of Korea, state control of financial systems in conflict prone countries has been poor (Addison *et al*, 2001). Controls on financial systems, such as ceilings on interest rates (for example, in Angola and Mozambique) operate to favour certain groups. Powerful politicians often own the private banks - for example in Liberia, Charles Taylor owned the Bong Bank. Bank credit may be directed towards enterprises run by political elites generating an increased risk of bad loans. Private banks may also be associated with criminal activities, e.g. in Cambodia only 12 of 33 private banks were legitimate; all others were involved in criminal activities.

The financial system is used by elites to leverage existing wealth – e.g. coffee economies of Central America – fostering recurrent insurrections reflecting this nexus between oppression and financial control by elites (Addison et al, 2001). Furthermore, military spending for personal gain is often financed by sale of public assets (Collier and Gunning, 1995). Rent seeking activities may exist, for example the Bank of Cambodia encouraged the development of many banks in order to gather the fees and fines associated with the licensing of a bank (Addison et al, 2001).

Weak financial regulation in underdeveloped economics promotes wealth accumulation via fraud, destroying savings and living standards and sparking conflict; for example, during the 1997 collapse of Albanian pyramid schemes; the central bank was unable to act given the political connections of pyramid bankers; as deposits slowed the banks were unable to meet their commitments and the resultant banking collapse sent the country into a downward spiral of poverty and conflict (Jarvis, 1999). Also - in Indonesia, the 1997 financial crisis emerged in the context of widespread crony capitalism as elite groups sought to protect their own political interests in the face of financial instability, sparking widespread violence against ethnic Chinese, exacerbating regional conflicts (Addison *et al.*, 2001). Financial instability is exacerbated by corruption and cronyism because if financial systems

evolve in an unsustainable way then banking crises have the potential to generate massive shocks. Resolving financial shocks in conflict prone countries can involve large fiscal costs, taking money away from reconstruction and destabilising already fragile societies and economies. Thus the financing of military expenditure has negative socio-economic impacts in conflict-prone economies.

The use of violent techniques to protect vested interests requires military spending, particularly on arms imports and this will have implications for foreign exchange reserves. Military expenditure may also 'crowd out' social expenditures that could be used to promote broadly based development. If arms are imported then less foreign exchange is available to fund the imports needed for investment and infrastructure projects. The import of arms to enable the protection of the interests of particular elite groups may create external financing pressures with implications for financial stability and the exchange rate.

Nagarajan (1998) argues that conflict affects the financial sectors of developing countries at many levels: at the macroeconomic level by disrupting general economic confidence, at the 'meso' level by destroying key financial institutions and at the microeconomic level by disrupting the social relationships essential to financial transactions in developing economies. Armed conflict will destabilise the evolution of fragile and rudimentary financial structures, contributing to significant financial instability in developing countries.

Addison et al (2001) also argue that, in terms of the financing of conflict, military expenditures are usually high, not only because of demobilisation costs but also as a deterrent to further rebel activity. On the other hand, government revenues tend to be low during conflict. The large fiscal deficits that emerge coincide with low levels of spending on social and economic infrastructure; following the conflict in Mozambique, fiscal deficits were between 10-20% of GDP. Given these fiscal deficits, the market for public debt becomes

crucial but capital markets in post-conflict underdeveloped countries tend to be thin because of financial repression. For this reason, effective financial reform is critical to the effective resurrecting of domestic capital markets in post conflict stages.

These complex interactions between civil conflict and financial factors suggest that a number of feedback effects will operate to ensure that financial instability in conflict prone underdeveloped countries creates further problems of poverty and underdevelopment. If financial problems are severe enough to necessitate IMF involvement, then the financial stringency associated with IMF conditionality may exacerbate dualism within underdeveloped countries: the poorest groups will suffer the most from fiscal and monetary tightening – particularly if elites are making military rather than social expenditure their first priority. Thus poverty and underdevelopment are the outcome of the vicious cycle between social and political unrest, armed conflict and financial instability.

Political institutions will also play a key role. The proportion of military expenditure to GDP teds to be lower in democracies (Collier and Hoeffler, 2004). Also, Addison *et al.* (2001) argue that financial reforms are more likely to be effective in democratised systems and Garfinkel (2001) argues that the political competition that characterises democracies introduces a negative bias into nations' military spending patterns and, given a strategic approach to military policy, this reduces other nations' incentives to arm as well. Thus Garfinkel argues that democratic institutions are a pre-commitment mechanism reducing the severity of conflicts and releasing resources for consumption.

Together, corruption, financial instability and ineffective financial regulation fuel narrow development. Addison et al (2001) conclude that armed conflict, including its financing, exacerbates these economic, political and social problems. There are key links between conflict, finance and narrow development - contributing to dualism and extreme inequality, particularly horizontal inequality. Whilst narrow development is not the only

cause of conflict and conflict is not the only cause of narrow development, financial instability creates social problems and these are a catalyst to further conflict. On the other hand, growth reduces risk of conflict by raising levels of income (Collier 2008, Collier and Hoeffler 2006, 2004, 2002). Financial instability may be exacerbated by globalisation because globalisation eases the transfer of money and technological innovations have overcome some of the problems with otherwise deficient infrastructure in poor countries. Financial deregulation and globalisation have enabled the financing of armed conflict because the removal of capital controls and the reduction in the financial information required about borrowers has enabled easier and quicker transfer of money to fund armed conflict (Fitzgerald, 2003, p. 3).[4] Conflict creates financial instability creates conflict.

These forces all contribute to vicious cycles between conflict, poverty and finance. As illustrated in Fig. 1, financial instability leads to poverty, poverty leads to war and war leads to poverty, war leads to financial instability. The poor are excluded from decisions affecting these feedbacks loops because they do not control the financial system. As their control over the situation is limited, their only recourse is conflict.

---

[4] Also see Fitzgerald (2003) for a discussion of global financial information about conflict funding and the problems and solutions associated with and international regulation of conflict funding, particularly in the context of the funding of self-determination movements.
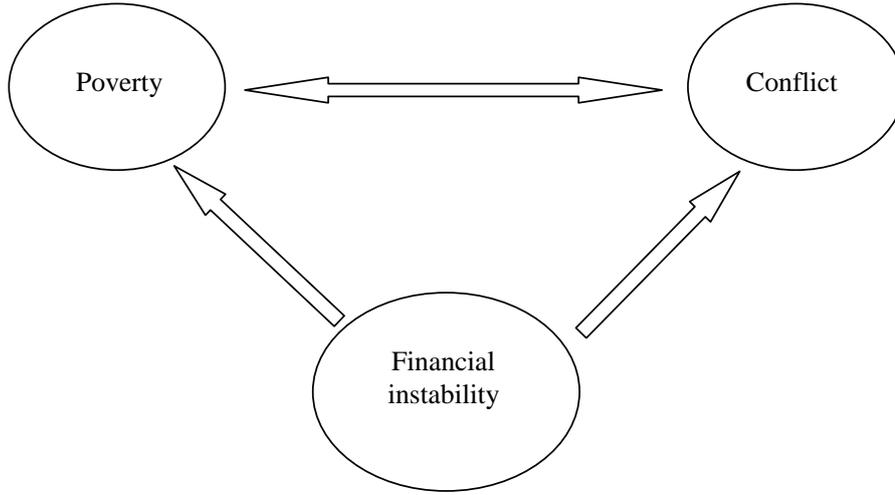
Fig. 1: Vicious Circles of Poverty, Conflict and Financial Instability

4 A MODEL OF CONFLICT, POVERTY AND FINANCE

A model of strategic interactions between government and insurgents can be used to capture the essence of the feedback effects between civil conflict, poverty and finance as outlined in the previous section. Assume that the government is concerned about social welfare but in the context of a dualistic economy, the utility of elite groups and vested interests is prioritised over the utility of poorer groups; the government is not a benign Rawlsian government. Assuming that there are n agents in the vested interest group each with utility u_i assigned the weight a_v, and m poor agents in the excluded group whose utility u_k is weighted a_p, then the social welfare function will take the following modified Benthamite form:

$$W(u_1^v,...,u_n^v,u_1^p...u_m^p) = a^v \sum_{i=1}^{n} u_i + a^p \sum_{k=1}^{m} u_k \qquad (1)$$

where $a^v > a^p$

The government will maximise this subject to the financing constraints and this will be determined by the availability of finance in the economy as a whole. Assuming a fixed exchange rate and underdeveloped financial institutions the main source of finance will be from foreign exchange. It is important to note that, in some economies, a major source of foreign exchange will come from natural resource sales. Different groups within an economy will have differing abilities to tap into foreign exchange from this source. The supply of foreign exchange will have to be divided between private demands and public demands, with public demands for foreign exchange comprising demands on foreign exchange to build public infrastructure for peacetime and demands of foreign exchange to fund military activities, in particular the import of arms. Thus the total supply of financial resources is divided as follows:

$$f_T = f_S + f_M + f_P = 1 \qquad\qquad (2)$$

where f_S is the proportion of foreign exchange going to public non-military projects, f_M is the proportion going to fund military endeavours e.g. arms imports and f_P is the proportion going to the private sector. With less public sector money available to fund projects that will improve human capital accumulation (viz. health and education spending) the potential for development will be eroded. Assuming that f_P is constant, absolute poverty will be increasing when $f_S < f_S^*$, and $f_M > f_M^*$, where f_S^* and f_M^* are threshold rates of use of foreign exchange for social and military purposes.

Assuming that civil conflicts emerge from a dispute between an incumbent government and an insurgent group(s) and so the interests of insurgents are not captured in the government's social welfare function[5], the insurgent group will maximise a utility

---

[5] Note that this implies that the elements in the government's social welfare function will be changing as citizens join insurgent groups; assuming that the new recruits to insurgent groups will be the poorest, excluded members of the society the utility of the poorer citizens will have less and less value in the government's social welfare function.

function in which differing weights assigned to the utility of each member of the insurgent group:

$$U_G = \sum_{g=1}^{G} a_g u_g \tag{3}$$

In maximising this objective function, insurgent groups face two major constraints: availability of finance and a labour constraint – the latter being determined by the number of people prepared to join their group.

The labour constraint faced by insurgent groups reflects scarcity of labour available for recruitment to insurgent groups; given cheap labour supplies in impoverished countries this will reflect the quantity of available labour rather than the real wage and the supply of new recruits will increase as poverty increases because fewer alternative employment opportunities will be available as absolute poverty and underdevelopment increase. Recruits to insurgent groups will be seeking economic and financial rewards e.g. from the sale of diamonds, oil, drugs etc. (Collier 2008). As the profits from rebel action increase the supply of new recruits (L) available to the insurgent group will increase. Insurgent groups will provoke armed conflict when they have a sufficient number of recruits i.e. when L>L* with the threshold labour level L* determined by p (the state of poverty) and f_r (the potential financial rewards from rebel action e.g. from natural resource sales). If poverty exceeds a threshold level and if financial rewards exceed a threshold level, i.e. if $p>p*$ and $f_r > f_r^*$, then $L>L*$ and the insurgent group will have the critical mass need to provoke a conflict.

The interactions between the behaviours of an incumbent government and an insurgent group determine the states of war and poverty with probability of war and extent of poverty determined at the point of intersection between the reaction functions of the incumbent government and insurgent group. At this point the probability of war can be expressed as a non-linear function:

$$\Pr(W = 1 \,|\, [w > w^*])\tag{4}$$

where $W = 1\,|\,[w > w^*]$ is an indicator function taking the value 1 if $w>w^*$ and 0 otherwise, and w is a latent variable reflecting the composite influences of financial resources and absolute poverty. Assuming that shares of financial resources as outlined in equation (2) are constant:

$$w_{i,t} = \beta_0 + \beta_1 f^s_{i,t} + \beta_2 p_{i,t} + \varepsilon_{i,t}\tag{5}$$

Absolute poverty (p) is determined as follows:

$$p = F(W, f_s < f^*_s, z_j)\tag{6}$$

where z_j is a vector of exogenous variables affecting absolute poverty, including factors such as geographical features, degree of economic diversification, income growth, size of the economy, infrastructure and institutional variables. Armed conflict will affect poverty in two ways: first by diverting resources, including foreign exchange, away from social expenditure on health and education projects (both of which would foster the accumulation of human capital) and secondly, by destroying essential infrastructure and institutions.

Previous empirical studies have explored some of these relationships between risk of war and socio-economic variables, identifying a positive relationship between military expenditure and the risk of civil war. Collier and Hoeffler (1998) find that initial income and population size, ethno-linguistic fractionalisation and natural resource wealth are significant determinants of the severity and duration of civil wars. In later studies, using data for 55 civil wars from 1960-99, they estimate the risk of reversion to conflict and find that growth, political/social/ethnic factors, primary resource abundance, external threat, years of peace, population and geographic dispersion and military expenditure affect the probability of

conflict Collier and Hoeffler (2004, 2006). Collier (2008) argues that the risk of civil conflict is affected by levels and growth in income as well as by resource spoils. Civil conflict, particularly in very underdeveloped economies with large illiterate population, is not necessarily about political activism in the face of legitimate grievances about social and economic inequities. It is particularly common in underdeveloped countries because growth is stagnant, levels of income are low and natural resources such as diamonds, oil and drug crops provide one of the few economic opportunities available to impoverished groups. Civil conflict is therefore as much about poverty and stagnant growth as it is about rebellious political action (Collier 2008).

Whilst previous analyses identify a role for many socioeconomic factors they neglect the impact of financial factors. An innovation in this paper is the explicit introduction of financial variables into the models and these previous empirical studies are developed by introducing foreign exchange flows as a proxy for resource flows, estimating equations (4) to (6) using the data sources for W, f and p outlined in Table 1.

TABLE 1: Data Sources

Code	*Variable*	*Definition*	*Source*
W	War	= 1 if country has experienced armed conflict, =0 otherwise	Uppsala Conflict Database http://www.pcr.uu.se/gpdatabase/
P	Poverty	Poverty gap ratio (based on $1 a day)[6]	UN Data http:data.un.org
F	Financial resources	Foreign exchange reserves (logged)	UN Data http:data.un.org

---

[6] The poverty gap ratio is calculated using the Sen-Shorrocks index - constructed as the weighted sum of the poverty gaps across a population (Sen 1976, Shorrocks 1995).

For the econometric methodology used, the probability of war is estimated using the EViews 6.0 for binary estimation using maximum likelihood estimation (quadratic hill climbing method). This is combined with panel fixed effects estimation techniques to control for heterogeneity across the sample of countries. In recognition of the fact that least squares procedures, e.g. two stage least squares (2SLS), may not be appropriate to limited dependent variable estimation the simultaneity in the binary dependent variable estimation of the war variable is captured adopting a control function approach by incorporating all exogenous variables that might either directly or indirectly (i.e. via poverty) affect susceptibility to war (Greene 2008, pp. 813-7, Blundell and Powell 2004). Space limitations preclude a regional analysis to capture heterogeneity at a more disaggregated level and it is important to note that national patterns may obscure many inter-regional differences. In India for example, the conflicts involving Pakistan and Kashmir will have had different impacts on the different Indian states depending on their proximity to the conflicts.

The model was estimated using data from less developed 65 countries over the period 1991 to 2006 and the results from the estimations are outlined in Tables 2 and 3. The results in Table 2 show that there is a strong positive association significant at 5% [p=0.044] between poverty and the risk of conflict; in addition, the risk of conflict is also positively associated with inflows of foreign exchange [p=0041]. Identifying the direction of causality in this association is problematic and it could be that war necessitates foreign exchange flows and/or that flows of foreign exchange from resource flows exacerbate economic tensions increasing the likelihood of war. The lagged dependent variable is positive and strongly significant [p=0.000] suggesting that conflict in one period is associated with increased risk of conflict in subsequent periods and this is in line with the predictions of Collier (2008) *et al.* that conflict is a trap from which the poorest countries will have difficulty extricating

themselves. The fixed effect parameters are jointly insignificant suggesting that differences across countries are not strongly significant in this sample.

TABLE 2: Conflict Estimations: Probit with panel (Maximum Likelihood estimation)

Dependent Variable: W (=1 if conflict, =0 if not)

n=1040 (65 countries, 1991-2006)

	Parameter Estimate	Standard error	z statistic	p Value
Intercept	-3.848	0.860	-4.473	0.000
W(-1)	3.167	0.151	21.034	0.000
p	0.014	0.007	2.017	0.044
f	0.078	0.038	2.042	0.041
Fixed effects	0.002	0.004	0.438	0.661
Mean dependent variable	0.223		S.D. dependent variable	0.416
LR statistic	712.004	[p=0.000]	McFadden R-squared	0.689
Log likelihood (LL)	-160.879		Akaike info criterion	0.340
Restricted LL	-516.881		Schwarz criterion	0.365

In capturing the influences on poverty, the results in Table 3 suggest that persistence is a feature of poverty with the lagged dependent variable having a strongly positive and significant association [0.000] on current poverty. Poverty is also strongly and positively associated with the war dummy variable [p=0.011]. Financial resources have a negative impact on poverty but the association is statistically insignificant [p=0.570] perhaps capturing an indirect link with financial resources as these increase susceptibility to conflict. Again the country fixed effects parameters are jointly insignificant [p=0.000].

TABLE 3: Poverty Estimations: Fixed effects panel estimation

Dependent Variable: p (=poverty gap ratio)

n=1040 (65 countries, 1991-2006)

	Parameter Estimate	Standard error	z statistic	p value	
Intercept	0.200	0.302	0.662	0.508	
p(-1)	0.995	0.003	339.226	0.000	
W	0.166	0.065	2.558	0.011	
f	-0.008	0.014	-0.568	0.570	
Fixed effects	-0.001	0.001	-1.017	0.309	
R-squared	0.993	Mean depe	8.271		
Adjusted R-squared	0.993	S.D. dependent variable			9.906
F test of explanatory power	34336.677	Akaike info criterion			2.473
	[p=0.000]	Schwarz criterion			2.498

These results are capturing some preliminary evidence on the associations between poverty, conflict and finance but more work needs to be done in capturing the simultaneous relationships and in differentiating both the positive and the negative effects of financial factors. In addition, recognising that financial factors contribute to instability and/or economic conflicts over resource rents, work is continuing in collecting data that specifically separates financial flows from natural resources sales, foreign aid and foreign direct investment.

5.   CONCLUSIONS AND POLICY IMPLICATIONS

In this paper, the relationships between armed conflict, finance and inequality have been analysed and indicate that conflict, financial instability and poverty may feed into each other, reinforcing destabilising political, socio-economic and financial forces in underdeveloped countries. Whilst military institutions may bestow some benefits on developing economies, if their actions foster financial instability then this will have substantial ramifications for the macroeconomies of stagnant nations because feedback processes will retard/reverse the evolution of financial institutions creating prolonged constraints on the availability of finance in developing economies. Designing effective

financial policies to overcome conflict-finance-poverty traps may be problematic, for example possibilities for currency reform are limited partly because currencies are perceived as nationalistic symbols and partly because they are desirable as a source of seigniorage revenue.

In reducing the negative consequences of military interventions, particularly when these are precipitated by the actions of corrupt elites, the evolution of new financial institutions within a democratic structure is important. Effective financial reform will be affected by political factors and governance: the regressive effects of conflict and corruption may be ameliorated in the presence of democratic institutions. But regardless of political systems, a crucial element in breaking the vicious cycles between poverty, conflict and financial instability lies in the effective regulation and supervision of financial systems, particularly in countries that have experienced repeated conflict. Even when conflicts are finally resolved, during post-conflict phases there will be pressing needs to rebuild domestic capital markets for reconstruction and if this financial reconstruction is constrained by institutional weaknesses and weak regulation then financial fragility will increase susceptibility to future conflicts.

REFERENCES

Addison, T., Le Billon, P., and Murshed, S.M. (2001) 'Finance in Conflict and Reconstruction, *World Institute for Development Economics Research (WIDER) DP 2001/44*, UN University, August 2001,.

Aron, J. (2003) 'Building institutions in post-conflict African economies', *Journal of International Development*, vol. 15, no. 4, pp. 471-85.

Benoit, E. (1972), 'Growth Effects of defence in Developing Countries', *International Development Review*, Vol. 1, pp. 2-10.

Benoit, E. (1978), 'Growth and Defense in Developing Countries', *Economic Development and Cultural Change*, vol. 26, pp. 271-80.

Blundell, R. and Powell, J. (2004), 'Endogeneity in Semiparametric Binary Response Models', *Review of Economic Studies*, vol. 71, pp. 665-79.

Bolbol, A.A. (1999) 'Seigniorage, Dollarization and Public Debt: The Lebanese Civil War and Recovery Experience, 1982–97', *World Development, Volume 27, Issue 10, October 1999, Pages 1861-1873*

Carbonnier, G. (2002) 'The Competing Agendas of Economic Reform and Peace Process: A Politico-Economic Model Applied to Guatemala', *World Development,* Volume 30, Issue 8, August 2002, Pages 1323-1339.

Collier, P. (2008). The Bottom Billion: Why the Poorest Countries are Failing and What Can Be Done about It, Oxford: Oxford University Press.

Collier, P. and Dercon, S. (2006). 'The Complementarities of Poverty, Equity and Growth', *Economic Development and Cultural Change*, vol. 55, pp. 223-36.

Collier, P. and Gunning, J.W. (1995), 'War, peace and private portfolios', *World Development*, Volume 23, Issue 2, February, Pages 233-241.

Collier, P. and Hoeffler, A. (2006), 'Military Expenditure in Post-Conflict Societies', *Economics of Governance*, vol. 7, pp. 89-107.

Collier, P. and Hoeffler, A. (2004), 'Greed and Grievance in Civil War', *Oxford Economic Papers,* vol. 56, no. 4, pp.563-95.

Collier, P. and Hoeffler, A. (2002), 'On the incidence of civil war in Africa', *Journal of Conflict Resolution*, Vol. 46 (1), pp. 13-28.

Collier, P. and Hoeffler, A. (1998), 'On economic causes of civil war', *Oxford Economic Papers*, Vol. 50 (4), pp. 563-573.

Dunne, P., Smith, R., And Willenbockel, D. (2005). 'Models of Military Expenditure and Growth: A Critical Review', *Defence and Peace Economics*, Vol. 16, No. 6, pp. 449 - 461.

Fitzgerald, E.V.K.(2003) 'Global financial information, compliance incentives and conflict funding', *Queen Elizabeth House Working Paper Series*, *WP No. 96*, Oxford.

Fitzgerald, E.V.K.(1997) 'Paying for the war: macroeconomic stabilization in poor countries under conflict conditions', *Oxford Development Studies,* 25(1), pp. 43-65.

Garfinkel, M.R. (1994), 'Domestic Politics and International Conflict', *American Economic Review*, Vol. 84, No. 5. (Dec., 1994), pp. 1294-1309.

Goodhand, J. (2003), 'Enduring Disorder and Persistent Poverty: A Review of the Linkages Between War and Chronic Poverty', *World Development*, Volume 31, Issue 3, March 2003, Pages 629-646.

Greene, W.H. (2008), *Econometric Analysis*, 6th edition, New Jersey: Pearson Prentice-Hall.

Hirschleifer, J. (2001), *The Dark Side of the Force: Economic Foundations of Conflict Theory*, Cambridge University Press: Cambridge.

Jarvis (1999) Rise and Fall of Pyramid Schemes in Albania, IMF Working Paper no. 99/98

Keshk, O.M.G. (2003) CDSIMEQ: A Program to Implement Two-state Probit Least Squares, *Stata Journal*, 3(2), pp. 157-67.

Keynes (1914) 'War and the Financial System', *Economic Journal*, vol. 24, no. 95, pp. 460-486.

Keynes, J.M. (1940) *How to Pay for the War: A radical plan for the Chancellor of the Exchequer*.

Kindleberger (1993) *A Financial History of Western Europe.*

Knight, M. Loayza, N. and Villaneuva, D. (1996), 'The peace dividend: military spending cuts and economic growth', *IMF Staff Papers*, vol. 43, no. 1, pp. 1-37.

Magnusson, M.A. and Wydick, B. (2001), 'How efficient are Africa's emerging stock markets?' *Journal of Development Studies*, Volume 38, Number 4, pp. 141-56.

McCandless, G.T. (1996) 'Money, Expectations, and the U.S. Civil War', *American Economic Review*, Vol. 86, No. 3. (June), pp. 661-671.

Nafziger, E.W. and Auvinen, J. (2002) 'Economic Development, Inequality, War, and State Violence', *World Development,* Volume 30, Issue 2, February 2002, Pages 153-163.

Nagarajan, G. (1998), *Developing Micro-Finance Institutions in Conflict-Affected Countries: Emerging Issues, First Lessons Learnt and Challenges Ahead*, International Labour Organization, Enterprise and Cooperative Development Department, http://www.ilo.org/public/english/employment/recon/crisis/papers/naga.htm

Ofstad, A. (2002), 'Countries in Violent Conflict and Aid Strategies: The Case of Sri Lanka', *World Development,* Volume 30, Issue 2, February, Pages 165-180.

Ohanian, L.E. (1997) 'The macroeconomic effects of war finance in the United States, World War II and the Korean War', *American Economic Review*, vol. 87, no. 1, 23-40.

Olson, M. (1982), The Rise and Decline of Nations: Economic Growth, Stagflation and Social Rigidities, Yale: Yale University Press.

Sandler, T. Tschirhart, J.T. and Cauley, J. (1983), 'A theoretical analysis of transnational terrorism', *American Political Science Review*, vol. 77, no. 1, pp. 36-54.

Sen, A. (1976), 'Poverty: an Ordinal Approach to Measurement', *Econometrica*, 44(2), pp. 219-231.

Shorrocks, A.F. (1995), 'Revisiting the Sen Poverty Index', *Econometrica*, 63(5), pp. 1225-1230.

Stewart, F. and Fitzgerald, E.V.K. (2000)(eds) 'Introduction: Assessing the Economic Costs of War'. In *War and Underdevelopment*, Stewart, F. and Fitzgerald, E.V.K. (eds), Queen Elizabeth House Series in Development Studies.

Stiglitz, J. (2004), *Globalization and Its Discontents*, Harmondsworth: Penguin

Treddenick, J.M. (2000), **'**Defence and Economics: Some Issues for the post-Cold War World', *Canadian Journal of Economics*, Vol. 29, Special Issue: Part 2. (Apr., 1996), pp. S644-S648.

Wallensteen and Sollenberg (2000) Armed Conflict, 1989-99, *Journal of Peace Research*, 37(5), pp. 635-49.