BANK OF ENGLAND

Appendix to Staff Working Paper No. 901
Terms-of-trade shocks are not all alike

Federico Di Pace, Luciana Juvenal and Ivan Petrella

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Appendix A Data

Our data set includes information on macroeconomic indicators, commodity prices, producer price indices (PPI), and country-specific sectoral export and import shares. This appendix describes the sources of data used in the paper.

A.1 Macroeconomic Data Sources

The country-specific macroeconomic data are from the World Bank's World Development Indicators (WDI) database. Specific details of these series are listed below:

Country-specific macro data:

1. GDP per capita in local currency units. Indicator code: NY.GDP.PCAP.KN
2. Gross capital formation as % of GDP. Indicator code: NE.GDI.TOTL.ZS
3. Imports of goods and services as % of GDP. Indicator code: NE.IMP.GNFS.ZS
4. Exports of goods and services as % of GDP. Indicator code: NE.EXP.GNFS.ZS
5. Household final consumption expenditure as % of GDP. Indicator code: NE.CON.PETC.ZS
6. GDP per capita, PPP (constant 2005 international $). Indicator code: NY.GDP.PCAP.PP.KD
7. Consumer Price Index (2010=100). Indicator code: FP.CPI.TOTL
8. Official Exchange Rate (LCU per US$, period average). Indicator code: PA.NUS.FCRF

The WDI database does not include CPI data for Argentina. We therefore sourced the CPI for Argentina from Cavallo and Bertolotti (2016).

The mean impulse responses reported in the paper are a weighted by the country's GDP. The GDP used for the weighting is the GDP, PPP (constant 2011 international $), with indicator code NY.GDP.MKTP.PP.KD.

The criteria for a country to be included in the sample is similar to the one in Schmitt-Grohé and Uribe (2018). In particular, a country needs to have at least 30 consecutive annual observations and to belong to the group of poor and emerging countries. The group of poor and emerging countries is defined as all countries with average GDP per capita at PPP U.S. dollars of 2005 over the period 1980-2016 below 25000 dollars according to the WDI database.

A total of 41 countries satisfy this criteria: Algeria, Argentina, Bangladesh, Bolivia, Brazil, Burkina Faso, Cameroon, Chad, Colombia, Congo, Cote d'Ivore, Dominican Republic, Egypt, Equatorial Guinea, Gabon, Ghana, Guatemala, Honduras, India, Indonesia, Jordan, Kenya, Madagascar, Malawi, Malaysia, Mauritius, Mexico, Morocco, Niger, Nigeria, Pakistan, Panama, Peru, Philippines, Senegal, South Africa, Sudan, Thailand, Tunisia, Turkey and Uruguay. However, our final sample has 38 countries as we exclude Malaysia, Panama, and Tunisia. The reason for excluding these countries is that our constructed terms of trade measure does not mimic the terms of trade data from the WDI. Coincidentally, Schmitt-Grohé and Uribe (2018) highlight that Panama has faulty terms of trade data and therefore they exclude it from their sample. It is uncertain whether the same applies to the other two countries but we prefer to remain conservative and discard the countries for which our measure of terms of

trade is not a good approximation of the official measure. Table A.1 reports the data coverage for each country.

World data:

Real world GDP at 2010 prices and 2010 exchange rates is sourced from Haver Analytics and includes the following countries: United States, Japan, Germany, France, United Kingdom, Italy, Canada, Spain, Netherlands, Australia, Switzerland, Belgium, Sweden, Austria, Denmark, Norway, Finland, Greece, Portugal, Ireland, New Zealand, Luxembourg, Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Peru, Uruguay, Venezuela, Macao, India, Indonesia, Malaysia, Pakistan, People's Republic of China-Mainland, People's Republic of China-Hong Kong, Philippines, Singapore, South Korea, Taiwan, Thailand, Vietnam, Poland, Czech Republic, Hungary, Slovakia, Slovenia, Estonia, Lithuania, Latvia, Russia, Ukraine, Romania, Bulgaria, Croatia, Albania, Kazakhstan, Israel, Turkey and South Africa. Real world GDP is calculated by Haver Analytics based on data from national statistical offices starting in 2001. Data from 1980 through 2000 are linked by Haver Analytics using the growth rates of the real world GDP series in the World Development Indicators (WDI) database. The indicator code for this series is A001GDPD@IMFWEO.

A.2 Export and Import Price Indices

As explained in the main text, we calculate country-specific export and import price indices denominated in US dollars using sectoral export and import shares, commodity prices, and sectoral U.S. PPI data as a proxy for manufacturing prices.

The weights for the calculation of export and import price indices are given by the products' trade shares. In order to calculate the trade shares, for each country, we obtain a time series of highly disaggregated product export and import values sourced from the MIT Observatory of Economic Complexity.[1] This dataset combines data from the Center for International Data from Robert Feenstra and UN COMTRADE. The product trade data are disaggregated at the 4-digit level and classified according to the Standard International Trade Classification, Revision 2 (SITC Rev. 2). Our sample consists of 988 categories but since we only have price information for 62 categories, the trade shares have to be reclassified so that we can match trade and price data. We therefore match the trade shares associated with each of the 988 categories with 46 commodity and 16 industry classifications for which we have price information. The matched information is then used to recalculate export and import shares for a total of 62 categories.[2] The sources of price data are detailed in Tables A.2 and A.3. Note that the manufacturing industries are classified according to the North American Industry Classification System (NAICS) code. In order to match the sectoral manufacturing price data with the trade shares, NAICS codes were reclassified to match with the SITC classification.

Once we have the series of weights obtained from the trade shares and prices for each of the categories, we calculate, for each country, the export and import price indices.

[1] The data can be accessed at `https://atlas.media.mit.edu/en/`.

[2] The number of categories is dictated by the price data.

Table A.1: Macro Data Coverage

Country	Data
Algeria	1980 - 2016
Argentina	1987 - 2016
Bangladesh	1986 - 2016
Bolivia	1980 - 2016
Brazil	1980 - 2016
Burkina Faso	1980 - 2016
Cameroon	1980 - 2016
Chad	1983 - 2015
Colombia	1980 - 2016
Congo, Dem. Rep.	1980 - 2013
Cote d'Ivoire	1980 - 2016
Dominican Republic	1980 - 2016
Egypt, Arab Rep.	1980 - 2016
Equatorial Guinea	1985 - 2016
Gabon	1980 - 2016
Ghana	1980 - 2013
Guatemala	1980 - 2016
Honduras	1980 - 2016
India	1980 - 2016
Indonesia	1980 - 2016
Jordan	1980 - 2016
Kenya	1980 - 2015
Madagascar	1980 - 2016
Malawi	1980 - 2016
Mauritius	1980 - 2015
Mexico	1980 - 2016
Morocco	1980 - 2016
Niger	1980 - 2015
Nigeria	1981 - 2015
Pakistan	1980 - 2016
Peru	1980 - 2016
Philippines	1980 - 2016
Senegal	1980 - 2016
South Africa	1980 - 2016
Sudan	1980 - 2015
Thailand	1980 - 2016
Turkey	1980 - 2016
Uruguay	1982 - 2015

Notes: This table shows the data coverage for each of the countries included in our sample.

Table A.2: List of commodities

Commodity	Definition	Source
Crude oil	Average between Brent, Dubai and WTI	World Bank Commodity Price Data
Coal	Australian	World Bank Commodity Price Data
Natural gas	Natural gas index (average of Europe, US and Japan)	World Bank Commodity Price Data
Cocoa	International Cocoa Organization indicator	World Bank Commodity Price Data
Coffee	Average between arabica and robusta	World Bank Commodity Price Data
Tea	Average between Kolkata, Colombo and Mombasa	World Bank Commodity Price Data
Coconut oil	Philippines/Indonesia, bulk, c.i.f. Rotterdam	World Bank Commodity Price Data
Copra	Philippines/Indonesia, bulk, c.i.f. N.W. Europe	World Bank Commodity Price Data
Palm oil	Malaysia, 5% bulk, c.i.f. N. W. Europe	World Bank Commodity Price Data
Soybeans	US, c.i.f. Rotterdam	World Bank Commodity Price Data
Soybean oil	Crude, f.o.b. ex-mill Netherlands	World Bank Commodity Price Data
Soybean meal	Argentine 45/46% extraction, c.i.f. Rotterdam	World Bank Commodity Price Data
Barley	US	World Bank Commodity Price Data
Maize	US	World Bank Commodity Price Data
Rice	5% broken, white rice (WR), f.o.b. Bangkok	World Bank Commodity Price Data
Wheat	US, no. 1, hard red winter	World Bank Commodity Price Data
Banana	US import price, f.o.t. US Gulf ports	World Bank Commodity Price Data
Orange	navel, EU indicative import price, c.i.f. Paris	World Bank Commodity Price Data
Beef	Australia/New Zealand, c.i.f. U.S. port (East Coast)	World Bank Commodity Price Data
Chicken	Broiler/fryer, Georgia Dock, wholesale	World Bank Commodity Price Data
Sheep	New Zealand, wholesale, Smithfield, London	World Bank Commodity Price Data
Meat	Average of beef, chicken and sheep	World Bank Commodity Price Data
Sugar	World, f.o.b. at greater Caribbean ports	World Bank Commodity Price Data
Tobacco	General import , cif, US	World Bank Commodity Price Data
Cotton	Index	World Bank Commodity Price Data
Rubber	Any origin, spot, New York	World Bank Commodity Price Data
Aluminum	London Metal Exchange	World Bank Commodity Price Data
Iron ore	Spot in US dollar	World Bank Commodity Price Data
Copper	London Metal Exchange	World Bank Commodity Price Data
Lead	London Metal Exchange	World Bank Commodity Price Data
Tin	London Metal Exchange	World Bank Commodity Price Data
Nickel	London Metal Exchange	World Bank Commodity Price Data
Zinc	London Metal Exchange	World Bank Commodity Price Data
Gold	UK	World Bank Commodity Price Data
Platinum	UK	World Bank Commodity Price Data
Silver	UK	World Bank Commodity Price Data
Beverages	Index, 2010=100	World Bank Commodity Price Data
Food	Index, 2010=100	World Bank Commodity Price Data
Oils and Meals	Index, 2010=100	World Bank Commodity Price Data
Grains	Index, 2010=100	World Bank Commodity Price Data
Timber	Index, 2010=100	World Bank Commodity Price Data
Other Raw Mat.	Index, 2010=100	World Bank Commodity Price Data
Fertilizers	Index, 2010=100	World Bank Commodity Price Data
Metals and Minerals	Index, 2010=100	World Bank Commodity Price Data
Base Metals	Index, 2010=100	World Bank Commodity Price Data
Precious Metals	Index, 2010=100	World Bank Commodity Price Data

Notes: The first column of this table shows the list of all commodities used for the calculation of export and import prices, the second column displays the definition used for each commodity price, and the last column shows the the data source.

Table A.3: List of Manufacturing Industries

Industry	NAICS Code	Definition	Source
MUV Index		Index, nominal	World Bank
Processed Foods and Feeds	311, 312	PPI Index	FRED
Textile products and apparel	313, 314, 315	PPI Index	FRED
Hides, skins, leather, and related products	316	PPI Index	FRED
Chemicals and allied products	325	PPI Index	FRED
Rubber and plastic products	326	PPI Index	FRED
Lumber and wood products	321	PPI Index	FRED
Pulp, paper, and allied products	322, 323	PPI Index	FRED
Metals and metal products	331, 332	PPI Index	FRED
Machinery and equipment	333	PPI Index	FRED
Electronic components and accessories	334	PPI Index	FRED
Electrical equipment, appliances, and component manufacturing	335	PPI Index	FRED
Furniture and household durables	337	PPI Index	FRED
Nonmetallic mineral products	327	PPI Index	FRED
Transportation equipment	336	PPI Index	FRED
Miscellaneous products	339	PPI Index	FRED

Notes: The first column of this table shows the list of manufacturing sectors used to calculate export and import prices, the second column describes the NAICS code associated with each manufacturing group, the third column displays the definition used for each producer price index, and the last column shows the data source. Since all indices from the World Bank dataset have a base 2010=100 and those from the Federal Reserve Bank of St. Louis FRED have a base of 1982=100, we rebased the latter ones to 2010=100.

A.3 Additional Results from Raw Data

This section includes additional details about the data. Specifically, Table A.4. provides a detailed comparison of our proxy of ToT and the associated P^x and P^m against equivalent measures that cover only raw commodity prices. In particular, this table provides the country results behind Table 3 in the paper. Tables A.5-A.7 provide additional information about country specific export and import specialization (equivalent to Table 1 in the main draft) for three different subsamples of our data.

Table A.4: Commodity Terms of Trade: Descriptive Statistics

	$\sigma(P_c^x)/\sigma(P^x)$	$\gamma_1(P_c^x)$	$\sigma(P_c^m)/\sigma(P^m)$	$\gamma_1(P_c^m)$	$Corr(P_c^x, P_c^m)$	$\sigma(ToT^c)/\sigma(ToT)$	$\gamma_1(ToT^c)$
Algeria	1.08	65.7	2.84	65.1	51.3	0.6	72.2
Argentina	1.36	65.3	4.68	66.0	94.8	0.5	44.9
Bangladesh	4.71	67.2	2.36	68.4	94.4	0.5	70.2
Bolivia	1.07	67.2	3.41	62.5	88.8	0.5	58.7
Brazil	1.68	68.5	2.87	66.3	91.0	1.5	62.4
Burkina Faso	1.09	67.0	2.88	62.1	59.6	0.8	70.9
Cameroon	1.10	65.7	2.52	60.0	89.2	0.4	60.4
Chad	1.05	57.5	4.13	66.2	88.0	0.5	28.7
Colombia	1.35	62.2	3.97	64.1	83.8	0.6	50.0
Congo, Dem. Rep.	1.45	64.8	2.81	60.5	91.1	0.6	55.7
Cote d'Ivoire	1.12	63.6	2.16	59.1	69.6	1.2	50.9
Dominican Republic	1.91	62.2	2.95	63.2	81.0	0.7	40.2
Egypt, Arab Rep.	1.51	62.7	2.14	64.8	70.1	0.9	69.7
Equatorial Guinea	1.04	60.1	4.05	65.2	83.6	0.3	51.4
Gabon	1.05	61.9	3.14	63.8	70.4	0.6	61.8
Ghana	1.11	63.9	2.85	61.3	82.5	0.8	47.4
Guatemala	1.70	69.9	2.96	64.8	70.6	1.0	57.5
Honduras	2.13	72.6	2.59	66.2	71.1	0.6	61.0
India	2.75	72.1	2.14	64.1	89.6	1.4	64.8
Indonesia	1.61	69.2	2.38	64.6	95.0	0.5	75.7
Jordan	1.95	60.0	2.44	67.5	93.7	1.3	20.0
Kenya	1.29	66.4	2.81	65.8	71.7	1.2	57.7
Madagascar	1.59	61.8	3.38	70.0	87.4	1.1	61.4
Malawi	1.11	71.5	3.09	59.6	61.7	0.9	46.2
Mauritius	1.89	64.3	3.05	63.4	72.4	1.4	58.6
Mexico	3.14	64.7	4.62	65.4	91.5	0.8	55.5
Morocco	2.10	66.0	2.70	64.1	94.3	0.9	50.7
Niger	2.04	64.3	2.61	70.4	39.0	1.1	74.3
Nigeria	1.06	62.9	3.14	67.7	74.4	0.5	65.9
Pakistan	3.34	71.9	2.22	64.8	81.9	0.9	66.9
Peru	1.19	73.1	2.73	64.3	93.7	0.4	39.7
Philippines	3.43	66.2	4.02	64.1	89.4	1.0	44.7
Senegal	1.28	63.8	2.14	62.0	94.3	0.8	53.5
South Africa	1.71	72.8	3.77	63.0	94.3	0.7	53.0
Sudan	1.02	66.4	3.44	60.0	89.0	0.3	25.8
Thailand	2.61	70.7	2.97	64.0	87.3	1.0	52.6
Turkey	2.87	69.5	3.20	68.6	94.4	0.6	67.7
Uruguay	1.41	66.9	2.45	63.3	71.1	2.1	69.4
Median	1.48	65.9	2.87	64.2	87.4	0.8	57.6
Share of PC #1	76.6		93.5			63.2	

Notes: σ denotes standard deviation; γ_1 is the first order autocorrelation; $Corr$ denotes correlation; P_c^x (P_c^m) and P^x (P^x) are the commodity export (import) price and our export (import) price indices, respectively; ToT^c is the commodity terms of trade measure while ToT is the terms of trade measure calculated using our export and import price indices. All entries are in percentage terms and variables are calculated as the quadratically detrended logarithm of the original data to remove low frequency trends. Therefore, the standard deviations are the standard deviation of the percentage deviations of the series from the trends.

Table A.5: Commodity Info: 1980 - 1989

	Comm. Imp. %	Comm. Exp. %	Main Imports						Main Exports					
Algeria	29.7	97.5	Met. & Min.	6.5	Food	5.0	Wheat	4.8	Crude oil	76.7	Natural gas	19.8	Beverages	0.3
Argentina	25.0	76.2	Natural gas	5.1	Crude oil	3.5	Met. & Min.	2.4	Food	10.0	Soybean meal	7.2	Soybeans	7.0
Bangladesh	42.5	36.2	Wheat	8.5	Crude oil	7.7	Cotton	5.9	Other R. M.	13.2	Food	11.9	Tea	4.8
Bolivia	17.2	96.0	Met. & Min.	6.2	Wheat	4.1	Food	2.6	Natural gas	39.4	Tin	25.6	Gold	6.4
Brazil	46.5	59.3	Crude oil	21.1	Wheat	5.1	Fertilizers	3.3	Coffee	11.1	Iron ore	9.2	Soybean meal	6.9
Burkina Faso	30.0	94.0	Food	8.4	Met. & Min.	4.7	Crude oil	4.6	Cotton	35.0	Oils & Meals	20.3	Gold	14.8
Cameroon	22.7	96.8	Met. & Min.	6.1	Crude oil	3.6	Food	3.5	Crude oil	49.3	Cocoa	14.5	Coffee	13.9
Chad	21.6	93.4	Food	5.6	Wheat	2.7	Rice	2.1	Cotton	79.0	Crude oil	5.9	Other R. M.	5.1
Colombia	23.7	82.6	Crude oil	8.1	Met. & Min.	2.7	Food	2.3	Coffee	50.0	Crude oil	10.9	Banana	7.1
Congo, Dem. Rep.	21.0	80.8	Crude oil	6.6	Food	4.1	Met. & Min.	3.3	Copper	37.3	Crude oil	13.7	Coffee	12.4
Cote d'Ivoire	35.2	93.7	Crude oil	11.4	Food	8.9	Met. & Min.	4.5	Cocoa	31.5	Coffee	24.1	Timber	15.2
Dominican Republic	27.3	61.0	Food	4.9	Met. & Min.	3.9	Fertilizers	3.0	Sugar	21.3	Coffee	8.9	Gold	7.2
Egypt, Arab Rep.	35.8	89.3	Wheat	6.5	Food	5.2	Met. & Min.	3.7	Crude oil	72.8	Cotton	7.8	Aluminum	2.8
Equatorial Guinea	36.5	94.7	Fertilizers	7.2	Food	6.3	Beverages	6.2	Cocoa	45.0	Timber	31.3	Orange	6.0
Gabon	17.5	93.4	Met. & Min.	6.8	Food	3.1	Crude oil	1.6	Crude oil	74.1	Timber	10.3	Met. & Min.	7.1
Ghana	28.4	94.7	Crude oil	6.1	Aluminum	5.5	Food	5.0	Cocoa	53.0	Aluminum	22.7	Timber	7.3
Guatemala	29.8	82.3	Crude oil	8.4	Met. & Min.	4.1	Food	3.9	Coffee	37.2	Food	10.6	Cotton	8.0
Honduras	22.6	90.2	Crude oil	5.3	Food	4.8	Met. & Min.	4.1	Banana	35.8	Coffee	22.3	Food	9.9
India	34.1	44.6	Crude oil	9.4	Fertilizers	4.8	Met. & Min.	2.2	Food	7.4	Crude oil	6.4	Iron ore	5.7
Indonesia	33.5	91.0	Crude oil	15.8	Met. & Min.	3.3	Rice	2.0	Crude oil	52.0	Natural gas	14.8	Timber	4.9
Jordan	39.0	71.1	Crude oil	13.5	Food	5.8	Met. & Min.	3.7	Fertilizers	44.5	Food	9.7	Crude oil	4.1
Kenya	29.5	87.5	Crude oil	13.2	Met. & Min.	2.9	Palm oil	2.4	Coffee	33.5	Tea	23.8	Food	9.5
Madagascar	31.7	91.7	Rice	12.2	Crude oil	5.4	Met. & Min.	3.7	Food	40.8	Coffee	32.8	Met. & Min.	5.2
Malawi	10.9	96.0	Met. & Min.	3.7	Food	1.8	Fertilizers	0.9	Tobacco	57.2	Tea	19.3	Sugar	10.2
Malaysia	31.3	71.0	Crude oil	11.5	Food	3.9	Met. & Min.	2.9	Crude oil	19.0	Timber	15.0	Rubber	13.0
Mauritius	23.9	58.9	Food	7.3	Met. & Min.	3.2	Other R. M.	1.9	Sugar	52.5	Food	2.9	Tea	1.6
Mexico	23.7	62.8	Met. & Min.	3.5	Maize	2.3	Other R. M.	2.2	Crude oil	43.2	Food	5.7	Coffee	2.2
Morocco	37.7	67.0	Crude oil	9.2	Wheat	4.5	Fertilizers	4.0	Fertilizers	27.4	Food	17.9	Orange	8.9
Niger	22.8	14.3	Met. & Min.	4.1	Food	3.8	Crude oil	3.5	Met. & Min.	7.1	Crude oil	2.8	Other R. M.	1.0
Nigeria	25.6	99.3	Food	6.2	Crude oil	6.0	Met. & Min.	4.9	Crude oil	95.7	Cocoa	2.1	Other R. M.	0.3
Pakistan	45.2	39.2	Crude oil	20.3	Fertilizers	3.8	Tea	3.0	Cotton	13.6	Rice	9.7	Food	4.7
Panama	20.6	49.2	Crude oil	8.5	Food	3.0	Met. & Min.	2.9	Banana	18.8	Food	12.7	Crude oil	5.5
Peru	25.8	88.7	Met. & Min.	3.6	Wheat	3.6	Food	2.8	Crude oil	18.4	Copper	17.7	Zinc	10.0
Philippines	32.0	54.4	Crude oil	13.9	Food	2.9	Met. & Min.	2.3	Coconut oil	8.0	Food	7.6	Copper	7.0
Senegal	36.3	92.4	Food	8.0	Crude oil	6.1	Rice	5.1	Food	35.7	Oils & Meals	18.5	Fertilizers	17.4
South Africa	12.5	65.6	Met. & Min.	3.5	Other R. M.	1.5	Food	1.2	Coal	10.4	Gold	9.1	Platinum	8.9
Sudan	33.0	96.0	Crude oil	7.3	Wheat	5.9	Food	4.2	Cotton	35.3	Other R. M.	16.3	Grains	8.8
Thailand	30.3	66.2	Crude oil	11.3	Food	2.9	Met. & Min.	2.8	Food	22.9	Rice	11.8	Rubber	7.4
Tunisia	33.2	56.9	Crude oil	11.4	Met. & Min.	3.5	Wheat	2.9	Crude oil	32.0	Fertilizers	10.1	Food	9.7
Turkey	37.2	59.0	Crude oil	21.5	Fertilizers	2.3	Iron ore	1.9	Food	14.6	Grains	7.7	Crude oil	7.7
Uruguay	31.9	61.4	Crude oil	12.7	Other R. M.	2.6	Fertilizers	2.6	Gold	15.9	Beef	12.6	Other R. M.	9.9
Median	29.7	82.3		7.3		3.9		3.0		35.3		11.9		7.1

Table A.6: Commodity Info: 1990 - 1999

	Comm. Imp. %	Comm. Exp. %	Main Imports						Main Exports					
Algeria	36.9	85.6	Food	8.4	Wheat	8.0	Met. & Min.	3.2	Crude oil	60.6	Natural gas	23.9	Fertilizers	0.3
Argentina	18.1	69.7	Met. & Min.	2.7	Food	2.1	Crude oil	2.0	Food	11.8	Soybean meal	9.0	Crude oil	8.4
Bangladesh	31.9	15.6	Wheat	5.0	Crude oil	4.9	Food	3.8	Food	9.3	Other R. M.	2.8	Fertilizers	1.2
Bolivia	22.6	91.2	Wheat	4.8	Met. & Min.	3.7	Food	3.3	Natural gas	17.4	Tin	11.4	Gold	8.8
Brazil	30.6	49.3	Crude oil	7.9	Food	3.9	Coal	2.5	Iron ore	7.9	Coffee	4.9	Soybean meal	4.9
Burkina Faso	27.8	92.2	Food	6.9	Crude oil	5.2	Met. & Min.	3.5	Cotton	55.5	Gold	16.7	Food	7.4
Cameroon	28.8	96.4	Met. & Min.	4.7	Food	4.6	Crude oil	4.0	Crude oil	40.0	Timber	21.0	Cocoa	8.6
Chad	25.6	95.3	Wheat	5.5	Food	3.9	Met. & Min.	3.8	Cotton	83.0	Other R. M.	11.1	Oils & Meals	0.6
Colombia	21.4	72.8	Crude oil	3.8	Food	2.6	Met. & Min.	2.3	Coffee	22.1	Crude oil	21.8	Banana	7.2
Congo, Dem. Rep.	26.3	53.9	Food	5.4	Wheat	4.4	Met. & Min.	2.8	Copper	16.2	Met. & Min.	12.3	Crude oil	10.4
Cote d'Ivoire	30.6	90.0	Food	9.6	Crude oil	6.2	Met. & Min.	3.3	Cocoa	38.9	Timber	11.0	Coffee	10.8
Dominican Republic	26.2	24.6	Crude oil	7.6	Food	4.0	Met. & Min.	2.6	Sugar	4.7	Tobacco	4.0	Precious	3.6
Egypt, Arab Rep.	38.1	70.0	Wheat	9.2	Food	4.0	Timber	3.5	Crude oil	52.9	Food	4.8	Cotton	3.0
Equatorial Guinea	43.1	94.1	Beverages	9.2	Met. & Min.	7.5	Food	6.5	Timber	54.3	Crude oil	23.5	Cocoa	10.5
Gabon	22.6	97.0	Food	5.5	Met. & Min.	4.6	Beef	1.8	Crude oil	73.3	Timber	14.7	Met. & Min.	8.0
Ghana	24.3	80.2	Met. & Min.	4.5	Crude oil	4.0	Food	3.4	Cocoa	33.9	Aluminum	17.4	Timber	11.5
Guatemala	29.9	59.5	Crude oil	9.9	Food	4.4	Met. & Min.	3.0	Coffee	20.7	Food	10.0	Sugar	8.2
Honduras	29.8	57.2	Crude oil	10.2	Food	5.7	Met. & Min.	3.0	Banana	17.1	Food	15.9	Coffee	14.2
India	36.1	30.2	Crude oil	12.3	Fertilizers	3.7	Gold	2.8	Food	5.1	Met. & Min.	3.7	Iron ore	2.8
Indonesia	28.8	54.7	Crude oil	8.7	Met. & Min.	2.8	Other R. M.	2.5	Crude oil 16.1	Natural gas	10.7	Food	5.6	
Jordan	34.0	71.1	Food	5.8	Sugar	3.8	Wheat	3.6	Fertilizers	55.4	Food	5.1	Sheep	3.3
Kenya	24.0	80.6	Crude oil	4.3	Met. & Min.	2.9	Sugar	2.2	Tea	25.9	Coffee	19.2	Food	17.6
Madagascar	22.1	74.9	Food	4.7	Met. & Min.	3.7	Crude oil	2.3	Food	42.8	Coffee	13.4	Met. & Min.	4.6
Malawi	22.1	90.8	Fertilizers	5.3	Met. & Min.	4.4	Maize	2.7	Tobacco	67.2	Tea	9.4	Sugar	5.5
Mauritius	25.4	34.0	Food	6.3	Crude oil	4.0	Met. & Min.	2.7	Sugar	26.3	Food	3.3	Precious	1.6
Mexico	20.6	28.0	Met. & Min.	4.5	Food	2.6	Crude oil	2.1	Crude oil	14.0	Food	4.3	Met. & Min.	2.5
Morocco	38.9	46.1	Crude oil	11.0	Wheat	3.9	Fertilizers	3.0	Food	19.4	Fertilizers	13.0	Orange	5.3
Niger	29.5	20.3	Food	6.2	Sugar	3.6	Met. & Min.	3.5	Crude oil	15.6	Cotton	0.9	Food	0.8
Nigeria	20.0	98.3	Food	4.3	Met. & Min.	4.0	Crude oil	2.8	Crude oil	93.8	Cocoa	1.7	Rubber	0.8
Pakistan	42.7	18.9	Crude oil	12.7	Wheat	5.3	Palm oil	5.2	Cotton	6.8	Food	2.9	Rice	2.6
Peru	32.9	82.0	Crude oil	8.1	Wheat	4.0	Food	3.6	Copper	20.6	Zinc	12.6	Food	8.6
Philippines	27.9	27.5	Crude oil	10.5	Food	2.8	Met. & Min.	1.7	Food	6.8	Copper	3.4	Coconut oil	3.2
Senegal	40.0	86.6	Food	8.1	Crude oil	5.9	Rice	5.7	Food	44.6	Oils & Meals	14.2	Fertilizers	11.2
South Africa	15.4	64.7	Met. & Min.	2.9	Crude oil	2.3	Food	1.3	Gold	13.6	Platinum	9.2	Coal	8.6
Sudan	29.5	95.8	Wheat	8.1	Food	6.3	Met. & Min.	3.2	Cotton	29.1	Grains	17.9	Other R. M.	17.4
Thailand	25.2	34.2	Crude oil	8.6	Met. & Min.	3.3	Food	2.7	Food	14.4	Rice	4.4	Rubber	3.6
Turkey	33.3	30.6	Crude oil	11.2	Iron ore	3.0	Other R. M.	2.6	Food 10.3	Met. & Min.	3.5	Tobacco	2.8	
Uruguay	26.6	51.7	Crude oil	8.2	Food	2.9	Met. & Min.	2.4	Beef	11.8	Food	11.5	Rice	6.8
Median	26.6	69.7		6.2		4.0		2.8		20.6		10.3		5.5

Table A.7: Commodity Info: 2000 - 2016

	Comm. Imp. %	Comm. Exp. %	Main Imports						Main Exports					
Algeria	28.4	92.2	Food	6.3	Wheat	5.6	Met. & Min.	3.5	Crude oil	59.3	Natural gas	31.8	Fertilizers	0.3
Argentina	16.1	68.9	Met. & Min.	2.5	Natural gas	2.4	Crude oil	1.7	Soybean meal	12.4	Food	9.8	Crude oil	9.2
Bangladesh	36.6	7.3	Crude oil	5.6	Cotton	4.8	Palm oil	4.1	Food	4.4	Other R. M.	1.1	Fertilizers	0.4
Bolivia	22.0	91.7	Crude oil	5.9	Food	3.4	Met. & Min.	3.3	Natural gas	35.9	Soybean meal	9.3	Zinc	6.8
Brazil	29.5	56.5	Crude oil	11.2	Fertilizers	3.5	Food	2.2	Iron ore	10.7	Crude oil	6.6	Soybeans	6.2
Burkina Faso	29.3	89.9	Crude oil	5.5	Food	5.1	Met. & Min.	3.1	Cotton	49.1	Gold	23.4	Grains	6.7
Cameroon	38.5	92.0	Crude oil	14.3	Food	5.4	Met. & Min.	3.3	Crude oil	43.8	Timber	16.2	Cocoa	10.9
Chad	18.6	95.8	Met. & Min.	5.1	Food	3.5	Wheat	3.5	Crude oil	65.8	Cotton	23.3	Other R. M.	5.4
Colombia	18.8	69.9	Food	3.0	Met. & Min.	2.1	Crude oil	2.0	Crude oil	32.1	Coal	13.2	Coffee	6.4
Congo, Dem. Rep.	35.4	66.0	Food	7.1	Met. & Min.	5.3	Crude oil	5.0	Met. & Min.	25.4	Copper	21.1	Crude oil	12.5
Cote d'Ivoire	48.3	86.9	Crude oil	22.2	Rice	7.5	Food	6.5	Cocoa	41.8	Crude oil	13.1	Food	6.1
Dominican Republic	32.3	30.1	Crude oil	9.9	Food	4.8	Met. & Min.	2.6	Tobacco	5.8	Gold	4.3	Precious	3.6
Egypt, Arab Rep.	41.8	55.4	Wheat	5.4	Crude oil	5.3	Food	4.1	Crude oil	22.2	Natural gas	7.7	Food	7.7
Equatorial Guinea	20.9	96.2	Met. & Min.	7.9	Beverages	4.0	Food	2.6	Crude oil	82.8	Natural gas	9.4	Timber	3.0
Gabon	26.8	96.1	Food	5.4	Met. & Min.	5.0	Crude oil	2.7	Crude oil	73.2	Timber	12.0	Met. & Min.	9.8
Ghana	30.4	89.6	Crude oil	8.9	Food	4.7	Met. & Min.	3.7	Cocoa	37.0	Gold	13.4	Crude oil	9.0
Guatemala	30.2	54.3	Crude oil	9.7	Food	5.0	Met. & Min.	2.7	Food	12.1	Coffee	9.5	Sugar	7.6
Honduras	31.4	42.7	Crude oil	9.9	Food	6.5	Met. & Min.	2.5	Coffee	12.9	Food	10.8	Banana	3.9
India	49.0	29.5	Crude oil	19.7	Gold	9.0	Coal	3.1	Crude oil	4.9	Food	3.5	Precious	3.3
Indonesia	38.5	53.7	Crude oil	18.4	Food	2.6	Met. & Min.	2.3	Crude oil	9.5	Natural gas	8.2	Coal	7.7
Jordan	36.8	45.3	Crude oil	11.5	Food	4.8	Met. & Min.	2.1	Fertilizers	25.6	Food	7.7	Met. & Min.	2.7
Kenya	34.7	71.4	Crude oil	15.8	Palm oil	3.1	Met. & Min.	2.3	Tea	19.6	Food	16.1	Other R. M.	14.6
Madagascar	24.8	52.6	Met. & Min.	4.9	Food	4.7	Rice	2.8	Food	33.5	Met. & Min.	4.8	Nickel	4.6
Malawi	29.7	87.5	Fertilizers	6.1	Crude oil	4.5	Tobacco	3.7	Tobacco	56.2	Sugar	8.4	Tea	7.7
Malaysia	22.7	26.3	Crude oil	6.0	Food	2.3	Met. & Min.	1.9	Crude oil	6.8	Natural gas	5.2	Palm oil	4.8
Mauritius	33.4	35.9	Food	9.8	Crude oil	6.8	Met. & Min.	2.9	Sugar	15.4	Food	13.0	Precious	2.4
Mexico	17.7	23.6	Met. & Min.	4.1	Crude oil	2.6	Food	2.0	Crude oil	12.2	Food	3.3	Met. & Min.	2.5
Morocco	35.3	41.1	Crude oil	11.1	Natural gas	3.6	Wheat	3.1	Food	16.7	Fertilizers	11.5	Crude oil	3.0
Niger	32.4	43.4	Food	6.9	Tobacco	3.9	Palm oil	3.0	Crude oil	18.9	Met. & Min.	15.3	Food	2.3
Nigeria	26.5	95.5	Food	6.3	Wheat	3.7	Met. & Min.	3.6	Crude oil	85.4	Natural gas	6.2	Cocoa	1.2
Pakistan	42.7	21.9	Crude oil	18.6	Palm oil	4.2	Food	2.2	Rice	6.9	Food	3.6	Crude oil	2.0
Panama	12.7	43.7	Crude oil	3.7	Food	2.4	Met. & Min.	2.1	Food	12.8	Banana	9.7	Crude oil	5.9
Peru	32.2	81.3	Crude oil	13.0	Met. & Min.	2.8	Food	2.6	Copper	21.4	Gold	15.9	Food	9.5
Philippines	27.1	15.4	Crude oil	11.4	Food	3.0	Wheat	1.3	Food	3.1	Copper	1.7	Banana	1.7
Senegal	46.6	65.9	Crude oil	16.0	Rice	6.7	Food	6.1	Food	32.0	Crude oil	6.9	Oils & Meals	5.6
South Africa	28.1	53.0	Crude oil	15.8	Met. & Min.	2.1	Food	1.5	Platinum	10.3	Gold	7.6	Coal	6.5
Sudan	22.0	97.9	Met. & Min.	4.4	Food	4.4	Wheat	3.6	Crude oil	61.8	Gold	17.9	Grains	5.2
Thailand	33.8	25.7	Crude oil	14.6	Met. & Min.	3.5	Gold	2.7	Food	7.5	Rubber	3.3	Crude oil	2.6
Turkey	28.0	21.7	Crude oil	7.4	Iron ore	3.3	Gold	2.7	Food 6.2	Met. & Min.	4.5	Crude oil	2.0	
Tunisia	27.1	27.8	Crude oil	7.9	Natural gas	2.9	Met. & Min.	2.7	Crude oil	11.1	Food	7.2	Fertilizers	4.8
Uruguay	34.6	65.0	Crude oil	16.0	Food	3.9	Fertilizers	2.6	Beef	16.3	Food	13.0	Soybeans	7.5
Median	30.2	56.5		7.9		4.2		2.7		19.6		9.5		5.4

Appendix B Narrative Approach

This appendix documents the construction of a narrative series of exogenous price shocks for the commodities analyzed. We examined historical documents to identify episodes of large commodity price changes that were unrelated to the state of the economy (i.e. were not demand driven). We then classified this episode as a negative or positive price shock, depending on the direction of the price change. This will ultimately translate into a negative or positive export or import price shock, for each country, depending on whether the country is an exporter or importer of that commodity.

The series were constructed by using a number of sources: Food and Agriculture Organization (FAO) reports, publications from the International Monetary Fund (IMF) and the World Bank (WB), newspaper articles, academic papers and a number of online sources. In order to establish some rules at the time of selecting the dates, we followed the criteria listed below.

1. The event has to be important enough to affect a commodity market at a global level. Examples of these are natural disasters or weather related shocks in key areas where the commodity is produced, major geopolitical events, and unanticipated news on the volume of global production or demand of commodities.

2. The event should have an unambiguous effect on the price of the commodity.

3. The event has to be unrelated to important macroeconomic developments such as the global financial crisis or a US recession. This aims at eliminating endogenous responses of commodity prices to the state of the economy.

By using this criteria we were able to identify 23 episodes of exogenous commodity price shocks that are unrelated to business cycle fluctuations. Of these events, 17 are favorable commodity price shocks and 6 are negative price shocks. In what follows we document the dates selected, organizing the commodities in the following subgroups: (1) Agriculture: Food and Beverage Commodities, (2) Agriculture: Raw Materials, (3) Fertilizers, (4) Metals and Mineral Commodities. At the end of this section, we document some country-specific assumptions.

B.1 Agriculture: Food and Beverage Commodities

i. Coffee

Year of Event: 1986.
Type of Event: Positive price shock.

A report from the International Coffee Organization (ICO) states that in 1986 Arabicas were in short supply following a drought in Brazil which triggered a large price increase.[3] In fact, our data show that between 1985 and 1986 Arabica coffee prices increased from 3.23 dollars per kilo to 4.29 dollars per kilo.

According to the IMF Primary Commodities Report from May 1987, "a prolonged period of dry weather in 1985 in the major coffee producing states of Parana, São Paulo, and Minas Gerais seriously disrupted and greatly reduced the flowering of coffee trees, which normally occurs between mid-September and early November. The rains that occurred in early November and in early December were insufficient to reverse the damage caused ot the 1986 crop. The 1986 crop in Brazil (April 1986-March 1987) was about 11 million 60-kilogram bags compared

[3]Report available at: `http://www.ico.org/news/icc-111-5-r1e-world-coffee-outlook.pdf`.

with the 26-28 million bag harvest which might have been expected with normal weather on an off-year in the two-year Brazilian production cycle." The same report highlights that coffee prices in 1986 averaged two thirds above those in the third quarter of 1985.

Newspaper Articles. A number of newspaper articles document the severity of the drought and the consequences on prices. An example is listed below.

Drought Damages Brazilian Coffee, The Washington Post (January 29, 1986):[4]

"A six-month drought has destroyed more than half of Brazil's coffee crop, leaving many local farmers devastated while promising large financial gains for speculators with coffee beans to hoard, as the cost of a cup of coffee rises around the world."

Year of Event: 1994.
Type of Event: Positive price shock.

According to a report from the International Coffee Organization (ICO), climate shocks which affected coffee prices were recorded in Brazil in 1994.[5] Our data are in line with this observation given that we observe that Arabica coffee prices increased from 1.56 dollars per kilo in 1993 to 3.31 in 1994.

Newspaper Articles. A newspaper article from the New York Times documents that the climate shock of 1994 in Brazil is related to a frost. Some important aspects of the article are quoted in what follows.

New Frost Hits Brazilian Coffee, New York Times (July 11, 1994):[6]

"Frost struck in Brazil's biggest coffee-growing state early today, and farmers said the effects were harsher than a freeze that hit two weeks ago."

"(...)Coffee prices soared after the previous cold snap late last month, which destroyed one-third of next year's crop. Brazil is the largest coffee producer, accounting for about a quarter of world production. A threat to its crop can drastically affect world coffee prices(...)."

ii. Cereal[7]

Year of Event: 1985.
Type of Event: Negative price shock.

De Winne and Peersman (2016) document that favorable weather in North America and exceptionally good cereal harvest in Western Europe in the fourth quarter of 1984 led to a decline in cereal prices. A report from the FAO indicates that "In developed countries food and agricultural production has gone up between 5% and 5.5%. Much of this increase is a consequence of the North American recovery from the sharp decline of 1983, reflecting both increased plantings and favorable weather. Western Europe also had exceptionally good harvests of cereals, and some progress was made in the USSR and Eastern Europe."[8] Our

[4]Article available at: `https://www.washingtonpost.com/archive/politics/1986/01/29/drought-damages-brazilian-coffee/94a07436-4f78-4f46-b4e7-d3924b13a2e3/?utm_term=.4fd4b80da637`.

[5]Report available at: `http://www.ico.org/news/icc-111-5-r1e-world-coffee-outlook.pdf`.

[6]Article available at: `https://www.nytimes.com/1994/07/11/business/new-frost-hits-brazil-coffee.html`.

[7]In our sample, we use cereal as a proxy for the category "food" as we observe that many countries are net food importers and evidence suggests that cereals are by far the most important source of food consumption. This fact is documented by the FAO and further information can be found at `http://www.fao.org/docrep/006/Y4683E/y4683e06.htm`.

[8]Available at: `http://www.fao.org/docrep/017/ap664e/ap664e.pdf`.

data reveal a decline in grain prices from 1984 to 1985, when the index went from 63.27 to 53.54.

Year of Event: 1988.
Type of Event: Positive price shock.

As it will be explained below, in 1988 we observe positive price shocks for wheat, corn and soybean, therefore implying a positive price shock for cereal.

Year of Event: 1997.
Type of Event: Negative price shock.

As documented in De Winne and Peersman (2016), in 1996 the FAO issued a favorable forecast for world 1996 cereal output.[9] The largest increase was expected in coarse grains output, mostly in developed countries. Overall, global cereal production increased by 7.8 percent that year and this translated into lower prices. Our data show that the cereal price index experienced a sharp reduction from 1996 to 1997, going from 83.61 to 64.76.

Year of Event: 2010.
Type of Event: Positive price shock.

De Winne and Peersman (2016) report that cereal output was seriously affected by adverse weather conditions in key producing countries in Europe. A group of countries that includes the Russian Federation, Kazakhstan and Ukraine suffered from a heatwave and droughts while the Republic of Moldova had floods. According to a report from the FAO, "International prices of grain have surged since the beginning of July in response to drought-reduced crops in CIS exporting countries and a subsequent decision by the Russian Federation to ban exports."[10]

iii. Cocoa

Year of Event: 2002.
Type of Event: Positive price shock.

According to a report from the International Cocoa Organization, the increase in cocoa prices in 2002 was largely due to an attempted coup on 19th September in Cote d'Ivore, which is the leading cocoa producing country. Uncertainty over potential disruptions emanating from the sociopolitical crisis and civil war pushed prices to a 16-year high at 2.44 dollars per tonne in October 2002.[11] Our data show that between 2001 and 2002 cocoa prices increased from 1.07 dollars per kilo to 1.78 dollars per kilo.

Newspaper Articles. A newspaper article from the New York Times documents the cocoa price increase originated in Cote d'Ivore in 2002. Some important aspects of the article are quoted below.

War Inflates Cocoa Prices But Leaves Africans Poor, New York Times (October 31, 2002):[12]

"As civil war raged in Ivory Coast, the world's biggest cocoa producer, speculative traders here and in New York sent prices this month to 17-year highs."

iv. Corn

[9] The FAO document is available at: `http://www.fao.org/docrep/004/w1690e/w1690e02.htm#I2`.

[10] Available at: `http://www.fao.org/docrep/012/ak354e/ak354e00.pdf`.

[11] `https://www.icco.org/about-us/international-cocoa-agreements/cat_view/30-related-documents/45-statistics-other-statistics.html`.

[12] Article available at: `https://www.nytimes.com/2002/10/31/business/war-inflates-cocoa-prices-but-leaves-africans-poor.html`.

Year of Event: 1988.
Type of Event: Positive price shock.

The severe drought that affected the Farm Belt had a significant impact on corn prices in the 1988/1989 crop years. According to Karrenbrock (1989) corn yields were the most affected by the drought.[13] Our data feature a clear increase in corn prices from 1987 to 1988. In particular, prices went from 75.70 per tonne in 1987 to 106.89 per tonne in 1988.

Newspaper Articles. A newspaper article from the Los Angeles Times and another article from the New York Times document the severity of the drought and the impact on corn prices. Some important aspects of the articles are quoted below.

Commodities: Grain Prices Skyrocket in Response to Drought Report, Los Angeles Times (July 14, 1988):[14]

"Grain and soybean futures prices blasted out of their recent slump Wednesday in response to the government's report of severe drought damage to crops and forecasts for more hot, dry weather in the Farm Belt."

"Besides slashing its 1988 corn production estimate by 29% to a five-year low of 5.2 billion bushels, the USDA estimated soybean plantings this year at 58.52 million acres, a figure below the market's expectations, analysts said."

"(...) corn was 10 cents to 27.5 cents higher, with July at $3.335 a bushel; oats were 10 cents to 25.5 cents higher, with July at $3.045 a bushel, and soybeans were 30 cents to 69 cents higher, with July at $9.485 a bushel."

Drought Cutting U.S. Grain Crop 31% This Year, Los Angeles Times (August 12, 1988):[15]

"The Agriculture Department estimated that this nation's corn harvest might total no more than 4.47 billion bushels, down 2.6 billion bushels from last year."

"Analysts predicted that prices of corn and soybeans would rise sharply Friday."

v. Wheat

Year of Event: 1988.
Type of Event: Positive price shock.

A report from the FAO highlights some facts that are useful to understand the positive price shock in 1988.[16] Relevant aspects of the report are quoted below:

"World production of wheat fell again in 1988 to an estimated 511 million tons, slightly less than in the previous year but considerably below the last peak of 538 million tons in 1986. This decline was mainly the result of smaller crops in North America, where the wheat area decreased further and the principal growing areas suffered from the worst drought in half a century. But there were declines in wheat production in Central and South America as well (...)"

[13] `https://research.stlouisfed.org/publications/review/1989/05/01/the-1988-drought-its-impact-on-district-agriculture/`.

[14] Article available at: `http://articles.latimes.com/1988-07-14/business/fi-8706_1_grain-prices`.

[15] Article available at: `https://www.nytimes.com/1988/08/12/business/drought-cutting-us-grain-crop-31-this-year.html`.

[16] Commodity Review and Outlook 1988-89, Food and Agriculture Organization of the United Nations, page 53.

Our data indicate that wheat prices went from 112.90 dollars per metric ton in 1987 to 145.20 dollars per metric ton in 1988.

vi. Soybeans

Year of Event: 1988.
Type of Event: Positive price shock.

The World Bank "Price Prospects for Major Primary Commodities, 1988-2000" documents that in 1988 there were droughts in the USA which severely affected soybean production.[17] In order to put the severity of the drought into perspective, it is important to mention that the report explains that in 1980 the United States produced 65 percent of the world's soybeans, and prices were close to a historical high at $296 per tonne. Therefore, it is not surprising to conclude that such a severe drought in a key area of production had the capacity to significantly affect total production and prices. Our data depict a sharp increase in soybean prices in 1988, going from 215.75 per tonne in 1987 to 303.50 in 1988.

Newspaper Articles. A newspaper article from Los Angeles Times supports the analysis. The key point is detailed below.

Commodities: Grain Prices Skyrocket in Response to Drought Report, Los Angeles Times (July 14, 1988):[18]

"Grain and soybean futures prices blasted out of their recent slump Wednesday in response to the government's report of severe drought damage to crops and forecasts for more hot, dry weather in the Farm Belt."

vii. Sugar

Year of Event: 1984.
Type of Event: Negative price shock.

According to a FAO report, sugar prices declined in 1984 to their lowest level in 13 years, reflecting a situation of oversupply.[19] Our data show that prices declined by 40 percent in 1984. Interestingly, in 1984 Pepsico Inc. and Coca-Cola Company decided to stop using sugar in favor or a corn based sweetener for their drinks, which was associated with a fall in current and future consumption of sugar.

Newspaper Articles. Some articles are informative to illustrate the importance of the change in sweetener for the two giants of the soft-drink industry for the sugar market. We include an example below.

Coke, Pepsi to use more con syrup, New York Times (November 7, 1984):[20]

"For the sugar industry, the announcements mark the end of its involvement with soft drinks (...)"

[17] `http://documents.worldbank.org/curated/en/443751468739336774/Summary-energy-matals-and-minerals`.

[18] Article available at: `http://articles.latimes.com/1988-07-14/business/fi-8706_1_grain-prices`.

[19] `http://www.fao.org/3/a-ap664e.pdf`.

[20] Article available at: `https://www.nytimes.com/1984/11/07/business/coke-pepsi-to-use-more-corn-syrup.html`.

B.2 Agriculture: Raw Materials

i. Cotton

Year of Event: 1994.
Type of Event: Positive price shock.

A report from the U.S. International Trade Commission describes that the 1994 cotton price increase was driven by a decline in production in key production areas such as China, and India.[21] The decline in production in China is explained by bad weather and a bollworm infestation.

A study from the National Cotton Council of America explains that the price increase is also partly due to a recovery in world cotton consumption following the stagnation that resulted from the dissolution of the Soviet Union in the early 1990s.[22]

Our data indicate that cotton prices declined from 1.28 dollars per kilo in 1993 to 1.76 dollars per kilo in 1994.

Year of Event: 2003.
Type of Event: Positive price shock.

MacDonald and Meyer (2018) analyze the challenges faced when forecasting cotton prices in the long run. The article highlights that in 2003 there was a severe weather damage to cotton crops in China which resulted in a surge in cotton prices. In addition, an article from the National Cotton Council of America highlights that in the 2003 season, ''(...) USDA's forecast put world sticks at their lowest level since 1994/95, raising the specter of a world cotton shortage for the first time in nearly a decade."[23]

Our data show that cotton prices increased from 1.02 dollars per kilo in 2002 to 1.40 dollars per kilo in 2003.

Year of Event: 2010.
Type of Event: Positive price shock.

Janzen, Smith and Carter (2018) analyze the extent to which cotton price movements can be attributed to comovement with other commodities vis-à-vis cotton specific developments. They point at the fact that in 2010-2011 cotton was scarce as a consequence of a negative supply shock generated by lower than average planted crops and negative weather shocks in the USA and Pakistan. This led to an increase in the price of cotton. The authors explain that this boom-bust appears to be cotton-specific, unlike other cases in which a set of macroeconomic factors drive the price of a broad range of commodities.

Our data confirm the findings of the paper. In fact, cotton prices increased from 1.38 dollars per kilo in 2009 to 2.28 dollars per kilo in 2010.

ii. Timber

[21] Article available at: https://books.google.com/books?id=OZFDf6qLEosC&pg=SA3-PA5&lpg=SA3-PA5&dq=cotton+prices+1994&source=bl&ots=vi6JuOeGer&sig=DX9iSSIDP__dPIGTNKEfBO3FkSA&hl=en&sa=X&ved=2ahUKEwiJkOOWztneAhVkneAKHWFOCWs4ChDoATADegQIBRAB#v=onepage&q=cotton\%20prices\%201994&f=false.

[22] Article available at: https://www.cotton.org/issues/2005/upload/WorldCottonMarket.pdf.

[23] Article available at: https://www.cotton.org/issues/2005/upload/WorldCottonMarket.pdf.

Year of Event: 1993.
Type of Event: Positive price shock. Sohngen and Haynes (1994) explain that the 1993 price spike was driven by the environmentally friendly policies that President Clinton issued to protect forests which limited the timber harvests.[24] The application of such policies is confirmed in the list of environmental actions taken by President Clinton and Vice President Al Gore and is documented in the White House Archives.[25] Our data reveal that the timber price index increased from 72.41 in 1992 to 100.58 in 1993.

Newspaper Articles. A newspaper article from the Washington Post documents this episode and describes how the environmental policy was viewed as a threat to the woods product industry.

Clinton to Slash Logging (July 2, 1993):[26].

"To protect the region's wildlife and old-growth forests, the administration plan will allow for average timber harvests over the next decade of 1.2 billion board feet per year. That is about half the level of the last two years, and only a third of the average rate between 1980 and 1992, when annual harvests swelled as high as 5.2 billion board feet."

iii. Tobacco

Year of Event: 1989.
Type of Event: Positive price shock.

In a report from the FAO, it is explained that in 1989 tobacco prices in Malawi remained buoyant due to a worldwide shortage of this type of tobacco.[27] Our data show a 31 percent increase in the price of tobacco between 1988 and 1989.

Year of Event: 1993.
Type of Event: Negative price shock.

A report from the FAO highlights that the worldwide increase in competition for exports in 1993 led to a substantial fall in tobacco prices.[28] Our data reveal that tobacco prices declined 22 percent between 1992 and 1993.

B.3 Energy Commodities

i. Crude Oil

Year of Event: 1986.
Type of Event: Negative price shock.

The period of oil price decline which finalized in a large drop in 1986 is referred to in Hamilton (2013) as "the great price collapse." In particular, in 1986 Saudi Arabia abandoned the effort

[24] Article available at: `https://www.fs.fed.us/pnw/pubs/pnw_rp476.pdf`.
[25] Available here `https://clintonwhitehouse4.archives.gov/CEQ/earthday/ch13.html`.
[26] https://www.washingtonpost.com/archive/politics/1993/07/02/clinton-to-slash-logging/f2266e63-f45f-4f88-bd1f-5f1a1edd820f/
[27] Commodity Review and Outlook 1993-1994, Food and Agriculture Organization of the United Nations, page 135. Available at `https://books.google.co.uk/books?id=xwNp0dpOsiEC&pg=PA154&lpg=PA154&dq=world+commodity+tobacco+prices+1993&source=bl&ots=Hm48B0nax6&sig=frnhLU3FFikaxD1d-Ngq_GfC6Uc&hl=en&sa=X&ved=2ahUKEwip09mhu6TeAhVM2qQKHU4CBM84ChDoATAGegQIAhAB#v=onepage&q=world\%20commodity\%20tobacco\%20prices\%201993&f=false`.
[28] Commodity Review and Outlook 1993-1994, Food and Agriculture Organization of the United Nations, page 156.

to keep oil prices high by reducing oil production which originated a very large oil supply shock. With Saudi Arabia increasing oil production, the price of oil declined from $27 a barrel in 1985 to $12 a barrel in 1986.

Year of Event: 1990.
Type of Event: Positive price shock.

As explained in Hamilton (2013), this is the period marked by the first Persian Gulf War. Oil production in Iraq collapsed when the country invaded Kuwait in August 1990. The reduction in oil production together with the uncertainty that the conflict may spill over into Saudi Arabia led to the oil price almost doubling within a few months.

ii. Natural Gas

Year of Event: 2000.
Type of Event: Positive price shock.

The Energy Information Administration (EIA) documents the California energy crisis of 2000-2001.[29] In terms of natural gas, a report from the Task Force on Natural Gas Market Stability finds that "the 2000-2001 California natural gas crisis resulted in major part from a perfect storm of sudden demand increase, impaired physical capacity, natural gas diversion, and inadequate storage fill. The quick summary is as follows: Low hydroelectric availability in 2000, coupled with a modest increase in overall power needs resulted in a substantial increase in gas-fired generation usage, with little preparation."[30] A study from the Federal Reserve Bank of San Franciso documents the natural gas price increase in 2000.[31] Our data show that the natural gas price index jumped from 39.78 in 1999 to 73.85 in 2000.

Year of Event: 2005.
Type of Event: Positive price shock.

An article from the "Oil and Gas Journal" highlights that the effects of Hurricanes Katrina and Rita were the main source of the price increase. Some details of the article are quoted below.[32]

"The combined effects of the 2004 and 2005 hurricane seasons had an impact across all sectors of the US gas industry. Hurricane Ivan, which made landfall in September 2004, caused more long-term gas production interruptions than any previous hurricane, but its impacts were dwarfed by Hurricanes Katrina (landfall Aug. 29, 2005) and Rita (Sept. 24, 2005). The combined effects of Hurricanes Katrina and Rita were by far the most damaging in the history of the US petroleum industry."

A report from the Federal Energy Regulatory Commission highlights the following:[33]

"The pump was primed for significant energy price effects well before Hurricanes Katrina and Rita hit the Gulf Coast production areas in September. The Gulf storms exacerbated already tight supply and demand conditions, increasing prices for fuels in the United States further after steady upward pressure on prices throughout the summer of 2005. Most of this was

[29] https://www.eia.gov/electricity/policies/legislation/california/subsequentevents.html

[30] http://bipartisanpolicy.org/wp-content/uploads/sites/default/files/Introduction\%20to\%20North\%20American\%20Natural\%20Gas\%20Markets_0.pdf.

[31] https://www.frbsf.org/economic-research/publications/economic-letter/2001/february/economic-impact-of-rising-natural-gas-prices/#subhead3.

[32] https://www.ogj.com/articles/print/volume-104/issue-36/general-interest/us-gas-market-responds-to-hurricane-disruptions.html.

[33] https://www.ferc.gov/EventCalendar/Files/20051020121515-Gaspricereport.pdf.

due to increased electric generation demand for natural gas caused by years of investment in gas-fired generation and a significantly warmer-than-average summer. Supply showed some weakness despite increasing numbers of active drilling rigs. The result was broadly higher energy prices."

Our natural gas index data shows a clear spike in 2005, going up from 95.39 in 2004 to 142.40 in 2005.

Newspaper Articles. The increase in natural gas prices in the aftermath of the hurricanes received media attention. An example from NBC News is included in what follows.[34]

"Gas prices in cities across the United States soared by as much as 40 cents a gallon from Tuesday to Wednesday, a surge blamed on disruptions by Hurricane Katrina in Gulf of Mexico oil production."

B.4 Fertilizers

Year of Event: 1984.
Type of Event: Positive price shock.

According to a report from the FAO, the demand for fertilizers rebounded in 1984, leading to a price increase.[35] This observation is supported by the "Proceedings of the 34th Annual Meeting of the Fertilizer Industry Round Table 1984."[36] Our data reveal a considerable increase in fertilizer prices in 1984. Specifically, the index went from 29.47 in 1983 to 36.62 in 1984.

B.5 Metals and Mineral Commodities

i. Copper

Year of Event: 1981.
Type of Event: Negative price shock.

A report from the US Department of the Interior titled "Metal Prices in the United States through 1998" highlights that in 1981 copper prices were low due to a large growth in US and world production combined with rising inventories. Our data feature this price decline. In fact, our data show that copper prices went down from 1774.91 per tonne in 1980 to 1262.73 in 1981.

ii. Iron ore

Year of Event: 1982.
Type of Event: Positive price shock

According to "Metal Prices in the United States through 1998" iron ore production in the U.S. fell from 73.4 million tons in 1981 to 36.0 million tons in 1982. This decline in production was accompanied by a price increase, which we observe in our data. In fact, prices went up from 28.09 per dry metric ton in 1981 to 32.50 per dry metric ton in 1982.

[34] http://www.nbcnews.com/id/9146363/ns/business-local_business/t/pump-prices-jump-across-us-after-katrina/#.W3NQbehKiUk.

[35] http://www.fao.org/3/a-ap664e.pdf.

[36] http://www.firt.org/sites/default/files/pdf/FIRT1984.pdf.

B.6 Country-Specific Assumptions

In order to implement the narrative restrictions, a number of adjustments were necessary. In what follows we list the country-specific assumptions and clarify some events characteristics.

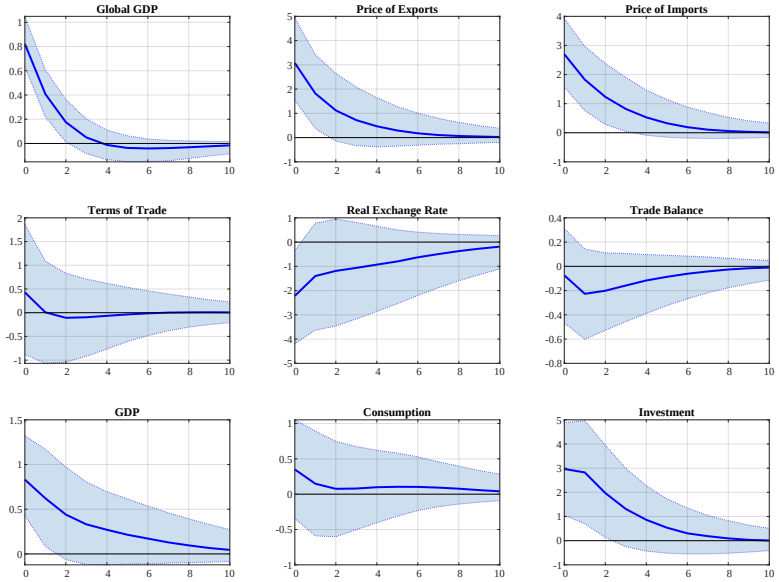
- The rule for associating a particular event to an export or import price shock is given by whether the country is an exporter or importer of that commodity. Following this rule, there are two cases in which the narrative restrictions translate into a positive export price shock originated in one commodity and a negative export price shock stemming from another commodity for the same year. Specifically, for Cameroon and Congo in 1986 we have a combination of a positive export price shock originated from coffee and a negative export price shock originated from crude oil. In this case, we attributed the sign of the export price shock according to the commodity that represents the larger weight in the export share. Since oil exports for both Cameroon and Congo represent a higher share than coffee exports in that year, the oil price shock dominates the coffee price shock, and therefore the coffee price shock is eliminated from the narrative.

- When an event is due to weather conditions or political events of a specific country, we exclude such event for that country. These cases are:
  - The coffee price shock in 1986 which was caused by droughts in Brazil. We therefore did not use this shock as part of the narrative restrictions for Brazil.
  - The cocoa price shock of 2002 was driven by an attempted coup in Cote d'Ivoire. Given that the country was suffering the consequences of a civil war with rising tensions we did not use the 2002 date for the narrative restrictions in this country.

- Some countries are exporters and importers of certain commodities in the same year. When this happens an event would serve both as an export price and import price shock. In our sample these happens for two events involving three countries:
  - The negative oil price shock in 1986 implies a negative export price shock and a negative import price shock for Indonesia and Nigeria.
  - The positive oil price shock in 1990 serves as a positive export price shock and a positive import price shock for Turkey.

Appendix C Empirical Evidence on Global Economic Activity Shocks

Figure C.1: Impulse Responses to a Global Economic Activity Shock: All Countries



Notes: The figure shows the impulse responses to a one standard deviation shock in Y^g for all countries using a VAR with sign and narrative restrictions. The blue solid lines denote the mean response weighted by each country's size proxied by their GDP (PPP) and the dashed lines represent the 16^{th} and 84^{th} percentile error bands.

Table C.1: Forecast Error Variance Decomposition: Global Economic Activity Shock

	Export Prices	Import Prices	Terms of Trade	Real Exchange Rate
0	33.08	40.98	23.11	12.21
1	32.37	40.97	24.37	15.21
4	32.08	40.27	25.88	18.79
10	31.79	39.30	25.83	19.93
	Trade Balance	**Output**	**Consumption**	**Investment**
0	10.65	17.99	8.60	15.72
1	16.18	20.52	11.26	22.06
4	20.39	23.35	14.19	25.55
10	21.22	24.02	15.61	25.68

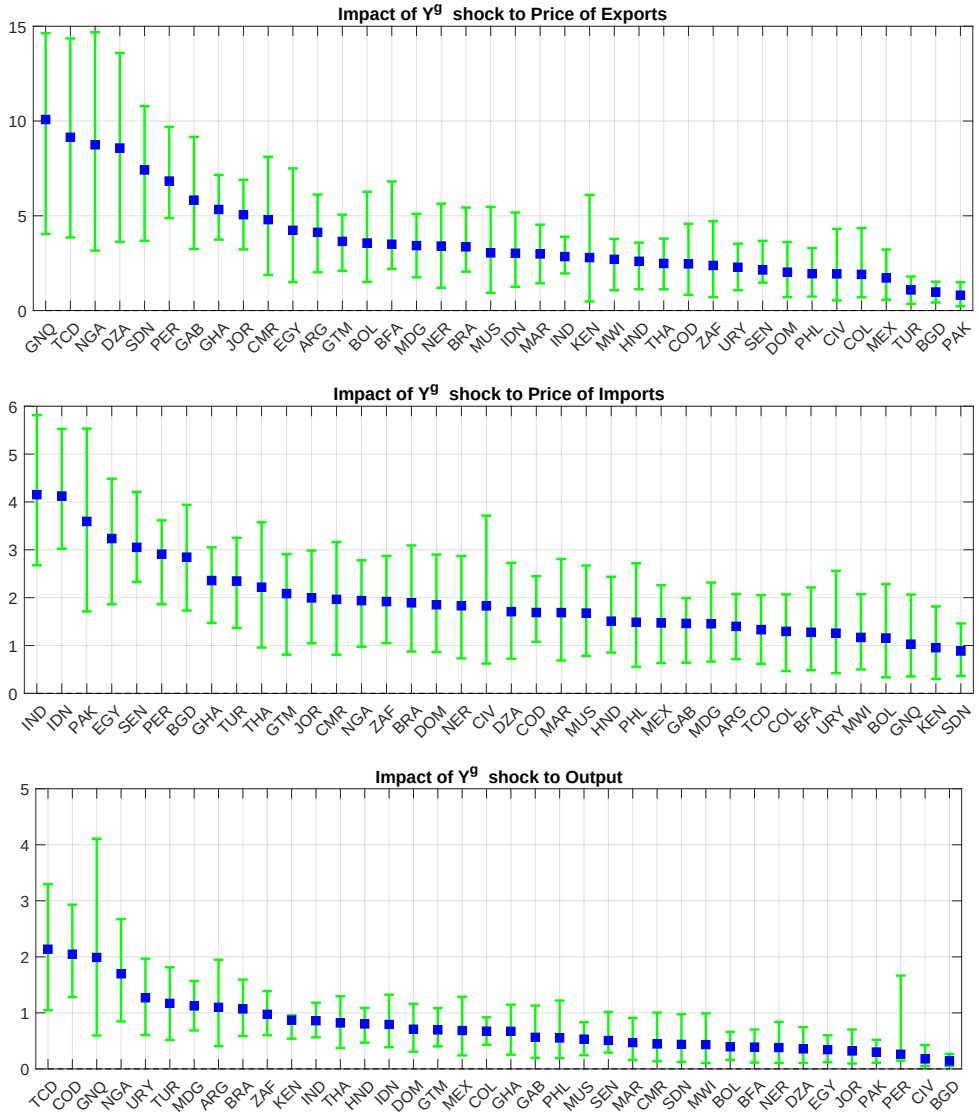
Notes: The table shows the forecast error variance decomposition of all the variables in the VAR for Y^g shocks on impact, at a 1-year, 2-year, 4-year and 10-year horizons. Reported are mean values weighted by each country's size proxied by their GDP (PPP).

Appendix D Cross-Country and Group Heterogeneity

D.1 Cross-Country Heterogeneity

Figure D.1 depicts the impact impulse response (blue square) of export prices, import prices and output to a one standard deviation shock in Y^g. We observe that the effects on export prices are higher than on import prices. Interestingly, the countries with the largest increase in export prices following a Y^g shock do not coincide with those showing the largest increase in import prices. The impact on output is heterogeneous across countries but large.

Figure D.1: Heterogeneous Effects of Y^g Shocks on Export Prices, Import Prices and Output



Notes: The figure shows the impact impulse response (blue square) on export prices, import prices and output (in %) for each country in the sample to a one standard deviation shock in Y^g. The green lines represent 16th and 84th percentile error bands.

Table D.1 shows the estimates of the determinants of the impact impulse responses of export prices, import prices, the terms of trade, output and the trade balance to a Y^g shock for the

Table D.1: Determinants of the Impulse Responses to a Global Economic Activity Shock

	IRF P^x	IRF P^m	IRF ToT	IRF Y	IRF TB
GDP Per Capita (PPP)	0.566**	0.059	0.462	0.058	-0.096
	(0.218)	(0.035)	(0.663)	(0.039)	(0.089)
Commodity Export Share	0.046***	-0.004	0.059***	-0.002	0.001
	(0.009)	(0.003)	(0.007)	(0.001)	(0.003)
Commodity Import Share	0.064**	0.033***	-0.019	-0.016**	-0.005
	(0.030)	(0.006)	(0.176)	(0.007)	(0.010)

Notes: The commodity export and import shares are the same as the ones reported in Table 1 of the main text. In all columns the total number of observations is 38 and the regression is robust to outliers. *, **, and *** denote significance at the 10%, 5% and 1% levels, respectively.

cross-section of countries.[37] Since in this case we are looking at the impact of one shock we use as regressors the GDP per capita (PPP), the commodity export share and the commodity import share.[38] We find that countries which have a higher commodity export share exhibit, on average, a larger response of export prices and the terms of trade after a Y^g shock. By contrast, the results suggest that countries which have a higher commodity import share display a larger response of import prices and export prices after a Y^g shock.

D.2 Analysis by Export and Import Group

We analyze the effects of P^x, P^m, and Y^g shocks by grouping the countries according to whether they are exporters or importers of main commodity groups. For exporters, we split the countries into agriculture (food and beverages), energy, manufacturing, metal and minerals (including precious metals) and agriculture raw materials (plus fertilizers).[39] A country is classified as an exporter for a given commodity if more than 25 percent of its commodity export share is within a particular commodity class. A country falls into the manufacturing exporter category if less than 30 percent of its exports are commodities.[40] For importers, we divide the countries into agriculture (food and beverages), energy, and manufacturing importers. A country is included in the category of importer of a given commodity if more than 15 percent of its commodity import share is within a particular commodity class. A country is classified as a manufacturing importer if less than 30 percent of its imports are commodities. The difference in the threshold for the classification of exporters and importers

[37] As before, the impact impulse response is defined as a 1 standard deviation shock in Y^g multiplied by 100 and we perform robust to outliers regressions.

[38] We also run separate specifications in which we have export and import characteristics in separate regressions as in Table 9 of the main text and the results remain robust. We do not include them here to preserve space but are available upon request.

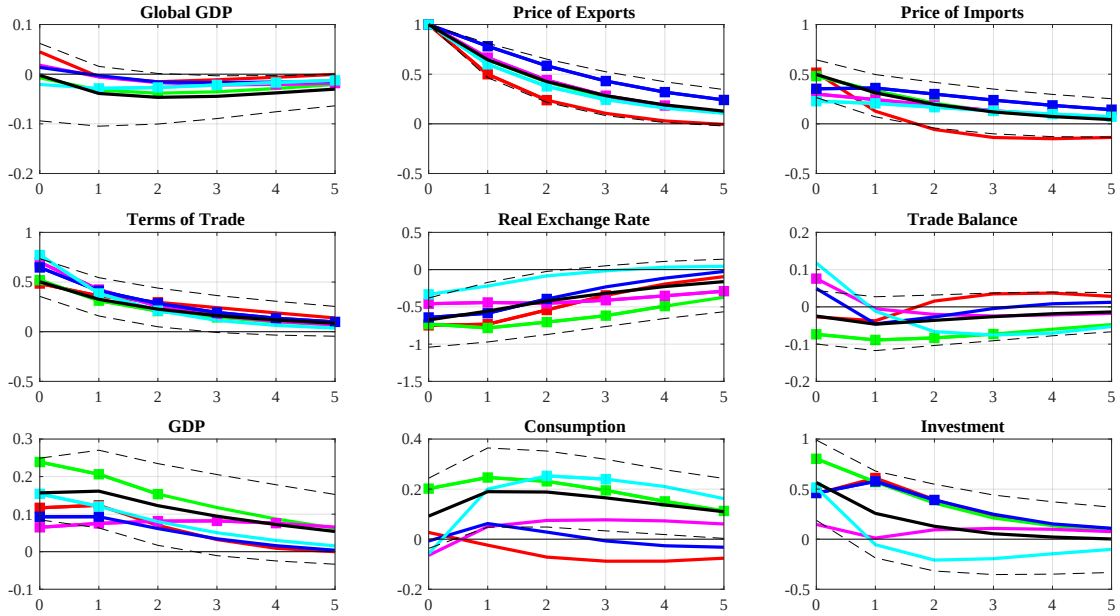
[39] We bundled precious metals into the metal category as otherwise we would have no countries in the precious metal exporters category. This happens because precious metal exports do not represent a large enough share of exports. Therefore, we can think of this group as related to mining activity and including both industrial and precious metals. In addition, we included fertilizers into the agriculture raw materials group because otherwise we were left with a very small group on its own.

[40] The following countries are agriculture (food and beverages) exporters: Argentina, Brazil, Colombia, Cote d'Ivoire, Ghana, Guatemala, Honduras, Kenya, Madagascar, Malawi, Mauritius, Senegal, Sudan, Thailand, and Uruguay. Energy exporters are Algeria, Bolivia, Cameroon, Chad, Colombia, Egypt, Equatorial Guinea, Gabon, Indonesia, Nigeria, and Sudan. The following countries are metal exporters: Bolivia, Congo, Peru, and South Africa. Manufacturing exporters are Bangladesh, Niger, Pakistan and Philippines. Finally, agriculture raw materials (plus fertilizers) exporters are Burkina Faso, Chad, Equatorial Guinea, Jordan, Malawi, and Sudan.

in each commodity group reflects the lower average share of commodities in imports and exports.[41]

The impulse responses for each export group are summarized in Figures D.2, D.3, D.4 while for each import group they are included in Figures D.5, D.6, D.7. Each color denotes a sector: agriculture (food and beverages) is in green, energy in magenta, manufacturing in red, metals in blue, agriculture raw materials (plus fertilizers) in turquoise, and for comparison purposes the results for all countries are in black (with the corresponding dashed confidence bounds). In all cases shocks have been normalized to a 1 percent increase in P^x, P^m, and Y^g, respectively. The solid lines denote the mean response weighted by the country's size proxied by their GDP. The squares denote that zero is not within the 68 percent confidence band.

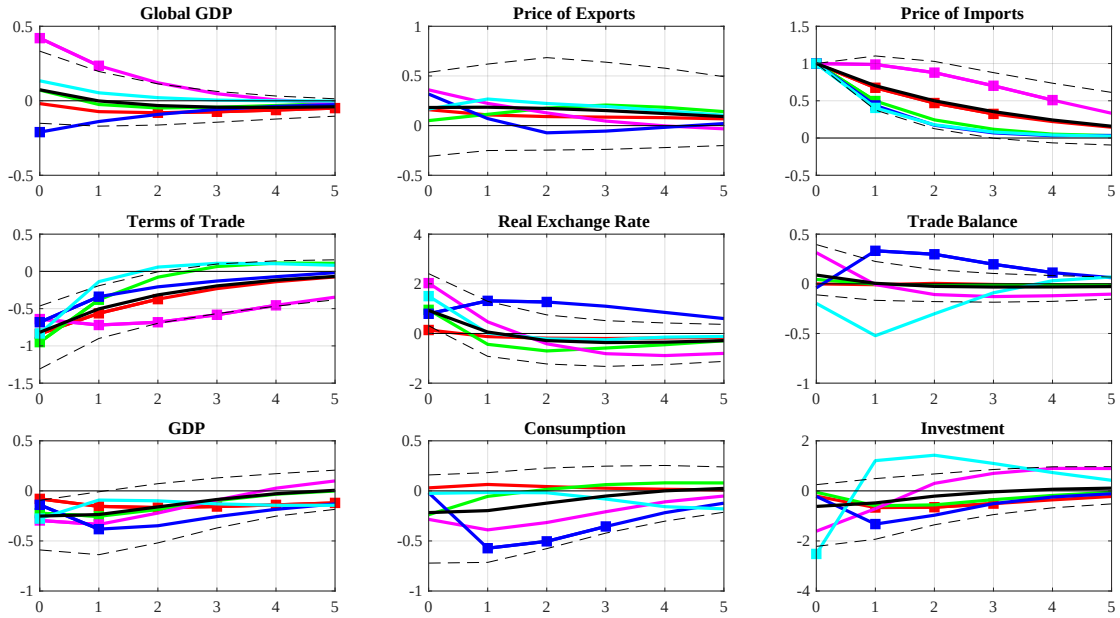
Figure D.2: Impulse Responses to an Export Price Shock by Export Group



Notes: The figure shows the impulse responses to an export price shock for countries in each commodity group using a VAR with sign and narrative restrictions. Each color represents a different export group: agriculture (food and beverages) exporters are in green, energy exporters in magenta, manufacturing exporters in red, metal exporters in blue and agriculture raw material (plus fertilizers) exporters in turquoise. The lines denote the mean response weighted by each country's size proxied by their GDP (PPP). The squares denote that zero is not within the 68 percent confidence band. For comparison, the impulse responses for all countries are shown in black with the corresponding 16th and 84th percentile error bands.

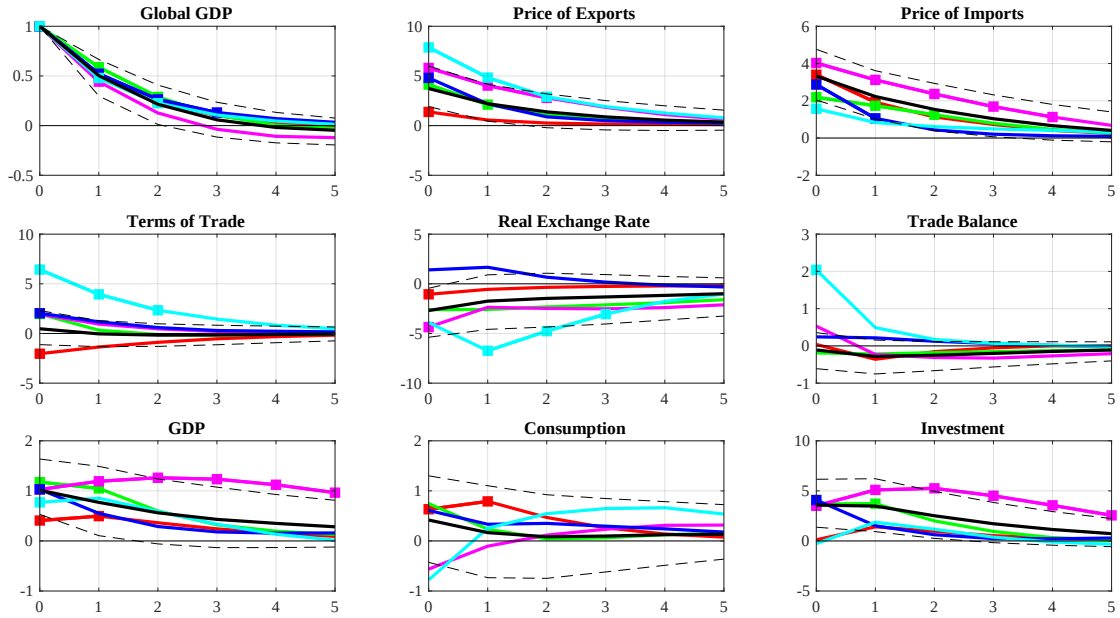
[41] The country split is as follows. Manufacturing importers is composed of Argentina, Bolivia, Burkina Faso, Chad, Colombia, Congo, Dominican Republic, Gabon, Ghana, Honduras, Madagascar, Malawi, Mauritius, Mexico, Niger, Nigeria, Philippines, South Africa and Sudan. The group of agriculture (food and beverages) importers includes Algeria, Bangladesh, Burkina Faso, Congo, Cote d'Ivoire, Egypt, Equatorial Guinea, Jordan, Madagascar, Mauritius, Niger, Senegal and Sudan. Energy importers are Brazil, Cote d' Ivoire, India, Indonesia, and Pakistan.

Figure D.3: Impulse Responses to an Import Price Shock by Export Group



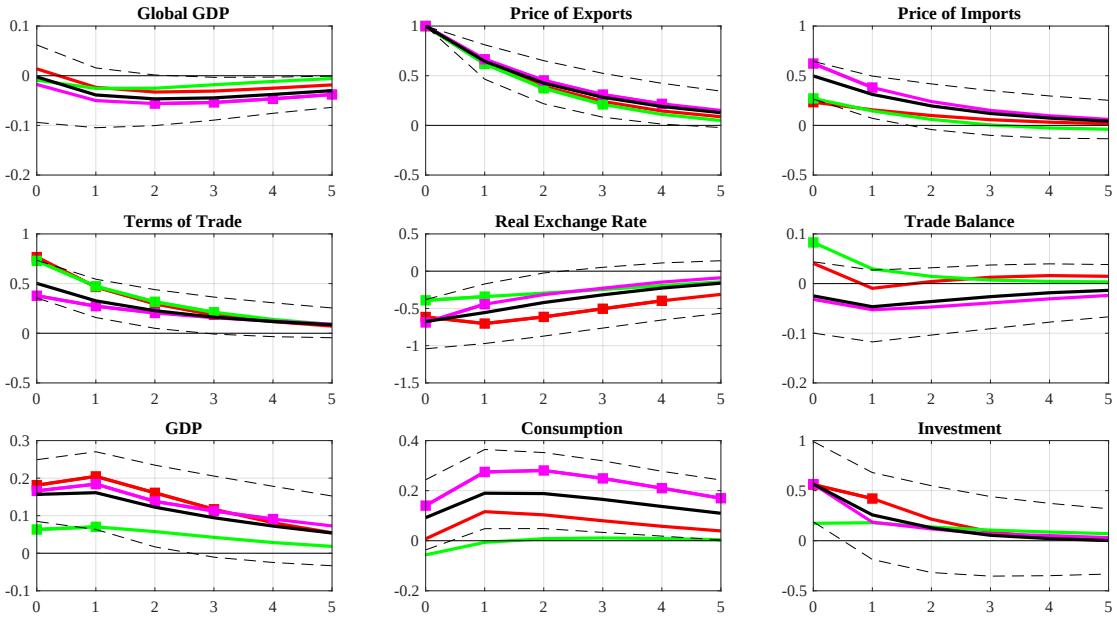
Notes: The figure shows the impulse responses to an import price shock for countries in each commodity group using a VAR with sign and narrative restrictions. Each color represents a different export group: agriculture (food and beverages) exporters are in green, energy exporters in magenta, manufacturing exporters in red, metal exporters in blue and agriculture raw material (plus fertilizers) exporters in turquoise. The lines denote the mean response weighted by each country's size proxied by their GDP (PPP). The squares denote that zero is not within the 68 percent confidence band. For comparison, the impulse responses for all countries are shown in black with the corresponding 16th and 84th percentile error bands.

Figure D.4: Impulse Responses to a Global Economic Activity Shock by Export Group



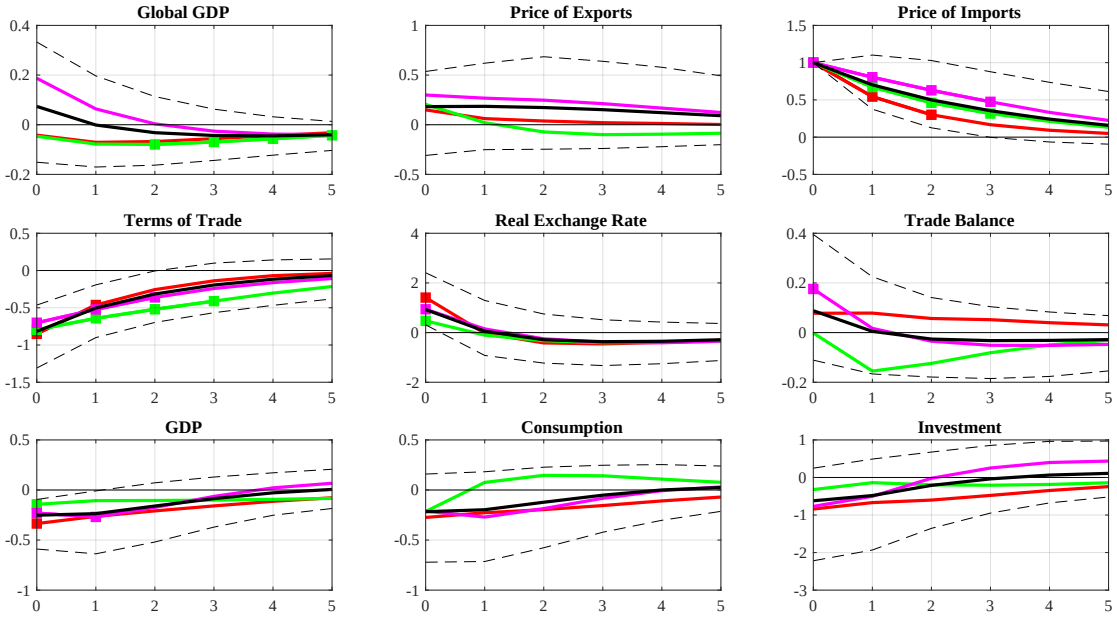
Notes: The figure shows the impulse responses to a global economic activity shock for countries in each commodity group using a VAR with sign and narrative restrictions. Each color represents a different export group: agriculture (food and beverages) exporters are in green, energy exporters in magenta, manufacturing exporters in red, metal exporters in blue and agriculture raw material (plus fertilizers) exporters in turquoise. The lines denote the mean response weighted by each country's size proxied by their GDP (PPP). The squares denote that zero is not within the 68 percent confidence band. For comparison, the impulse responses for all countries are shown in black with the corresponding 16th and 84th percentile error bands.

Figure D.5: Impulse Responses to an Export Price Shock by Import Group



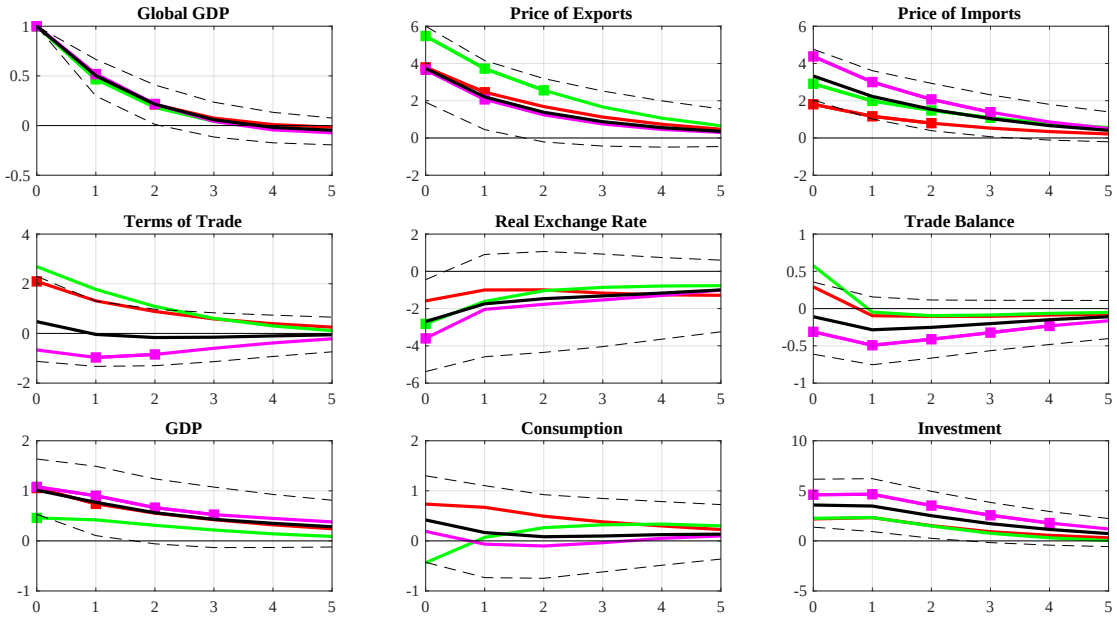
Notes: The figure shows the impulse responses to an export price shock for countries in each commodity group using a VAR with sign and narrative restrictions. Each color represents a different import group: agriculture (food and beverages) importers are in green, energy importers in magenta, and manufacturing importers in red. The lines denote the mean response weighted by each country's size proxied by their GDP (PPP). The squares denote that zero is not within the 68 percent confidence band. For comparison, the impulse responses for all countries are shown in black with the corresponding 16th and 84th percentile error bands.

Figure D.6: Impulse Responses to an Import Price Shock by Import Group



Notes: The figure shows the impulse responses to an import price shock for countries in each commodity group using a VAR with sign and narrative restrictions. Each color represents a different import group: agriculture (food and beverages) importers are in green, energy importers in magenta, and manufacturing importers in red. The lines denote the mean response weighted by each country's size proxied by their GDP (PPP). The squares denote that zero is not within the 68 percent confidence band. For comparison, the impulse responses for all countries are shown in black with the corresponding 16th and 84th percentile error bands.

Figure D.7: Impulse Responses to a Global Economic Activity Shock by Import Group



Notes: The figure shows the impulse responses to a global economic activity shock for countries in each commodity group using a VAR with sign and narrative restrictions. Each color represents a different import group: agriculture (food and beverages) importers are in green, energy importers in magenta, and manufacturing importers in red. The lines denote the mean response weighted by each country's size proxied by their GDP (PPP). The squares denote that zero is not within the 68 percent confidence band. For comparison, the impulse responses for all countries are shown in black with the corresponding 16th and 84th percentile error bands.

Table D.2: FEVD International Prices: Commodity Groups

	Exports Prices			Imports Prices			Terms of Trade		
	Y^g	P^x	P^m	Y^g	P^x	P^m	Y^g	P^x	P^m
	Agriculture (Food and Beverages) Exporters								
0	32.07	64.26	3.67	26.76	39.26	33.98	22.73	46.46	30.82
10	31.03	60.83	8.14	31.98	41.64	26.39	23.44	48.98	27.58
	Energy Exporters								
0	24.88	73.17	1.95	44.88	29.88	25.24	18.18	78.21	3.61
10	27.59	68.06	4.35	42.71	35.29	22.00	25.06	64.76	10.18
	Manufacturing Exporters								
0	19.92	66.52	13.55	40.04	13.19	46.77	33.95	20.04	46.01
10	22.17	54.91	22.91	36.70	17.03	46.27	31.79	23.82	44.40
	Metals Exporters								
0	29.56	68.25	2.19	36.25	42.77	20.98	22.10	71.84	6.06
10	25.94	69.37	4.69	27.90	58.29	13.80	23.26	67.96	8.77
	Agriculture Raw Materials (plus Fertilizers) Exporters								
0	37.62	59.05	3.33	19.44	32.72	47.83	36.77	55.74	7.49
10	38.11	54.73	7.16	22.92	47.65	29.44	40.67	51.67	7.67
	Agricultural Importers								
0	28.27	68.15	3.58	35.97	20.75	43.28	22.91	59.83	17.26
10	29.88	59.03	11.09	34.98	28.72	36.30	25.70	54.01	20.29
	Energy Importers								
0	39.97	54.40	5.62	47.81	25.54	26.65	26.11	33.59	40.30
10	35.86	52.09	12.05	44.42	27.14	28.44	27.38	34.76	37.86
	Manufacturing Importers								
0	25.41	70.94	3.65	33.35	28.81	37.84	15.99	70.19	13.82
10	28.30	65.25	6.45	33.70	36.39	29.91	20.91	64.75	14.34

Table D.3: FEVD Business Cycle: Commodity Groups

	Trade Balance			Output			Consumption			Investment		
	Y^g	P^x	P^m	Y^g	P^x	P^m	Y^g	P^x	P^m	Y^g	P^x	P^m
	Agriculture (Food and Beverages) Exporters											
0	4.76	8.27	7.66	15.54	21.23	5.18	7.03	14.73	8.19	11.13	17.52	2.82
10	14.56	24.67	10.25	21.44	32.36	11.67	14.45	30.42	11.98	19.99	24.87	10.30
	Energy Exporters											
0	11.92	10.76	9.05	12.02	9.41	4.36	5.18	8.21	5.18	12.66	4.37	4.94
10	22.73	19.75	11.22	29.31	25.40	10.15	14.19	20.23	11.21	27.61	14.89	10.84
	Manufacturing Exporters											
0	11.91	4.91	5.13	8.70	8.29	5.15	13.67	6.50	5.15	3.87	9.60	6.04
10	23.76	12.87	20.46	16.60	14.24	24.66	23.79	15.95	20.21	15.96	18.87	21.96
	Metals Exporters											
0	7.46	8.40	2.33	20.95	8.99	2.45	11.25	5.48	3.26	11.81	10.79	2.62
10	11.56	17.01	16.76	19.40	20.13	15.41	15.09	15.79	14.62	16.04	23.61	12.57
	Agriculture Raw Materials (plus Fertilizers) Exporters											
0	12.02	5.99	3.74	4.24	12.61	3.60	7.48	4.73	3.77	4.96	8.17	15.73
10	17.40	16.17	7.35	14.17	19.27	13.35	13.75	26.39	11.57	12.36	20.80	17.22
	Agricultural Importers											
0	12.40	15.27	6.53	7.15	10.78	6.48	8.40	13.20	7.10	12.09	6.75	6.05
10	17.96	20.83	14.19	15.52	23.02	16.45	21.12	24.62	17.63	19.43	19.25	14.77
	Energy Importers											
0	9.28	6.06	8.19	23.60	13.43	7.87	6.00	8.35	6.21	19.99	10.01	3.56
10	24.43	17.26	13.35	30.67	25.68	14.71	13.37	29.52	13.61	32.33	15.73	10.99
	Manufacturing Importers											
0	10.53	7.38	6.79	14.42	14.18	8.68	10.54	5.27	9.29	11.22	12.08	7.63
10	18.06	20.24	12.56	18.89	29.49	14.68	17.29	17.47	15.06	20.07	19.91	14.66

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