Economic Modelling xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Economic Modelling

journal homepage: www.elsevier.com/locate/econmod

# Your war, my problem: How conflict in a neighbour country hurts domestic development

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ARTICLE INFO

*Keywords:*
Civil conflict
War in the neighborhood
Economic development
Cost of conflict

ABSTRACT

This paper explores the transmission mechanisms of the impact of civil conflict in the neighbourhood on the economic development of the domestic country. We study a set of endogenous relations linking growth and its fundamental causes, domestic conflict and conflict in the neighbourhood. Methodologically, we go beyond a reduced-form single equation model to estimate a system of four equations where neighbourhood conflict affects domestic civil conflict, institutions and economic integration. Civil conflict in the neighbourhood significantly increases the probability of domestic conflict, lowers the quality of domestic institutions, and reduces the degree of economic integration with the rest of the world. The dollar value of this damage cumulates over time depending on the frequency/duration of spatial conflict. Our simulations show that the cost to the domestic economy ranges between $506 and $14,165 in lost per-capita GDP over a period of fifteen years.

## 1. Introduction

The lively debate on the economics of civil conflict has recently taken an interest in spatial effects. In a series of influential papers, Murdoch and Sandler (2002, 2004) provide evidence of significant "collateral damage" of civil conflict on the economic growth of a neighbouring country, a conclusion reiterated (albeit with some significant qualifications) by De Groot (2010) and Dunne and Tian (2014). Here, we reconsider the spatial effects of civil conflict in light of methodological and conceptual innovations that we believe to be important.

The existing spatial effects analyses are largely based on neo-classical growth equations where the rate of change of per-capita GDP is regressed on domestic civil conflict, civil conflict in the neighbourhood, and factors accumulation rates (e.g. investment rates, schooling indicators). It is limited insofar as it concentrates on the *direct* effect of neighbourhood civil conflict. To account for possible *indirect* effects, Murdoch and Sandler (2002, 2004) estimate "auxiliary" regressions of domestic factors accumulation rates. However, their results suggest that these indirect effects are negligible. This in turn raises two further issues. First, the political science literature indicates that one of the most likely spatial effects of civil conflict is to generate a new civil conflict in neighbouring countries. Hence, an auxiliary regression for domestic civil war should have also been estimated. Second, the auxiliary regressions establish that domestic factors accumulation is not the mechanism through which the spatial effect is transmitted. This is not a fully satisfactory answer however, as one still wants to know how civil conflict in Country A causes slower growth in Country B. In fact, *we posit that uncovering the transmission mechanisms is at least as important as documenting the existence of a spatial effect*.

Another limitation of the neo-classical approach is that it does not conceptually address the issue of fundamental or deep drivers of growth. With neo-classical regressions one can state that growth in a country is faster, relative to other countries, because it accumulates more physical capital, human capital, labour and/or enjoys faster technological progress. However, this raises the question of why only some countries are able to do so. This has led researchers to investigate more fundamental causes of growth, such as institutions, geography and economic integration. Framing the analysis of the spatial effects of civil conflict in terms of the fundamental causes of growth seems a promising way to better understand the transmission mechanisms. Intuitively, civil conflict in Country A will affect Country B's ability to trade and integrate economically globally. It will also create the potential of violence spillover to which the domestic country might respond with a change in its institutional arrangements. The fundamental causes approach therefore offers a potentially more comprehensive perspective than the neo-classical approach used so far in the literature.

This study contributes to the existing literature by taking an inclusive approach to the analysis of spatial effects. We look at a full set of endogenous relations linking growth and its fundamental causes,

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http://dx.doi.org/10.1016/j.econmod.2017.08.030
Received 14 August 2017; Received in revised form 28 August 2017; Accepted 28 August 2017

domestic conflict and neighbourhood conflict. These endogenous relationships allow us to identify the transmission mechanisms of the spatial effect of conflict. Methodologically, we eschew the reduced-form single equation model and estimate a system of four equations where neighbourhood conflict is allowed to affect domestic civil conflict and two other fundamental causes of growth (institutions and economic integration). However, as the economic interpretation of coefficients in this system is complicated by the presence of several endogenous relationships, we complement the empirical estimation with a simulation exercise to quantify the net spatial effect of civil conflict (i.e. the spatial effect inclusive of all indirect effects). This simulation is akin to an impulse response function.

The rest of the paper is organised as follows. Section 2 proposes some theoretical considerations on the spatial links between civil conflict and fundamental causes of growth. Section 3 introduces the econometric model, estimation approach, and variables description. Results are simulations are discussed in Sections 4 and 5 respectively. Section 6 concludes. The Appendix A reports data sources, summary statistics, and some additional estimates.

## 2. Conflict and the fundamental causes of development

### 2.1. Conceptual representation of the development process

In our conceptual framework, the economic development of a generic country is captured by its level of per-capita GDP, ($y$), expressed as a function of its lagged values and a set of fundamental causes denoted by $z_1$, $z_2$, etc. Assuming that the relationship between current and past level of per-capita GDP is linear, then the framework can be re-expressed as a growth model with a convergence term: $g = \beta Ly + f(z_1, z_2 \ldots z_N)$, where $L$ is the lag operator and β is a generic parameter. In empirical terms, the function $f(\bullet)$ is generally assumed to be linear. In the standard neo-classical approach, the $z$'s are the rates of accumulation of physical capital, human capital, and effective labour. It then follows that variations in growth rates across countries are explained by differences in the initial level of income, factors accumulation, and/or technological progress. Nevertheless, this explanation is incomplete: once we know that investment, schooling and technological progress generate growth, we would like to know what makes some countries capable of generating relatively faster. According to North and Thomas (1973, pp. 2, italics in original): "the factors we have listed (innovation, economies of scale, education, capital accumulation etc.) are not causes of growth; *they are growth*". Thus with the neo-classical approach we can only characterise the proximate determinants of growth, not its fundamental causes. Various representations of the fundamental causes of growth have been suggested in the literature and three (institutions, geography and economic integration [Acemoglu, 2008]), are briefly discussed below.

The importance of institutions to development is twofold: first, they affect incentives to save, invest, and trade and second, they determine societal resource allocation. Institutions that respect property rights, provide well-functioning markets and increase transparency and predictability of the decision making process encourage investment. Similarly, institutional arrangements that create accountable and responsive governments facilitate the adoption of growth-enhancing economic reforms (Acemoglu 2001, Acemoglu et al., 2005, 2014; Fatas and Mihov, 2013; Ketterer and Rodríguez-Pose, 2016; Rodrik et al., 2004).

The role of geography in economic development is multifaceted. First, location, particularly latitude, determines climate that impact on individuals' capacity to work as well as land productivity (Deschenes and Greenstone, 2007; Dunne et al., 2013; Hendrix and Salehyan; 2012; Miguel et al., 2004). Second, location and climate influence ecological conditions that determine exposure to endemic diseases (Andersen et al., 2016; Gallup and Sachs, 2001; Sachs and Malaney, 2002). Finally, landlocked countries potentially find it more difficult to integrate globally, both commercially and culturally (Carmignani, 2014).

Natural resource endowment (subsumed within geography) also matters for development even if its exact effect on growth is ambiguous. The conventional view (Sachs and Warner, 1995, 2001) notes that a higher ratio of natural resource exports to GDP reduces growth, known as the "curse" of natural resources More recently, the view that natural resources might instead be a "blessing" has received significant support (Alexeev and Conrad, 2009; Brunnschweiler and Bulte, 2009). A third view suggests that natural resources *per se* are neither a curse nor a blessing, but become so depending on underlying conditioning factors (Buonanno et al., 2015; Carmignani and Chowdhury, 2012; Mehlum et al., 2006). A recent meta-analysis by Havrenek et al. (2016) also concludes that overall support for the conventional resource curse hypothesis is weak.

Economic integration encompasses all forms of exchange between a country and the rest of the world (RoW). The benefits for growth lies in increased opportunities for learning, knowledge spillovers, and productivity change. These benefits do not however, materialise symmetrically across countries. For instance, trade liberalisation might be detrimental to the economic prospects' of countries whose comparative advantage lie in traditional, non-dynamic sectors. Also, the extent to which integration effectively leads to knowledge spillovers and productivity gains is likely to depend on a country's conditions, such as the underlying policy and institutional environment and/or the initial stock of human capital. Finally, high dependence on volatile international capital can expose a country to costly financial crisis and current account reversals.

The overall empirical evidence confirms that economic and international financial integration is generally growth-enhancing (Bumann et al., 2013; Bussiere and Fratzscher, 2008; Dollar and Kraay, 2004; Frankel and Romer, 1999; Kose et al., 2009; Wacziarg and Welch, 2008). The extent of this growth effect however, varies across countries depending on factors like the policy mix (Chang et al., 2009) and the level of natural barriers (Henry et al. 2012).

### 2.2. Domestic effects of neighbourhood conflict

A look at civil wars post-1960 reveals some interesting spatial patterns. Roughly 75% are preceded by at least one year of civil conflict in the geographical neighbourhood (defined as the group of countries that share a land border with the domestic country). The unconditional probability of civil conflict onset in the global sample of all countries is 1.1%; but conditional on one of the neighbouring countries being at war, the probability of onset increases to 2%. While these simple statistics are not in themselves representative of a causality effect, they do suggest that one very likely feature of civil conflict is that it spreads across countries. In view of the potentially highly disruptive effects of war on the economy, this spatial spillover is a first important way in which conflict in the neighbourhood can influence domestic growth and development. Several channels of transnational dimensions of civil conflict contagion have been emphasized (Gleditsch, 2007; Metternich et al. 2015). First, large inflows of refugees into the domestic country can be highly destabilizing with refugee camps are at risk of being militarised (Fisk, 2014; Salehyan and Gleditsch, 2006). Second, independently from refugees, a neighbouring conflict provides domestic rebels-to-be learning and emulating opportunities (Bakke, 2014; Garcia and Wimpy, 2014). These effects can be exacerbated if conflict in the neighbourhood changes the attitude of the general population towards violence (Linke et al., 2015) especially if countries with weaker domestic state capacity have reduced abilities to resist contagion effects (Braithwaite, 2010; Maves and Braithwaite, 2013).

Domestic governments could undertake pre-emptive strategies to counter contagion effects, including by directing military intervention in the conflict country. Provided this has a peacekeeping purpose, third-party interventions have been shown to reduce contagion risk by as much as 80% (Beardsley, 2011). Another possible pre-emptive action is repressing potential domestic rebels. From a development