Examining the effects of transitory and permanent economic shocks on civil conflict

presentation by Antonio Ciccone, UPF

based on two papers:
-- “Transitory Economic Shocks and Civil Conflict” by Ciccone
-- “International Commodity Prices and the Outbreak of Civil War in Sub-Saharan Africa” by Markus Brückner, UPF & Ciccone
available at www.antoniociccone.eu
This presentation and the literature

• aim to contribute to literature on economic shocks and civil conflict

(1) (transitory) rainfall shocks and civil conflict in Sub-Saharan Africa?

(2) (persistent) commodity price shocks and civil conflict in SSA?
(1) Rainfall shocks and civil conflict

• Existing evidence: Miguel, Satyanath, and Sergenti

- Negative rainfall shocks
- Civil conflict
- Civil war
(1) MSS empirical evidence

Low interannual rain growth → more civil conflict and civil war

- But rainfall shocks are transitory

- Low rainfall growth may therefore be due to:
  -- negative rainfall shock
  -- mean reversion after positive rainfall shock
Simplified statistical model of rainfall

$$\log \text{Rain}_t = a + \text{iidShock}_t$$
Figure 1: Conflict risk and rainfall shocks

Rainfall, relative to expectation

Conflict probability in MSS (2004), relative to country average

→ High conflict risk caused by negative shock (≪ rain less than expected)

→ High conflict risk caused by POSITIVE shock
Or, formally,

\[ \log \text{Rain}_t = a + \text{iidShock}_t \]

\[ \log \text{Rain}_t - \log \text{Rain}_{t-1} = \text{iidShock}_t - \text{iidShock}_{t-1} \]
MSS (2004) “Economic Shocks and Civil Conflict” does not tell us whether:

• conflict is caused by **negative rainfall shocks**
• or by **positive rainfall shocks**
Civil conflict onset and **transitory** shocks

**MSS specification**

\[
\text{Probability}(\text{Onset}_{ct}) = a_{ct} + b(\log\text{Rain}_{ct} - \log\text{Rain}_{ct-1}) + c(\log\text{Rain}_{ct-1} - \log\text{Rain}_{ct-2})
\]

**Rainfall shock specification**

\[
\text{Probability}(\text{Onset}_{ct}) = a_{ct} + b\log\text{Rain}_{ct} + c\log\text{Rain}_{ct-1} + d\log\text{Rain}_{ct-2}
\]
### Table 1: Rainfall and Civil Conflict Onset

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LS</td>
<td>LS</td>
</tr>
<tr>
<td>Rainfall Growth, t</td>
<td>-0.066</td>
<td>(-1.39)</td>
</tr>
<tr>
<td>Rainfall Growth, t-1</td>
<td><strong>-0.126</strong>*</td>
<td>(-1.83)</td>
</tr>
<tr>
<td>Log Rainfall, t</td>
<td>0.083</td>
<td>(-1.05)</td>
</tr>
<tr>
<td>Log Rainfall, t-1</td>
<td>-0.034</td>
<td>(-0.45)</td>
</tr>
<tr>
<td>Log Rainfall, t-2</td>
<td>0.157**</td>
<td>(2.12)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
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<th>Yes</th>
</tr>
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<td></td>
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<tr>
<td>Country Specific Time Trend</td>
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<td>Yes</td>
</tr>
<tr>
<td>Common Time Effects</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Number of Observations</td>
<td>555</td>
<td>555</td>
</tr>
</tbody>
</table>

Note: Method of estimation is least squares. Huber robust standard errors are clustered at the country level; *t*-values in brackets. *Significantly different from zero at 90 percent confidence, **95 percent confidence, ***99 percent confidence.
Empirical findings using MSS data

→ High conflict risk caused by **POSITIVE** past shock

→ Low conflict risk caused by **negative** past shock
### TABLE. Rainfall Growth and Civil Conflict Onset

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LS</td>
<td>LS</td>
<td>LS</td>
<td>LS</td>
</tr>
<tr>
<td>Rainfall Growth, t</td>
<td>-0.066</td>
<td>-0.032</td>
<td>0.036</td>
<td>0.043</td>
</tr>
<tr>
<td></td>
<td>(-1.39)</td>
<td>(-0.65)</td>
<td>(0.60)</td>
<td>(0.86)</td>
</tr>
<tr>
<td>Rainfall Growth, t-1</td>
<td>-0.126*</td>
<td>-0.091</td>
<td>-0.087</td>
<td>-0.071</td>
</tr>
<tr>
<td></td>
<td>(-1.83)</td>
<td>(-1.47)</td>
<td>(-1.56)</td>
<td>(-1.01)</td>
</tr>
<tr>
<td>Post-Cold War Dummy</td>
<td></td>
<td></td>
<td></td>
<td>0.123**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(2.00)</td>
</tr>
<tr>
<td>Country FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Time Trends</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
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<tr>
<td>Year FE</td>
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<tr>
<td>No. Observations</td>
<td>555</td>
<td>555</td>
<td>555</td>
<td>555</td>
</tr>
</tbody>
</table>

Note: Method of estimation is least squares; t-values reported in parentheses are based on Huber robust standard errors that are clustered at the country level. The dependent variable is civil conflict onset. * Significantly different from zero at the 90 percent confidence level. ** 95 percent confidence level, *** 99 percent confidence level.
Where does this leave us?

• MSS finding linking low rainfall growth to civil conflict appears non-robust to common shocks to conflict

• In any case, the MSS finding does not tell us about whether negative rainfall shocks cause civil conflict

• If we re-examine the MSS data to look for the effects of rainfall shocks, we get the opposite of their conclusion: civil conflict preceded by positive rain shocks
Latest conflict data
Table 3: Rainfall and Civil Conflict Onset

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rainfall Growth, t</td>
<td>0.033</td>
<td>0.076*</td>
<td>0.024</td>
<td>0.067</td>
</tr>
<tr>
<td></td>
<td>(0.75)</td>
<td>(1.67)</td>
<td>(0.45)</td>
<td>(1.13)</td>
</tr>
<tr>
<td>Rainfall Growth, t-1</td>
<td>-0.064</td>
<td>-0.049</td>
<td>0.053</td>
<td>0.030</td>
</tr>
<tr>
<td></td>
<td>(-1.63)</td>
<td>(-1.44)</td>
<td>(1.31)</td>
<td>(0.77)</td>
</tr>
<tr>
<td>Log Rainfall, t</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log Rainfall, t-1</td>
<td></td>
<td></td>
<td>-0.111**</td>
<td>-0.145**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(-2.29)</td>
<td>(-2.59)</td>
</tr>
<tr>
<td>Log Rainfall, t-2</td>
<td></td>
<td></td>
<td>0.053</td>
<td>0.030</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(1.31)</td>
<td>(0.77)</td>
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<tr>
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<td>Country Specific Time Trend</td>
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<td>Yes</td>
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<tr>
<td>Common Time Effects</td>
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<td>Yes</td>
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<td>Yes</td>
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<td>800</td>
</tr>
</tbody>
</table>

Note: Method of estimation is least squares. Huber robust standard errors are clustered at the country level; t-values in brackets. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.
Conclusion: Rain and civil conflict

- Low interannual rainfall growth
- Low rainfall levels in year t-1 (negative shock)
Civil war?

No effect of rainfall shocks on civil war onset
Instrumental variables approach

• Use rainfall as instrument for deviation of income per capita from trend
Table 4: Rainfall and Per Capita GDP  

(First stage)

<table>
<thead>
<tr>
<th>Per Capita GDP</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log Rainfall, t</td>
<td>0.057**</td>
<td>0.060***</td>
</tr>
<tr>
<td></td>
<td>(2.61)</td>
<td>(2.85)</td>
</tr>
<tr>
<td>Log Rainfall, t-1</td>
<td>0.045</td>
<td>0.044</td>
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<tr>
<td></td>
<td>(1.52)</td>
<td>(1.47)</td>
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<tr>
<td>Country Fixed Effects</td>
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<td>Yes</td>
</tr>
<tr>
<td>Country Specific Time Trend</td>
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<td>Yes</td>
</tr>
<tr>
<td>Common Time Effects</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Number of Observations</td>
<td>866</td>
<td>866</td>
</tr>
</tbody>
</table>

Note: Method of estimation is least squares. Huber robust standard errors are clustered at the country level; t-values in brackets. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.
Table 5: Per Capita GDP and Civil Conflict *(Second stage)*

<table>
<thead>
<tr>
<th></th>
<th>Civil Conflict Onset</th>
<th>Civil Conflict Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>2SLS</td>
<td>2SLS</td>
<td></td>
</tr>
<tr>
<td>Log GDP, t</td>
<td>0.587</td>
<td>-0.266</td>
</tr>
<tr>
<td>(0.32)</td>
<td>(-0.18)</td>
<td></td>
</tr>
<tr>
<td>Log GDP, t-1</td>
<td><strong>-4.561</strong>*</td>
<td><strong>-2.482</strong>*</td>
</tr>
<tr>
<td>(-1.80)</td>
<td>(-2.14)</td>
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</tr>
<tr>
<td>Country Fixed Effects</td>
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<td>Country Specific Time Trend</td>
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<td>Yes</td>
</tr>
<tr>
<td>Common Time Effects</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Number of Observations</td>
<td>667</td>
<td>866</td>
</tr>
</tbody>
</table>

Note: Method of estimation is two-stage least squares. Huber robust standard errors are clustered at the country level; t-values in brackets. The instruments are current and lagged rainfall. *Significantly different from zero at 90 percent confidence, ** 95 percent confidence, *** 99 percent confidence.
(2) Commodity prices and civil war?

- The timing of civil wars in Uganda, Rwanda, and Burundi appear to be related to fall in price of coffee, their biggest export.
(2) Commodity prices and civil conflict/war?

• Is there evidence of a more generalized link between commodity export prices and civil war?

• Can commodity price fluctuations be used to estimate the effects of economic growth shocks on civil war?
Persistent Fluctuations of Agricultural Commodity Prices (Log Levels)
Growth Rates of Agricultural Commodity Prices (Log points)
Simplified statistical model of commodity prices

\[ \log\text{Price}_t = \log\text{Price}_{t-1} + \text{iidShock}_t \]
Civil conflict onset and permanent shocks

Growth specification

\[ \text{Conflict}_{ct} = a_{ct} + b \times \text{Shock}_{ct} = a_{ct} + b \times (\log\text{Price}_{ct} - \log\text{Price}_{ct-1}) \]
Conflict risk and TRANSITORY shocks

Rainfall, relative to expectation

Conflict probability in MSS (2004), relative to country average

→ High conflict risk caused by negative shock

→ High conflict risk caused by POSITIVE shock
Conflict risk and PERMANENT shocks

Conflict probability, relative to country average

High conflict risk caused by negative shock

High conflict risk caused by NEGATIVE shock
International Commodity Price Index

$$ComPI_{ct} = \sum_{i=1}^{19} P_{it} w_{ic}$$

AGRICULTURAL COMMODITIES: bananas, cocoa, coffee, cotton, fish, groundnuts, livestock, sugar, tea, tobacco, wood.

NATURAL RESOURCES: aluminium, copper, gold, iron, nickel, oil, phosphates, uranium.

Sources: Deaton, 1999 JEP, UN ComTrade, IMF
TABLE 6. Commodity Price Shocks and Civil War Onset

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LS</td>
<td>LS</td>
<td>LS</td>
</tr>
<tr>
<td>Commodity Price</td>
<td>-0.084**</td>
<td>-0.065**</td>
<td></td>
</tr>
<tr>
<td>Growth, t</td>
<td>(-1.98)</td>
<td>(-2.15)</td>
<td></td>
</tr>
<tr>
<td>Commodity Price</td>
<td>-0.021</td>
<td>-0.048</td>
<td></td>
</tr>
<tr>
<td>Growth, t-1</td>
<td>(-0.86)</td>
<td>(-1.25)</td>
<td></td>
</tr>
<tr>
<td>Commodity Price</td>
<td>-0.072*</td>
<td>-0.105**</td>
<td></td>
</tr>
<tr>
<td>Growth, t-2</td>
<td>(-1.75)</td>
<td>(-2.29)</td>
<td></td>
</tr>
<tr>
<td>3-Year Commodity</td>
<td></td>
<td></td>
<td>-0.060**</td>
</tr>
<tr>
<td>Price Growth</td>
<td></td>
<td></td>
<td>(-2.15)</td>
</tr>
<tr>
<td>Country FE</td>
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<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Time Trends</td>
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<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Year FE</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>No. Observations</td>
<td>814</td>
<td>814</td>
<td>814</td>
</tr>
</tbody>
</table>

Note: Method of estimation is least squares; t-values reported in parentheses are based on Huber robust standard errors that are clustered at the country level. The dependent variable is civil war onset. 3 Year Commodity Price Growth is the commodity price growth rate between t and t-3. * Significantly different from zero at the 90 percent confidence level, ** 95 percent confidence level, *** 99 percent confidence level.
Robustness

- excluding large commodity suppliers (more than 3% of world supply)
- agricultural vis-à-vis natural resource commodities
## TABLE 11. Commodity Price Shocks and Civil War Onset

<table>
<thead>
<tr>
<th></th>
<th>Civil War Onset</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td></td>
<td>LS</td>
</tr>
<tr>
<td>Excluding &gt; 3% World Supply</td>
<td></td>
</tr>
<tr>
<td>3-Year Commodity Price Growth</td>
<td>-0.073**</td>
</tr>
<tr>
<td></td>
<td>(-2.27)</td>
</tr>
<tr>
<td>Country FE</td>
<td>Yes</td>
</tr>
<tr>
<td>Time Trends</td>
<td>Yes</td>
</tr>
<tr>
<td>Year FE</td>
<td>Yes</td>
</tr>
<tr>
<td>No. Observations</td>
<td>766</td>
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</tbody>
</table>

Note: Method of estimation is least squares; t-values reported in parentheses are based on Huber robust standard errors that are clustered at the country level. The dependent variable is civil war onset. Column (1) drops commodities from a country's (time-invariant) commodity basket if the country produces more than 3% of world supply of the commodity (see Appendix Table 1). Column (2) drops commodities from a country's commodity basket that are produced in the mining and oil sector. Column (3) drops those commodities that are produced in the agricultural sector. * Significantly different from zero at the 90 percent confidence level, ** 95 percent confidence level, *** 99 percent confidence level.
Conclusions

Permanent negative shocks (commodity prices) → Civil war

Transitory negative shocks (rainfall) → Civil conflict
Appendix
Instrumental variables approach

- Use commodity price growth as instrument for economic growth
## Table 7. Economic Growth and Civil War Onset

<table>
<thead>
<tr>
<th>GDP Per Capita Growth</th>
<th>Civil War Onset</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>LS</td>
<td>LS</td>
</tr>
<tr>
<td>3-Year Commodity Price Growth</td>
<td>0.025***</td>
</tr>
<tr>
<td>GDP Per Capita Growth</td>
<td>-0.365**</td>
</tr>
<tr>
<td></td>
<td>(-2.55)</td>
</tr>
<tr>
<td>Country FE</td>
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<tr>
<td>Time Trends</td>
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<tr>
<td>Year FE</td>
<td>Yes</td>
</tr>
<tr>
<td>No. Observations</td>
<td>916</td>
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</tbody>
</table>

Note: The method of estimation in columns (1) and (2) is least squares, column (3) two-stage least squares; t-values reported in parentheses are based on Huber robust standard errors that are clustered at the country level. The dependent variable in column (1) is per capita GDP growth, columns (2)-(3) civil war onset. The instrumental variable in column (3) is the commodity price growth rate between \( t \) and \( t-3 \). * Significantly different from zero at the 90 percent confidence level, ** 95 percent confidence level, *** 99 percent confidence level.
Second instrument

\[ \text{OECD ExportDemandGrowth}_{c,t} = \sum_{j \in \text{OECD}} \theta_{c,j} \text{GDPGrowth}_{j,t} \]

time-invariant export shares
### Table 8. Export Demand, Economic Growth, and Civil War Onset

<table>
<thead>
<tr>
<th></th>
<th>GDP Per Capita Growth</th>
<th>Civil War Onset</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>LS</td>
<td></td>
<td>LS</td>
</tr>
<tr>
<td>3-Year Commodity</td>
<td>0.028***</td>
<td>-0.062**</td>
</tr>
<tr>
<td>Price Growth</td>
<td>(3.53)</td>
<td>(-2.19)</td>
</tr>
<tr>
<td>OECD Growth</td>
<td>0.010***</td>
<td>-0.006***</td>
</tr>
<tr>
<td></td>
<td>(10.53)</td>
<td>(-4.16)</td>
</tr>
<tr>
<td>GDP Per Capita Growth</td>
<td></td>
<td>-0.803***</td>
</tr>
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<td></td>
<td></td>
<td>(-5.45)</td>
</tr>
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<td>Hansen J, p-value</td>
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<td>0.1642</td>
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<td>Country FE</td>
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<td>Yes</td>
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<tr>
<td>Year FE</td>
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<tr>
<td>No. Observations</td>
<td>916</td>
<td>814</td>
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</table>

Note: The method of estimation in columns (1)-(2) is least squares, column (3) two-stage least squares; t-values reported in parentheses are based on Huber robust standard errors that are clustered at the country level. The dependent variable in column (1) is per capita GDP growth, columns (2)-(3) civil war onset. The instrumental variables in column (3) are the commodity price growth rate between $t$ and $t-3$ and OECD growth. * Significantly different from zero at the 90 percent confidence level, ** 95 percent confidence level, *** 99 percent confidence level.
Table 9. Export Demand, Economic Growth, and Civil War Onset

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>2SLS</td>
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<tr>
<td>3-Year Commodity</td>
<td>-0.041</td>
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<tr>
<td>Price Growth</td>
<td>(-1.36)</td>
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<td>OECD Growth</td>
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<td>0.011</td>
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<td></td>
<td></td>
<td>(1.27)</td>
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<td>GDP Per Capita Growth</td>
<td>-0.639***</td>
<td>-1.867**</td>
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<td>(-5.68)</td>
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<td>Yes</td>
</tr>
<tr>
<td>Year FE</td>
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<td>Yes</td>
</tr>
<tr>
<td>No. Observations</td>
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<td>814</td>
</tr>
</tbody>
</table>

Note: The method of estimation is two-stage least squares; t-values reported in parentheses are based on Huber robust standard errors that are clustered at the country level. The dependent variable is civil war onset. The instrumental variable in column (1) is OECD growth; column (2) commodity price growth between $t$ and $t-3$. * Significantly different from zero at the 90 percent confidence level, ** 95 percent confidence level, *** 99 percent confidence level.
Table 10. Another Look at Channels

<table>
<thead>
<tr>
<th></th>
<th>Government Expenditure Share</th>
<th>Military Expenditure Share</th>
<th>Growth of Terms of Trade</th>
<th>Growth of Exports</th>
<th>Growth of Development Aid</th>
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</thead>
<tbody>
<tr>
<td>(1)</td>
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<td>LS</td>
<td>LS</td>
<td>LS</td>
<td>LS</td>
</tr>
<tr>
<td>3-Year Commodity Price Growth</td>
<td>0.011</td>
<td>-0.054</td>
<td>0.115***</td>
<td>0.131***</td>
<td>0.096</td>
</tr>
<tr>
<td>Growth</td>
<td>(0.59)</td>
<td>(-0.79)</td>
<td>(5.09)</td>
<td>(4.03)</td>
<td>(0.71)</td>
</tr>
<tr>
<td>OECD Growth</td>
<td>-0.001</td>
<td>0.018</td>
<td>0.009**</td>
<td>0.013**</td>
<td>-0.001</td>
</tr>
<tr>
<td>Country FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Time Trends</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Year FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>No Observations</td>
<td>777</td>
<td>532</td>
<td>773</td>
<td>873</td>
<td>898</td>
</tr>
</tbody>
</table>

Note: Method of estimation is least squares; t-values reported in parentheses are based on Huber robust standard errors that are clustered at the country level. The dependent variable in column (1) is the growth rate of the share of government expenditure in GDP; the dependent variable in column (2) is the growth rate of the share of military expenditure in GDP; in column (3) the dependent variable is terms of trade growth; in column (4) the dependent variable is export growth; and in column (5) the dependent variable is the growth rate of (net) official development aid (ODA). 3 Year Commodity Price Growth is the commodity price growth rate between t and t-3. * Significantly different from zero at the 90 percent confidence level, ** 95 percent confidence level, *** 99 percent confidence level.
Heterogenous effects

- high versus low *initial* income
- democracies versus autocracies
Table 12. Heterogeneity in the Effect of Commodity Prices on Civil War Onset

<table>
<thead>
<tr>
<th>Civil War Onset</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>LS</td>
<td>LS</td>
<td>LS</td>
<td>LS</td>
<td>LS</td>
</tr>
<tr>
<td>3-Year Commodity Price Growth</td>
<td>-0.101**</td>
<td>-0.099**</td>
<td>-0.047*</td>
<td>-0.875**</td>
<td>-0.088**</td>
</tr>
<tr>
<td></td>
<td>(-2.49)</td>
<td>(-2.25)</td>
<td>(-1.90)</td>
<td>(-2.40)</td>
<td>(-2.04)</td>
</tr>
<tr>
<td>3-Year Commodity Price Growth*</td>
<td>0.074*</td>
<td></td>
<td>0.067*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.76)</td>
<td></td>
<td>(1.67)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Democracy [Polity IV] 3-Year Commodity Price Growth*</td>
<td>0.088*</td>
<td></td>
<td>0.080</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.72)</td>
<td></td>
<td>(1.59)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Democracy [Freedom House] 3-Year Commodity Price Growth* GDP79</td>
<td>0.053*</td>
<td>0.045**</td>
<td>0.026</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.84)</td>
<td>(2.22)</td>
<td>(1.14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Democracy</td>
<td>0.050</td>
<td>0.002</td>
<td>0.052*</td>
<td>0.002</td>
<td></td>
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<tr>
<td></td>
<td>(1.56)</td>
<td>(0.08)</td>
<td>(1.64)</td>
<td>(0.09)</td>
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</tr>
<tr>
<td>Country FE</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Time Trends</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Year FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>No. Observations</td>
<td>749</td>
<td>689</td>
<td>814</td>
<td>749</td>
<td>689</td>
</tr>
</tbody>
</table>

Note: Method of estimation is least squares; t-values reported in parentheses are based on Huber robust standard errors that are clustered at the country level. The dependent variable is civil war onset. Democracy [Polity IV] is an indicator variable that is 1 if between t-1 and t-3 the country has a strictly positive Polity2 score, 0 if between t-1 and t-3 the country's Polity2 score was smaller or equal to 0, and missing if between t-1 and t-3 the country switched between positive to negative Polity2 scores. Democracy [Freedom House] is an indicator variable that is 1 if between t-1 and t-3 Freedom House classifies a country as free or partially free, 0 if between t-1 and t-3 the country is not free, and missing if between t-1 and t-3 the country switched from free or partially free to not free. GDP79 is the difference between a country's log real per capita GDP in 1979 and the log of the 1979 sample average real per capita GDP. * Significantly different from zero at the 90 percent confidence level, ** 95 percent confidence level, *** 99 percent confidence level.