Do Differences in the Types of Commodities Exported Matter for Export Concentration?

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Discussion:

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Summary and Main Findings

- Many countries rely heavily on commodity production and 2/3rds of developing countries receive more than 60% of export revenues from commodities
- # of commodity-dependent countries has *increased* slightly between 1998 & 2017
- Moreover, this leads to high volatility of income and potentially Dutch disease
- Cárcamo and Nkurunziza therefore aim to study determinants (not necc. causes) of export concentration, with a lens towards commodities
- **Main findings**: high GDP shares of energy, and to smaller degree, minerals, are associated with higher rates of export concentration

What I liked

- Great discussion of determinants of export concentration and the outcomes thereof
  - Factors of production -> link here is not so simple between factor abundance and concentration, both conceptually and for measurement reasons
  - Level of development -> less "capable" countries can only produce upstream goods
  - Institutional quality: corrupt governments find it easier to expropriate resource rents and bad institutions deter growth of alternate sectors
  - Export prices
    1. Affect resource allocation across sectors as well as increasing value of exports in commodity sector, further increasing concentration
    2. Less discussed in the paper: Real exchange-rate appreciation decreases a country's competitiveness in other sectors (Dutch Disease)
    3. Also: effects of volatility
  - Trade barriers, market size, and FDI
- Great data coverage: I absolutely agree with the authors that small developing countries need to be included here, since they are the most concentrated
- Robustness of concentration measures: authors do a good job of presenting and highlighting limitations of each measure

What I would have liked to see more of

- *Why* are minerals and fuels more associated with increased concentration?
  - Authors mention that minerals and energy commodity prices are more volatile, and that these shares proxy for complex effects, and various underlying commodities
  - On this point, Cárcamo and Nkurunziza don't have much to say, except to give the policy prescription that energy (and to a lesser extent, mineral) dependent countries need to diversify their economies
- Historical evidence and one or more case studies: what are some examples of countries that have successfully diversified their exports?
  - Would add insight as this is the main policy relevant outcome
  - Unfortunately, dataset is only from 1995-2017 (presumably because some variables missing before then), even though SITC trade data is available earlier
- Discussion of production concentration vs. export concentration (I'll return to this)
- Analysis section is somewhat short and could benefit from some additional specifications (which I'll return to)
- Less relevant to paper but of personal interest: regional export concentration

Export share of top export

Table 2. Countries with the Largest Share of Top Commodity in Total Exports

Country	Top Commodity	Export Share	Country	Top Commodity	Export Share
Iraq	Crude Oil	0.990	Burkina Faso	Cotton	0.731
Chad	Crude Oil	0.945	Tajikstan	Aluminium	0.687
Angola	Crude Oil	0.930	Gabon	Crude Oil	0.663
Guinea-Bissau	Cashews	0.857	Venezuela	Crude Oil	0.658
Nigeria	Crude Oil	0.854	Oman	Crude Oil	0.631
Iran	Crude Oil	0.807	Kuwait	Crude Oil	0.614
Azerbaijan	Crude Oil	0.771	Malawi	Tobacco	0.558
Saudi Arabia	Crude Oil	0.770	Mozambique	Aluminium	0.555
Congo	Crude Oil	0.767	Algeria	Crude Oil	0.536
Yemen	Crude Oil	0.744	Laos	Copper	0.520
Zambia	Copper	0.738	Jamaica	Alumina	0.501
Turkmenistan	Natural Gas	0.737	Kazahkstan	Crude Oil	0.490

Notes: Share of top commodity in total exports by country in 2007, showing the countries with the highest concentration of exports that have a population larger than 1 million.

Source: Fally and Sayre (2019)

Why might fuels and minerals tend to be more concentrated?

Export share (= 1–Domestic expenditure shares) by group/commodity

Commodity/ Type of Commo.	(1) Export Share (Avg. 1995-2018)	(2) Exp. Share 1995	(3) Exp. Share 2005	(4) Exp. Share 2015
Agriculture	0.334	0.304	0.363	0.324
Fuels	0.744	0.732	0.761	0.784
Minerals	0.816	0.784	0.849	0.719
Sugar	0.127	0.046	0.130	0.182
Cassava	0.128	0.180	0.141	0.086
Rare Earths	0.156	0.015	0.461	0.320
Rice	0.164	0.123	0.194	0.124
Molybdenum	0.173	0.299	0.031	0.084
Maize	0.334	0.267	0.362	0.362
Coffee	0.413	0.418	0.435	0.298
Cotton	0.415	0.339	0.495	0.348
Natural Gas	0.516	0.441	0.451	0.599
Cashews	0.529	0.348	0.528	0.552
Copper	0.562	0.499	0.580	0.032
Coal	0.610	0.522	0.665	0.640
Cocoa	0.614	0.693	0.667	0.480
Crude Oil	0.75	0.839	0.750	0.756

Author's calculations using data from Fally and Sayre (2019). Export shares are averaged across countries, replacing export shares > 1 with 1, reflecting missing production or re-exports.

Trends in volatility over time by commodity group

Table 2: Commodity Price Volatility, 1975-2014

	Agriculture	Minerals	Fuels
1975 to 1984	0.300	0.209	0.209
1985 to 1994	0.361	0.173	0.168
1995 to 2004	0.178	0.213	0.258
2005 to 2014	0.154	0.262	0.322
All years	0.295	0.226	0.271

Source: Price data from the FAO, IMF, World Bank, EIA, and USGS. Volatility is defined as the standard deviation of yearly changes in log prices, averaged across commodities within a group.

Source: Fally and Sayre (2019)

Critiques/suggestions

- Evidence of mismeasurement biasing these concentration patterns upward?
  - Authors hint at this in their introduction of the modified Theil's T index: countries have "highly volatile numbers of export lines from year to year"
  - Could be re-exports or mismeasurement error, which (crucially) could be non-classical
  - For small developing countries, informal cross-border trade (Wiseman, work in progress) or corruption in customs may be signficant (Rijkers et al., 2017)
  - Reason to believe that this will only bias concentration measures downward
  - One suggestion: use BACI dataset from CEPII, which attempts to correct for (some of) this
- Instrument procedure for lagged dependent variable with serial correlation (assuming AR(1) errors, for example): approach standard, uses $y_{it-2}, y_{it-3}, y_{i,t-4}$ as IVs
  - Relevance? Easy to believe (although standard first-stage F stat. not reported)
  - Exc. rest.? Less so – since residual is current concentration left unexplained by covariates
  - Sargan-Hansen test reported in Table 2 agrees, with p-values $\in [0.007, 0.057]$ (H_0: over-indentifying restrictions valid)
  - Alternative: Dynamically complete model that includes more lags of all variables (Woolridge, 2009 pg. 396-399)
- Reverse causality? Concentration -> weakened competition -> more lobbying and corruption -> higher GDP shares of one industry/sector

Improvements

For authors only

- Can you expand the time span of your analysis? I figured the reason you used SITC data was for the longer time span (i.e. back to 1963)
- I don't understand your point about SITC trade data being available for more countries, HS6 data in the BACI dataset provided by CEPII I've worked with provides data for > 173 countries, but I haven't done a trade line by trade line comparision
- To a certain extent, for heavily concentrated countries, some of the correlation feels tautologic -> if commodity share of production in GDP approaches 100%, export concentration will reach its limit (which depends on the particular measure of concentration)
  - I wonder how much of the results are being driven only by a few of these heavily concentrated countries
  - I would like to see robustness checks of inclusion of different countries, dropping top 5, 10 of the most concentrated countries to see how this impacts results (which is not at all to say they should be removed in main analysis)
  - One easy alternative is to use non-resource export concentration (Bahar & Santos, 2018)