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Baltic Dry Index and the democratic window of opportunity ☆

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ABSTRACT

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In their seminal paper, Brückner and Ciccone (2011) document that a significant effect of democratic change may be triggered by negative transitory economic shocks, and that rainfall can open a democratic window of opportunity in sub-Saharan Africa (SSA). As a complement, this paper uses within-country variation in the Baltic Dry Index (BDI) as a source of transitory negative income shocks to SSA countries. The BDI reflects the cost of utilizing dry bulk carriers, which are specially designed vessels for transporting primary goods internationally, where these goods dominate the output and export sectors of the SSA economies. We find that positive BDI cost shocks are followed by significant contraction in income through trade channel and significant improvement in democratic institutions, where BDI can open a window of opportunity for democratic improvement. Instrumental variables estimates indicate that following a negative income shock of one percentage point, democracy scores improve by around 4–5 percentage points on average. *Journal of Comparative Economics* **42** (1) (2014) 143–159. School of International Trade and Economics, Central University of Finance and Economics (CUFE), 39 South College Road, Haidian District, Beijing 100081, PR China; School of Economics, University of Adelaide, Adelaide, SA 5000, Australia.

1. Introduction

In their seminal paper, Brückner and Ciccone (2011) show that rainfall can open a democratic window of opportunity. Within-country variation in rainfall acts as a source of negative transitory shocks (through agriculture sector channel) to income in sub-Saharan African (SSA) economies, and after recession democracy improves. To complement their work, in this paper, we offer another candidate which can also open a democratic window of opportunity in SSA, named BDI (Baltic Dry

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Index), the exogenous trade cost in primary goods.[1] High BDI can deteriorate the income of the SSA economies through the reduction of trade channel, hence, democracy improves.[2]

The export sectors of the SSA economies are heavily dominated by the export of primary goods (on average nearly 40 percent of total trade is primary goods), many of which are transported internationally by a class of specially designed vessels known as dry bulk carriers, or bulk carriers in short. In addition, the trade GDP ratio on average is nearly 70 percent in SSA economies, which suggests the importance of trade in the economy.[3] Therefore, the cost of utilizing bulk carriers as summarized by the BDI as the measure of trade cost, negatively impacts trade for the SSA economies, thus causing a negative income shock to SSA.[4]

The hypothesis that negative income shock, for instance, BDI cost, can improve democracy is observed both anecdotally and theoretically. Anecdotally, one of the important causes of the recent *Arab Spring* to protest the dictatorship, absolute monarchy, human rights violations, and government corruption in the Arab world is the economic decline, unemployment and extreme poverty during the financial crisis.[5] More importantly, in theory, at least, since Lipset (1959), it has been argued that democratic change could be sparked by economic recessions. There are several theoretical explanations of the link between economic recessions and democratization in the literature, e.g., Lipset (1959), Huntington (1991), Acemoglu and Robinson (2001), and Acemoglu and Robinson (2006).

A question arises immediately, as to whether the negative income shock by BDI cost is transitory or permanent? As is well known, income fluctuations are driven by transitory shocks like monetary policy or rainfall shocks, e.g., Brückner and Ciccone (2011), as well as permanent shocks like technology or oil price shocks, e.g., Brückner et al. (2012). The literature on the impact of income on democracy suggests that it is important to distinguish between transitory income shocks and permanent income shocks on democratic institutions. For example, on one hand, in theory, Lipset's (1959) modernization hypothesis can be interpreted as a positive response of democratic institutions to permanent increases in income, and Brückner et al. (2012) persistent (oil-price-driven) income shocks on democracy offer empirical evidence on permanent positive shock on income. On the other, Acemoglu and Robinson (2001, 2006) theory of political transition yields that transitory positive income shocks may decrease the probability of a democratic transition. Brückner and Ciccone (2011) also provide the evidence of transitory income shock in SSA being driven by rainfall. It is therefore important to ask whether the effects of income shock by BDI cost is transitory or permanent. In this paper we show that the within-country variation in BDI cost, as a source of negative shock to the income in SSA economies, is transitory by studying the time series properties of BDI cost as well as utilizing the test method done in Brückner et al. (2012).

Being a transitory negative income shock, in this line of theoretical literature, as mentioned before, there is an explanation that fits our framework well is that of Acemoglu and Robinson (2001) theory of political transitions. In their theory, transitory negative economic shocks may spark democratic improvement. This is because negative shocks give rise to a window of opportunity for citizens to contest power, as the cost of fighting ruling autocratic regimes is relatively low. When citizens' cost of contesting power is low, as in Acemoglu and Robinson's theory of political transitions, we can estimate the democratic window-of-opportunity effect of negative income shocks by using BDI cost as an instrument.

Another question we need to answer is whether the BDI shock is exogenous or not in SSA. The SSA economies, in which 33 countries are least developed countries LDCs classified by the United Nations, account for about 1 percent of global trade in goods, less than 2 percent of global trade in primary goods, and less than 1 percent of global output.[6] Therefore, as Lin and Sim (2013) have proclaimed, small economic scale and tarde participation will not affect BDI, but China as well as other emerging economies drive the BDI, thus BDI cost can be treated as an exogenous income shock to the SSA economies (see Section 2

[1] In this paper, we exclude South Africa, in the region classified as the 'sub-Saharan Africa (SSA)' primarily because South Africa is a high income and developed country comparing with other SSA economies. Another simple reason for excluding South Africa is that when we collect the data from United Nations Conference on Trade and Development (UNCTAD) (see the website http://unctadstat.unctad.org/), there is a category called 'sub-Saharan Africa excluding South Africa'. However, the results are robust after including South Africa. Details are available in the online Supplementary Appendix Table A1.

[2] The data show some striking instances of democratic improvement with positive BDI cost shock in SSA. Figure A1 in the online Supplementary Appendix plots the evolution of the Polity2 score for 9 SSA countries where democratic improvement tracks closely to the growth of BDI over the period 1985–2010 (a higher Polity2 score denotes more democratic institutions).

[3] See Brückner and Lederman (2012), Table 1 in the Appendix. The data is based over the period 1979–2009. According to UNCTAD data, the average trade GDP ratio of 33 SSA's least developed countries (LDCs) classified by the United Nations, is nearly 60 percent over the period 1995–2010. In addition, Table A2 in the appendix demonstrates that a one percentage point expansion in trade raises the GDP per capita of the SSA countries by approximately 0.6–0.7 percentage points. Lin and Sim (2013) show such effect for LDCs is around 0.5. Brückner and Lederman (2012) show that in SSA economies such effect in short-run is 0.5 percent and in long-run is about 0.8 percent. These estimates which are much higher than the magnitude reported by Feyrer (2009), highlight that trade is pivotal for income improving in less developed countries. In addition, Waugh (2010) also indicate that trade is quite important for less developed countries from perspective of asymmetric trade frictions between wealthy and low income countries.

[4] In this regard, Lin and Sim (2013) have documented the significant negative effect of BDI cost on income through trade channel in LDCs, 33 of which locate in SSA. For example, they show that a one standard deviation increase in BDI cost reduces GDP per capita (trade) about 7–8.5 (14–16.6) percentage points.

[5] See http://en.wikipedia.org/wiki/Arab_Spring.

[6] The export and import in goods of the SSA economies from 1985 to 2010 averagely account for 1.19% and 1.25% of global export and import in goods, respectively. Also the trade in primary goods of the SSA economies also account for less than 2 percent of the world total trade in primary goods. The total GDP of 49 SSA economies accounts for around 1% of world GDP in 2010, and averagely 0.85% over the period 1985–2010. The data are calculated by the authors based on the trade data on UNCTAD.