

## **Chartbook of Real Commodity Prices, 1850-2020**

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### **Abstract**

This chartbook is an update of Jacks, D.S. (2019), "From Boom to Bust: A Typology of Real Commodity Prices in the Long Run." *Cliometrica* 13(2), 2019: 201-220. It considers a publicly available dataset on an expanded range of 40 commodities, comprising 7.22 trillion USD worth of production in 2019 and spanning the years from 1850 to 2020. It also presents evidence on three new general commodity price indices using various weighting schemes for the period from 1900 to 2020. Applying weights drawn from the value of production in 1975, real commodity prices are estimated to have increased by 13.03% (or 0.10% per annum) from 1900 and 23.59% (or 0.18% per annum) from 1950. The data also indicates the presence of two complete commodity price cycles, entailing multi-year positive deviations from the long-run trend. A currently evolving cycle was initiated in 1998, reached its peak in 2011, and is now likely nearing its trough.

## **Charts**

This chartbook considers the evidence on 40 real commodity price series which are drawn from seven product categories—animal products, energy products, grains, metals, minerals, precious metals, and soft commodities—and which are enumerated in Table 1.

Figures 1a through 7d depict the evolution of the underlying series. Figure 8 applies three weighting schemes to the real commodity price series from 1900 to 2020: shares based on 1975 production values, shares based on 2019 production values, and equal shares. Here, I treat the index based on 1975 production values as the preferred measure of general commodity price movements. Figure 9 depicts various sub-indices representing commodities to be grown, commodities in the ground, and commodities in the ground, ex-energy. Figures 10a through 13b depict exercises in trend-cycle decomposition for all of the indices as described in Jacks (2019).

## Sources

This notes details the sources of the real commodity prices used throughout this paper. As such, there are a few key sources of data: the annual Sauerbeck/*Statist* (SS) series dating from 1850 to 1950; the annual Grilli and Yang (GY) series dating from 1900 to 1986; and the monthly International Monetary Fund (IMF), United Nations Conference on Trade and Development (UNCTAD), and World Bank (WB) series dating variously from 1960 and 1980. The relevant references are:

Grilli, E.R. and M.C. Yang (1988), "Primary Commodity Prices, Manufactured Goods Prices, and the Terms of Trade of Developing Countries: What the Long Run Shows." *World Bank Economic Review* 2(1): 1-47.

Sauerbeck, A. (1886), "Prices of Commodities and the Precious Metals." *Journal of the Statistical Society of London* 49(3): 581-648.

Sauerbeck, A. (1893), "Prices of Commodities During the Last Seven Years." *Journal of the Royal Statistical Society* 56(2): 215-54.

Sauerbeck, A. (1908), "Prices of Commodities in 1908." *Journal of the Royal Statistical Society* 72(1): 68-80.

Sauerbeck, A. (1917), "Wholesale Prices of Commodities in 1916." *Journal of the Royal Statistical Society* 80(2): 289-309.

The *Statist* (1930), "Wholesale Prices of Commodities in 1929." *Journal of the Royal Statistical Society* 93(2): 271-87.

"Wholesale Prices in 1950." *Journal of the Royal Statistical Society* 114(3): 408-422.

A more detailed enumeration of the sources for each individual series is as follows.

*Aluminum*: 1900-1979, GY; 1980-2020, IMF.

*Barley*: 1850-1869, SS; 1870-1959, Manthy, R.S. (1974), *Natural Resource Commodities - A Century of Statistics*. Baltimore and London: Johns Hopkins Press; 1960-2020, WB.

*Bauxite*: 1900-2020, USGS.

*Beef*: 1850-1899, SS; 1900-1959, GY; 1960-2020, WB.

*Chromium*: 1900-2020, USGS.

*Coal*: 1850-1851, Cole, A.H. (1938), *Wholesale Commodity Prices in the United States, 1700-1861: Statistical Supplement*. Cambridge: Harvard University Press; 1852-1859, Bezanson, A. (1954), *Wholesale Prices in Philadelphia 1852-1896*. Philadelphia: University of Pennsylvania Press; 1880-1948, Carter, S. et al. (2006), *Historical Statistics of the United States, Millennial Edition*. Cambridge: Cambridge University Press; 1949-2020, United States Energy Information Administration.

*Cocoa*: 1850-1899, Global Financial Data; 1900-1959, GY; 1960-2020, WB.

*Coffee*: 1850-1959, Global Financial Data; 1960-2020, WB.

*Copper*: 1850-1899, SS; 1900-1979, GY; 1980-2020, IMF.

*Corn*: 1850-1851, Cole, A.H. (1938), *Wholesale Commodity Prices in the United States, 1700-1861: Statistical Supplement*. Cambridge: Harvard University Press; 1852-1859;

Bezanson, A. (1954), *Wholesale Prices in Philadelphia 1852-1896*. Philadelphia: University of Pennsylvania Press; 1860-1999, Global Financial Data; 2000-2020, United States Department of Agriculture National Agricultural Statistics Service.

*Cotton*: 1850-1899, SS; 1900-1959, GY; 1960-2020, WB.

*Cottonseed*: 1874-1972, Manthy, R.S. (1974), *Natural Resource Commodities - A Century of Statistics*. Baltimore and London: Johns Hopkins Press; 1973-2020, National Agricultural Statistics Service.

*Gold*: 1850-1999, Global Financial Data; 2000-2020, Kitco.

*Hides*: 1850-1899, SS; 1900-1959, GY; 1960-2020, UNCTAD.

*Iron ore*: 1900-2010, USGS; 2011-2020, IMF.

*Lamb*: 1850-1899, SS; 1900-1980, GY; 1980-2020, IMF.

*Lead*: 1850-1899, SS; 1900-1979, GY; 1980-2020, IMF.

*Manganese*: 1900-2004, USGS; 2005-2020, Metalry.

*Natural gas*: 1900-1921, Carter, S. et al. (2006), *Historical Statistics of the United States, Millennial Edition*. Cambridge: Cambridge University Press; 1922-2020, United States Energy Information Administration.

*Nickel*: 1850-1979, USGS; 1980-2020, IMF.

*Palm oil*: 1850-1899, SS; 1900-1959, GY; 1960-2020, WB.

*Peanuts*: 1870-1972, Manthy, R.S. (1974), *Natural Resource Commodities - A Century of Statistics*. Baltimore and London: Johns Hopkins Press; 1973-1979, National Agricultural Statistics Service; 1980-2020, WB.

*Petroleum*: 1860-1981, Global Financial Data; 1982-2020, WB.

*Phosphate*: 1880-1959, Manthy, R.S. (1974), *Natural Resource Commodities - A Century of Statistics*. Baltimore and London: Johns Hopkins Press; 1960-2020, WB.

*Platinum*: 1900-1909, USGS; 1910-1991, Global Financial Data; 1992-2020, Kitco.

*Pork*: 1850-1851, Cole, A.H. (1938), *Wholesale Commodity Prices in the United States, 1700-1861: Statistical Supplement*. Cambridge: Harvard University Press; 1852-1857, Bezanson, A. (1954), *Wholesale Prices in Philadelphia 1852-1896*. Philadelphia: University of Pennsylvania Press; 1858-1979, Global Financial Data; 1980-2020, IMF.

*Potash*: 1900-1959, USGS; 1960-2020, WB.

*Rice*: 1850-1899, SS; 1900-1959, GY; 1960-2020, WB.

*Rubber*: 1890-1899, Global Financial Data; 1900-1959, GY; 1960-2020, WB.

*Rye*: 1850-1851, Cole, A.H. (1938), *Wholesale Commodity Prices in the United States, 1700-1861: Statistical Supplement*. Cambridge: Harvard University Press; 1852-1869, Bezanson, A. (1954), *Wholesale Prices in Philadelphia 1852-1896*. Philadelphia: University of Pennsylvania Press; 1870-1970, Manthy, R.S. (1974), *Natural Resource Commodities - A Century of Statistics*. Baltimore and London: Johns Hopkins Press; 1971-2020, National Agricultural Statistics Service.

*Silver*: 1850-2020, Kitco.

*Steel*: 1897-1998, USGS; 1999-2011, WB; 2012-2020, FRED.

*Sugar*: 1850-1899, SS; 1900-1959, GY; 1960-2020, WB.

*Sulfur*: 1870-1899, Manthy, R.S. (1974), *Natural Resource Commodities - A Century of Statistics*. Baltimore and London: Johns Hopkins Press; 1900-2020, USGS.

*Tea*: 1850-1899, SS; 1900-1959, GY; 1960-2020, WB.

*Tin*: 1850-1899, SS; 1900-1979, GY; 1980-2020, IMF.

*Tobacco*: 1850-1865, Clark, G. (2005), "The Condition of the Working Class in England, 1209-2004." *Journal of Political Economy* 113(6): 1307-1340; 1866-1899, Carter, S. et al. (2006), *Historical Statistics of the United States, Millennial Edition*. Cambridge: Cambridge University Press; 1900-1959, GY; 1960-2020, WB.

*Wheat*: 1850-1978, Global Financial Data; 1979-2020, WB.

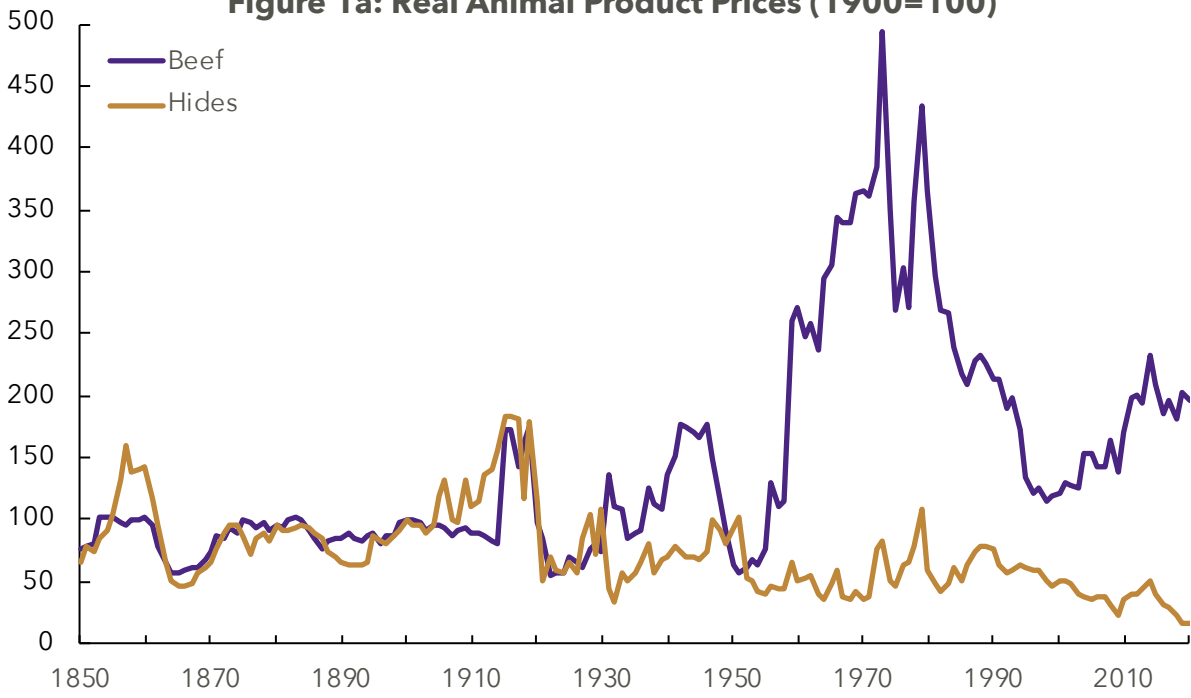
*Wool*: 1850-1899, SS; 1900-1979, GY; 1980-2020, IMF.

*Zinc*: 1850-1899, Global Financial Data; 1900-1979, GY; 1980-2020, IMF.

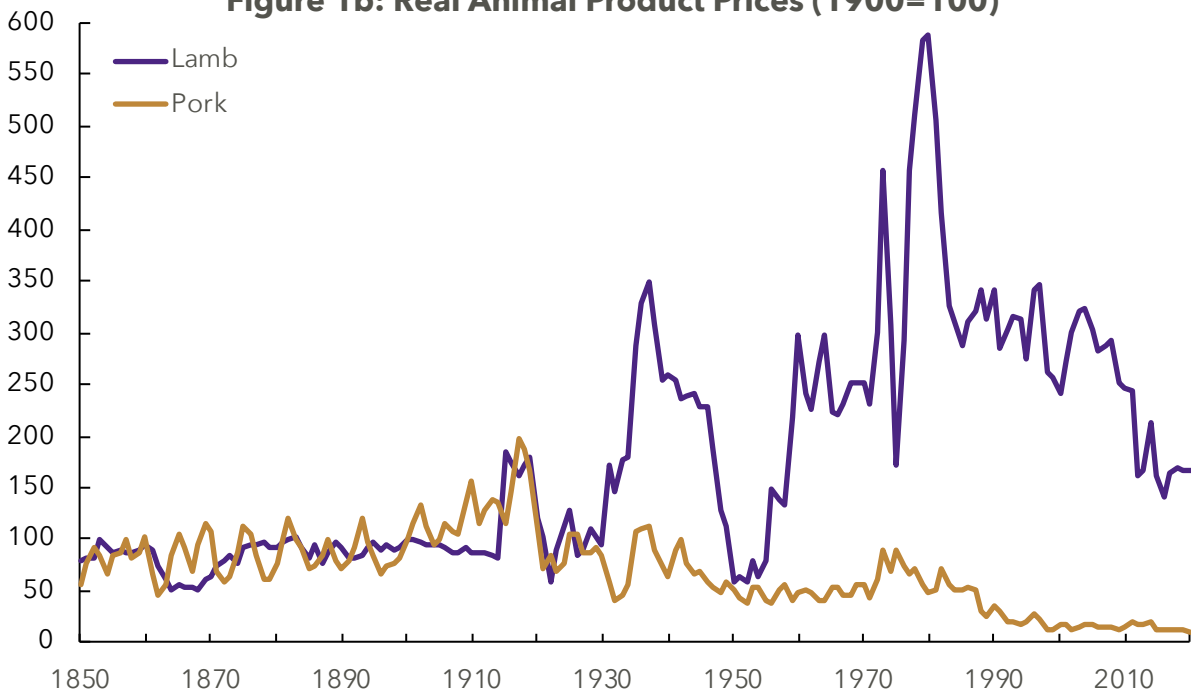
**Table 1: Value of Production across Commodities in 2019**

<b>Commodity</b>	<b>Production in 2019</b>	<b>Units of measurement</b>	<b>Value (b 2019 USD)</b>
<b>Animal products</b>			<b>545.12</b>
Beef	70.38	Million tonnes	335.01
Hides	8.55	Million tonnes	3.25
Lamb	15.04	Million tonnes	38.41
Pork	117.84	Million tonnes	168.45
<b>Energy products</b>			<b>2895.41</b>
Coal	7.92	Billion tonnes	508.89
Natural gas	3.99	Trillion cubic m.	363.97
Petroleum	4.84	Billion tonnes	2022.56
<b>Grains</b>			<b>591.14</b>
Barley	158.98	Million tonnes	20.36
Corn	1.15	Billion tonnes	195.32
Rice	503.90	Million tonnes	210.63
Rye	12.80	Million tonnes	3.03
Wheat	765.77	Million tonnes	161.79
<b>Metals</b>			<b>2472.91</b>
Aluminum	63.70	Million tonnes	114.31
Chromium	44.00	Million tonnes	96.80
Copper	24.50	Million tonnes	147.25
Lead	4.72	Million tonnes	9.42
Manganese	19.60	Million tonnes	29.40
Nickel	2.61	Million tonnes	36.32
Steel	1.86	Billion tonnes	2001.50
Tin	296.00	Thousand tonnes	5.52
Zinc	12.70	Million tonnes	32.39
<b>Minerals</b>			<b>201.53</b>
Bauxite	358.00	Million tonnes	9.25
Iron ore	2.45	Billion tonnes	157.76
Phosphate	227.00	Million tonnes	19.97
Potash	41.30	Million tonnes	10.55
Sulfur	80.00	Million tonnes	4.00
<b>Precious metals</b>			<b>182.92</b>
Gold	3.30	Thousand tonnes	162.10
Platinum	186.00	Tonnes	5.66
Silver	26.50	Thousand tonnes	15.15
<b>Soft commodities</b>			<b>331.58</b>
Cocoa	5.60	Million tonnes	13.10
Coffee	10.04	Million tonnes	28.90
Cotton	25.82	Million tonnes	44.33
Cottonseed	44.76	Million tonnes	8.45
Palm oil	41.50	Million tonnes	24.97
Peanuts	48.76	Million tonnes	64.91
Rubber	14.62	Million tonnes	23.97
Sugar	181.00	Million tonnes	50.68
Tea	6.50	Million tonnes	16.70
Tobacco	6.69	Million tonnes	31.60
Wool	1.72	Million tonnes	23.97

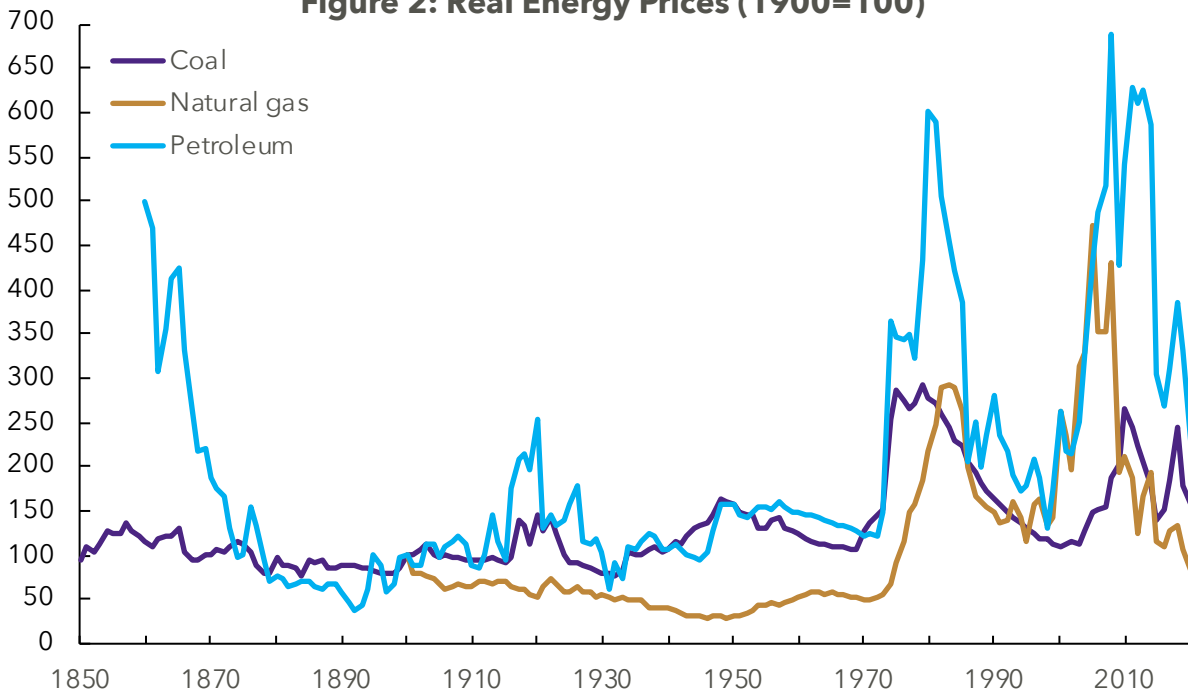
**Figure 1a: Real Animal Product Prices (1900=100)**



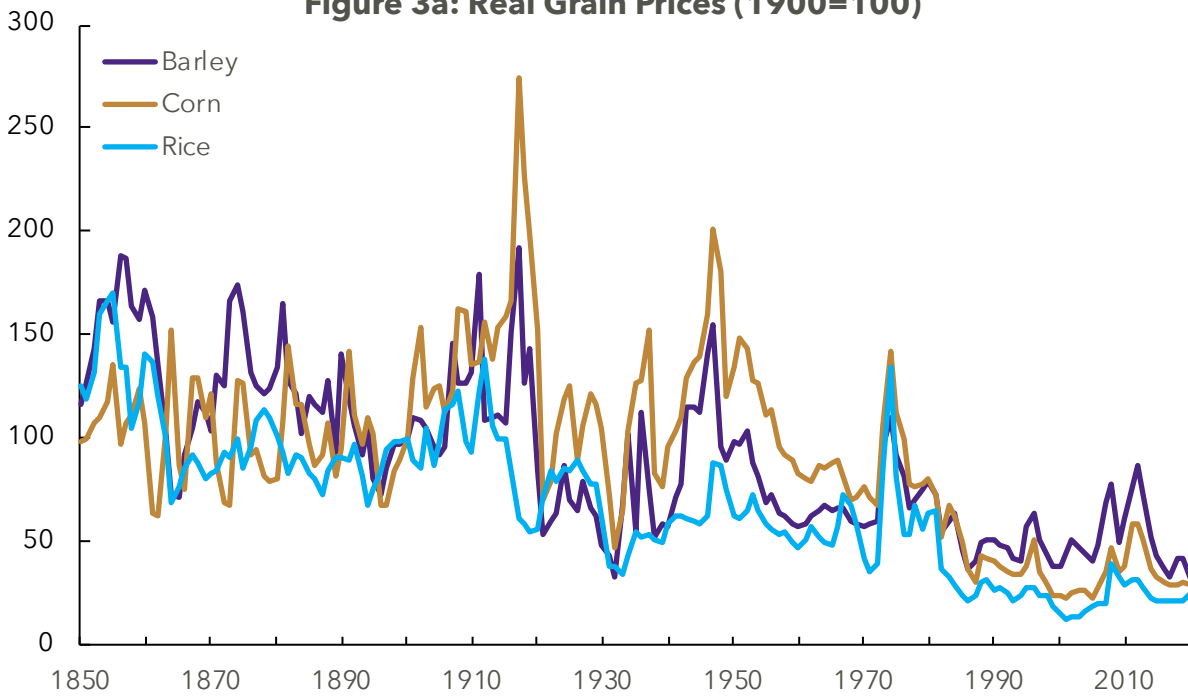
**Figure 1b: Real Animal Product Prices (1900=100)**



**Figure 2: Real Energy Prices (1900=100)**

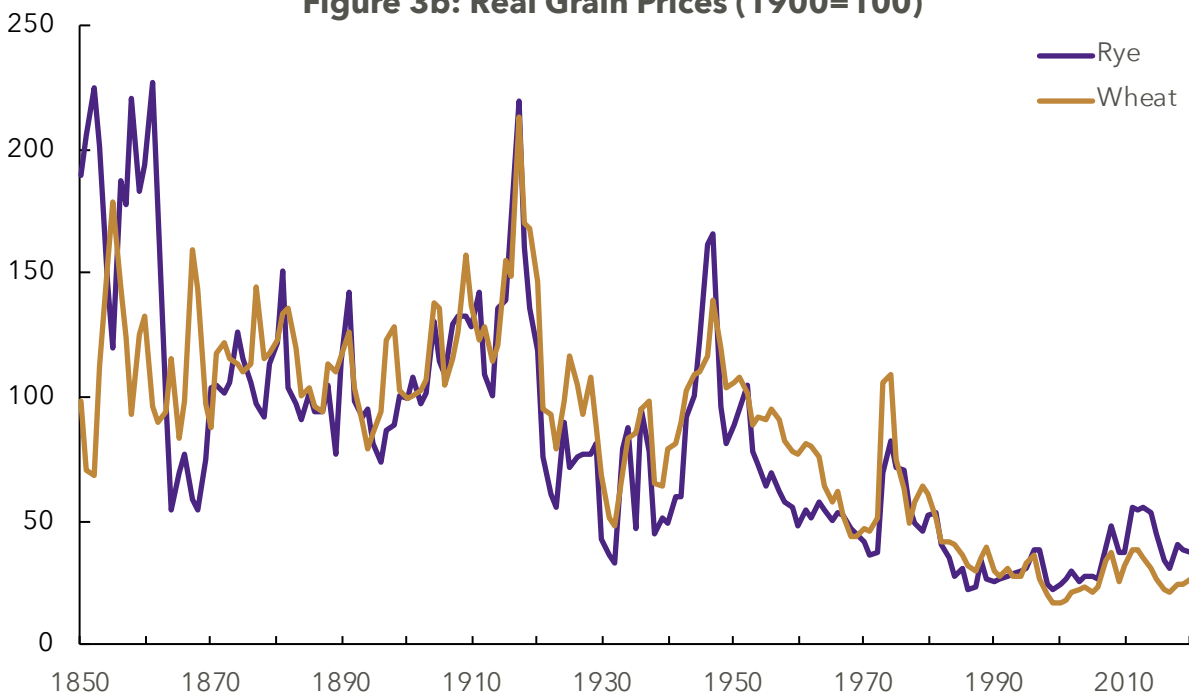


**Figure 3a: Real Grain Prices (1900=100)**

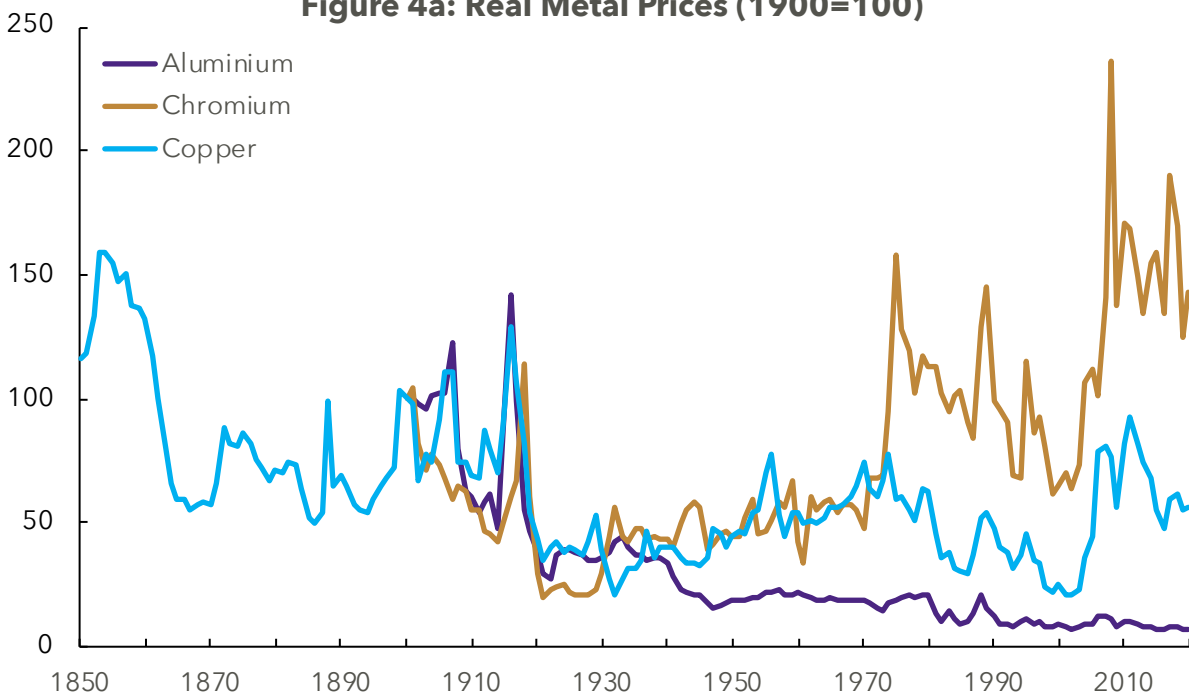




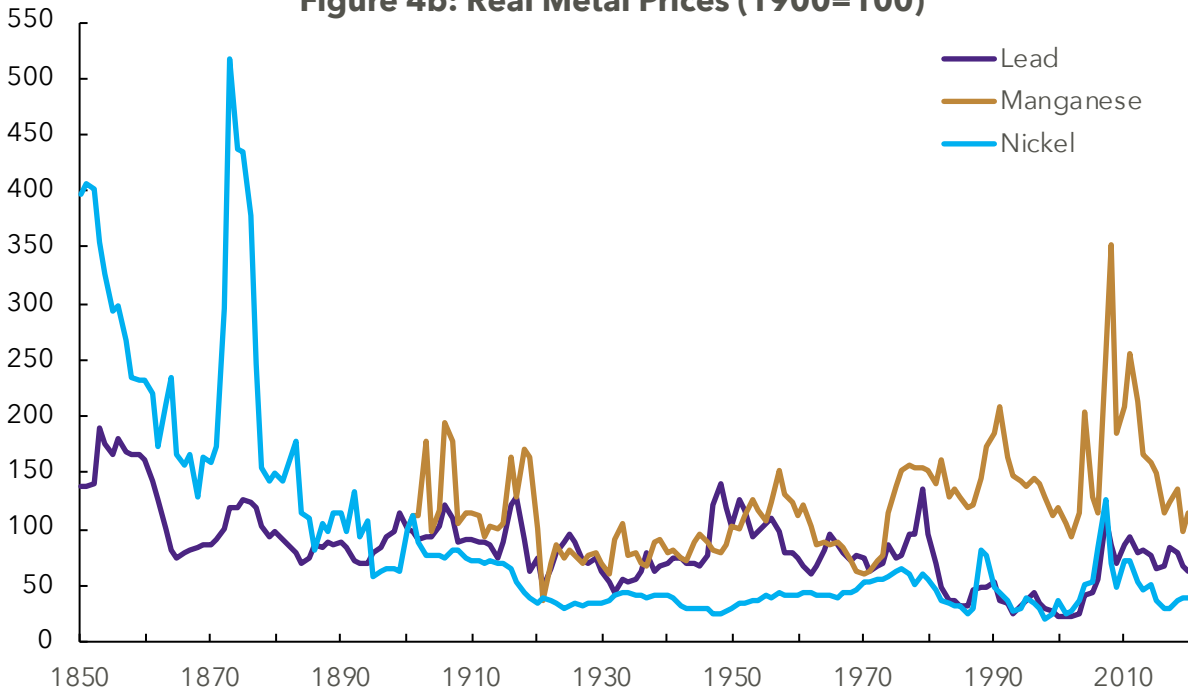
**Figure 3b: Real Grain Prices (1900=100)**



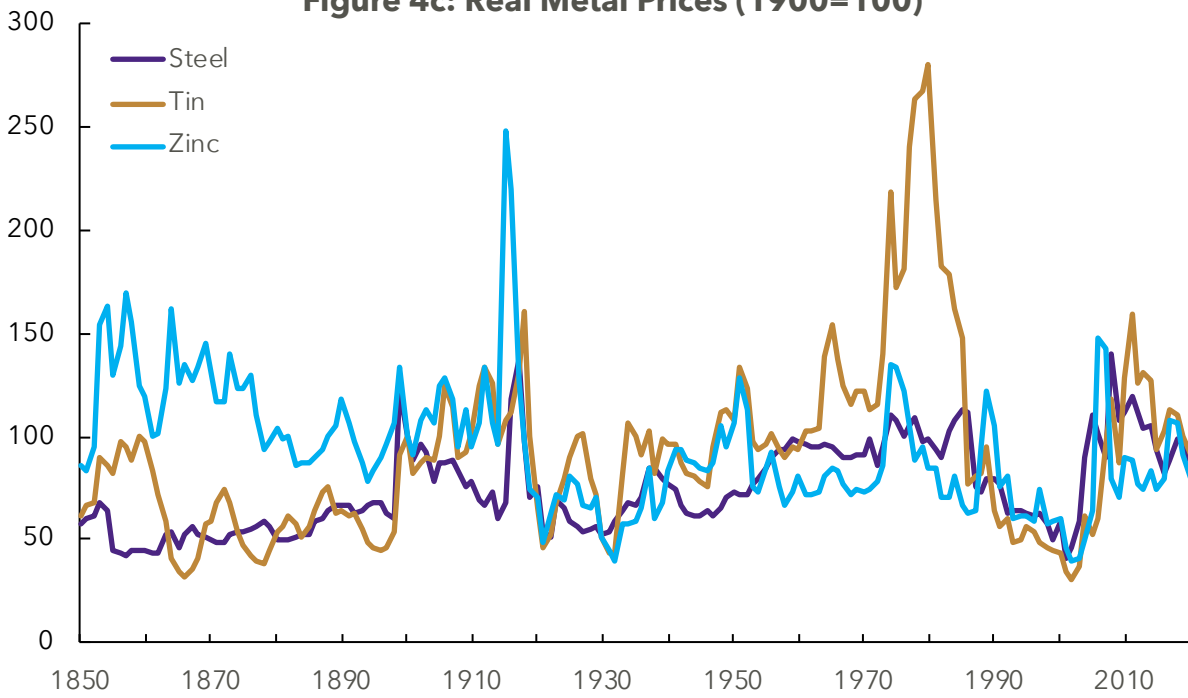
**Figure 4a: Real Metal Prices (1900=100)**



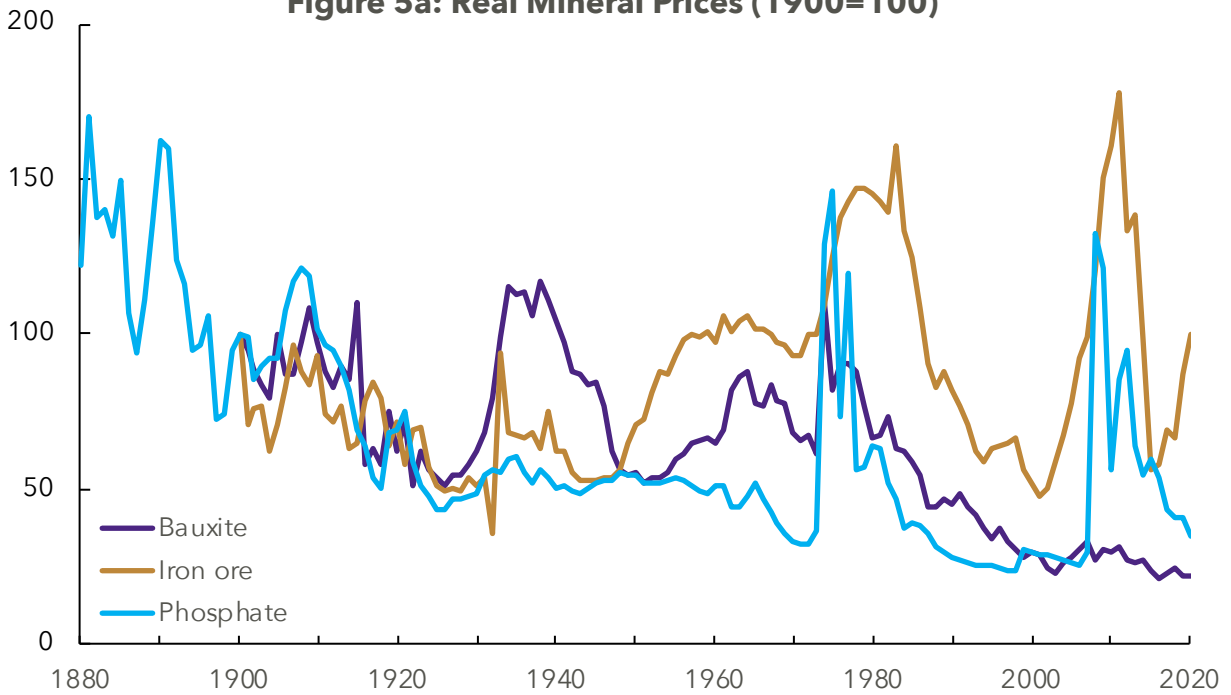
**Figure 4b: Real Metal Prices (1900=100)**



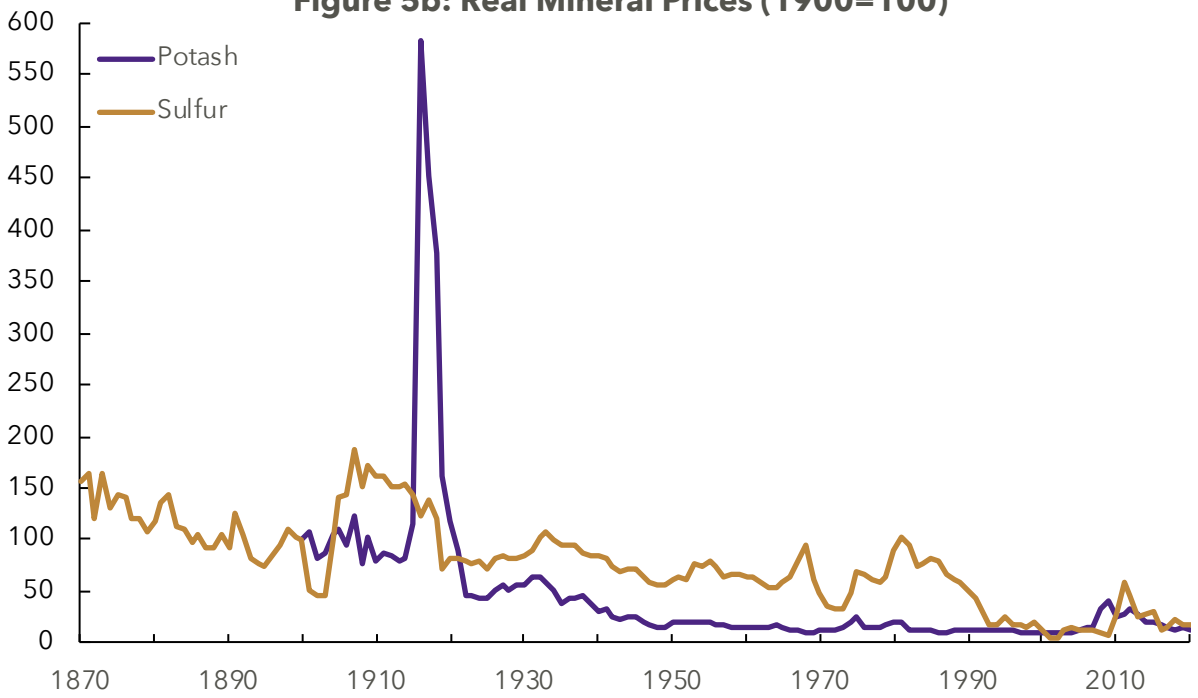
**Figure 4c: Real Metal Prices (1900=100)**



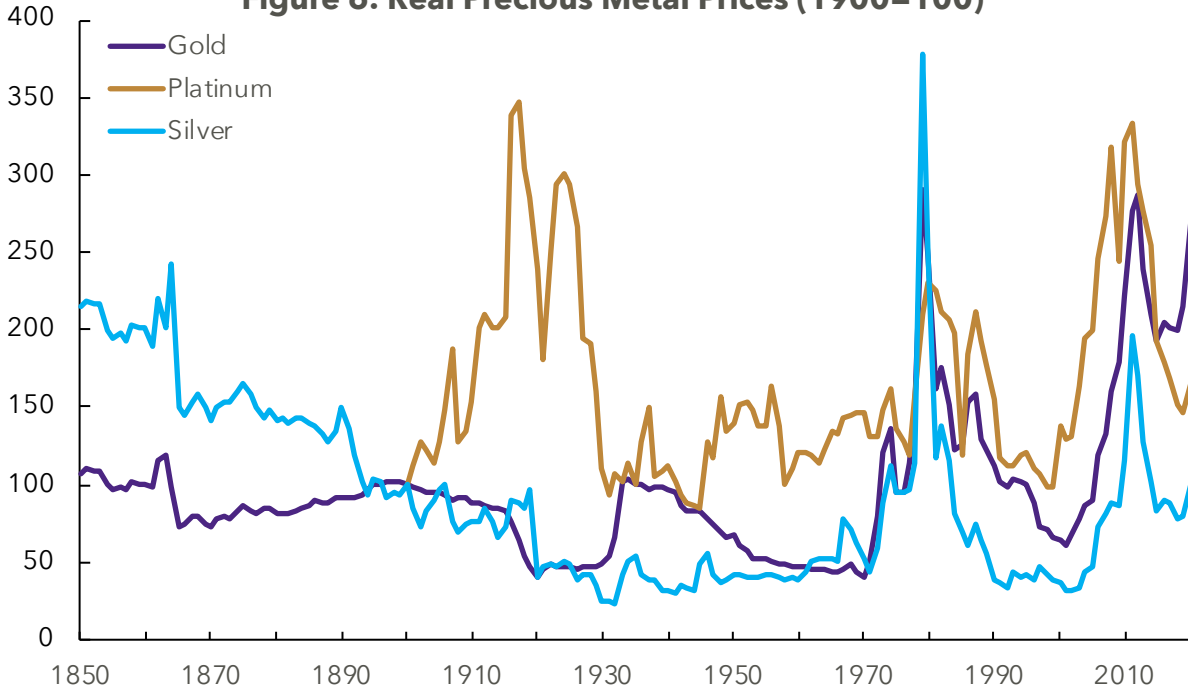
**Figure 5a: Real Mineral Prices (1900=100)**



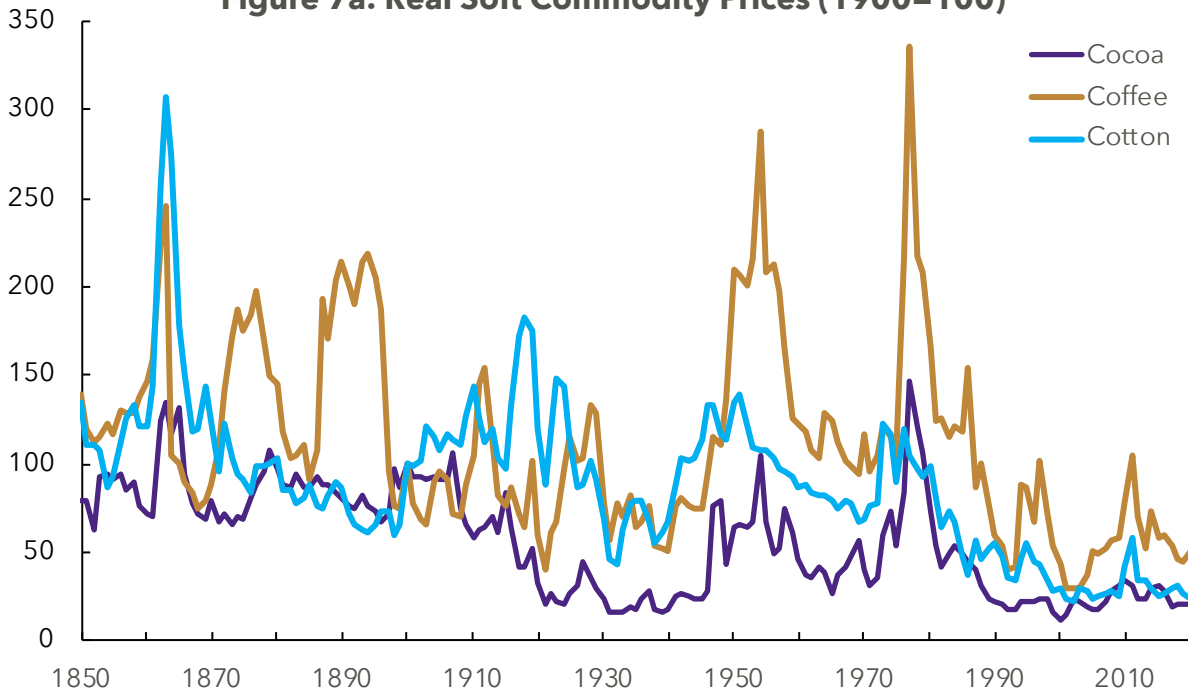
**Figure 5b: Real Mineral Prices (1900=100)**



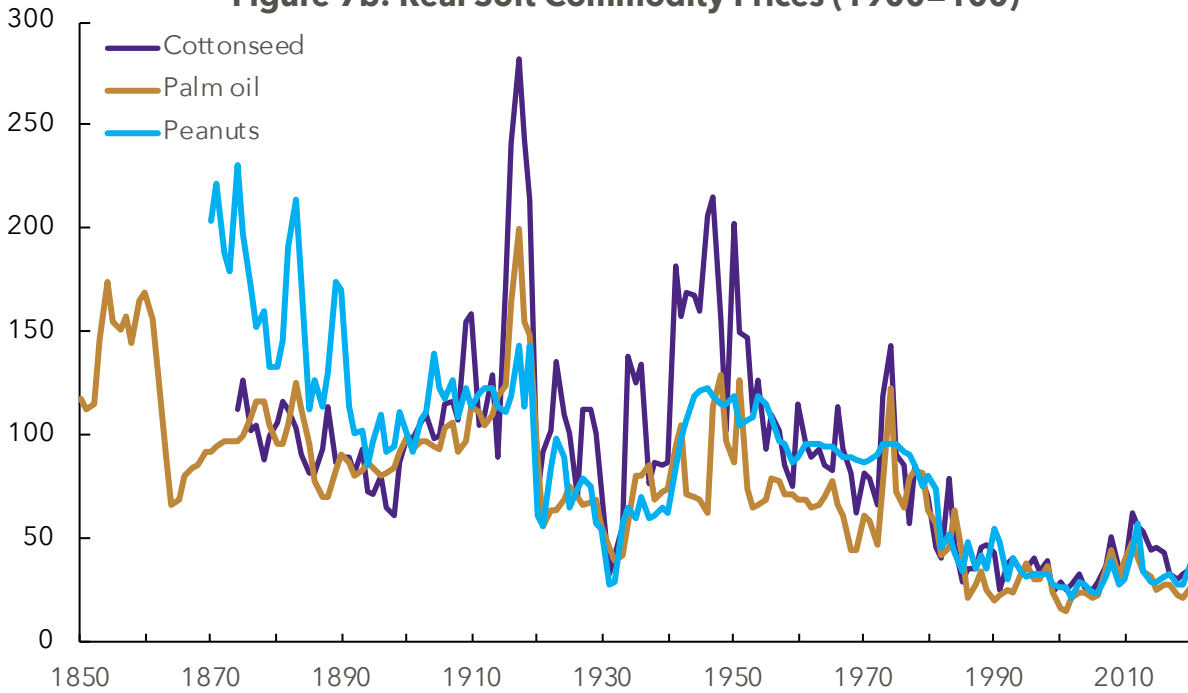
**Figure 6: Real Precious Metal Prices (1900=100)**



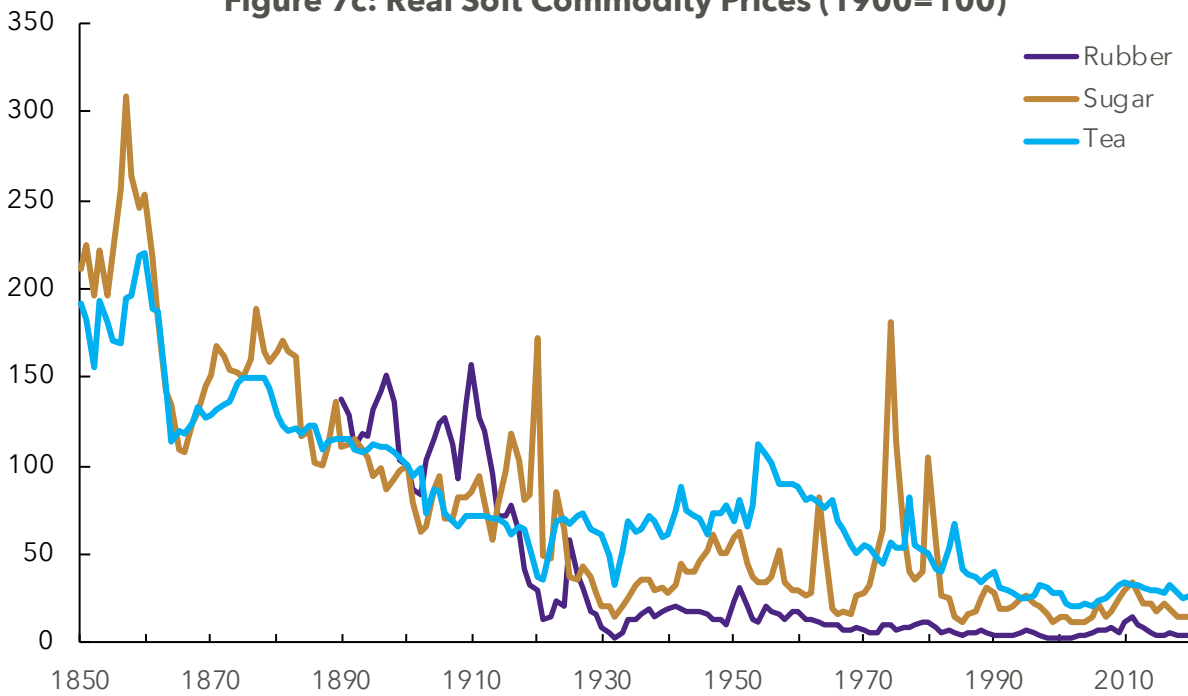
**Figure 7a: Real Soft Commodity Prices (1900=100)**



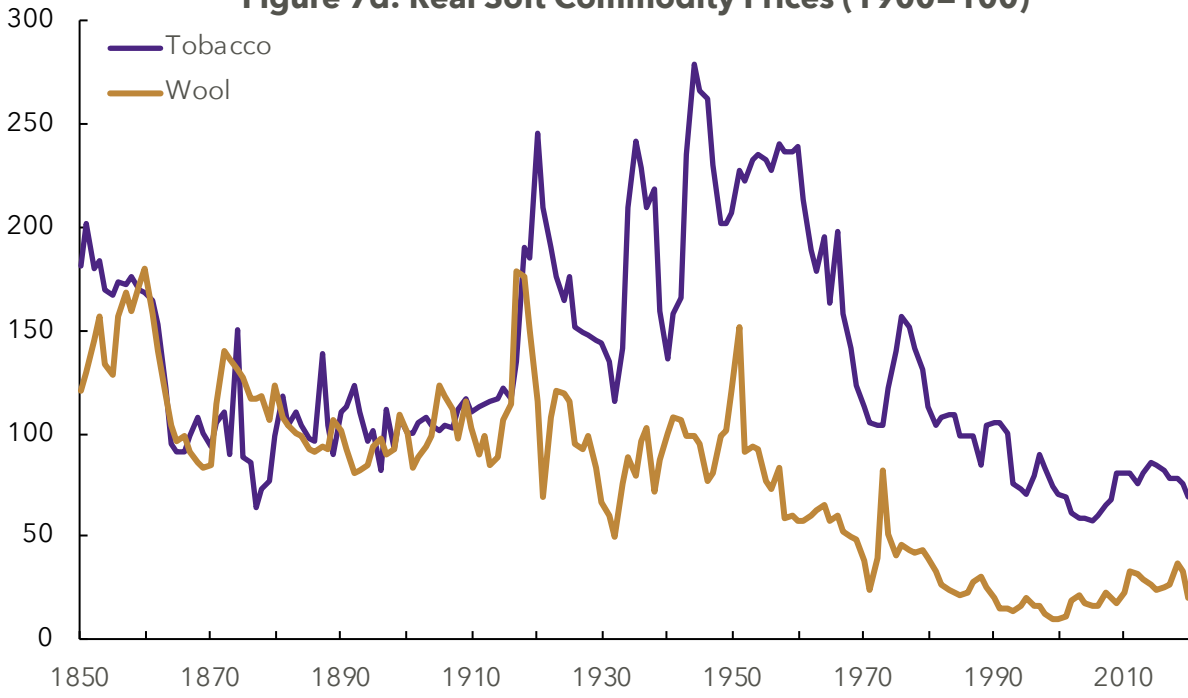
**Figure 7b: Real Soft Commodity Prices (1900=100)**



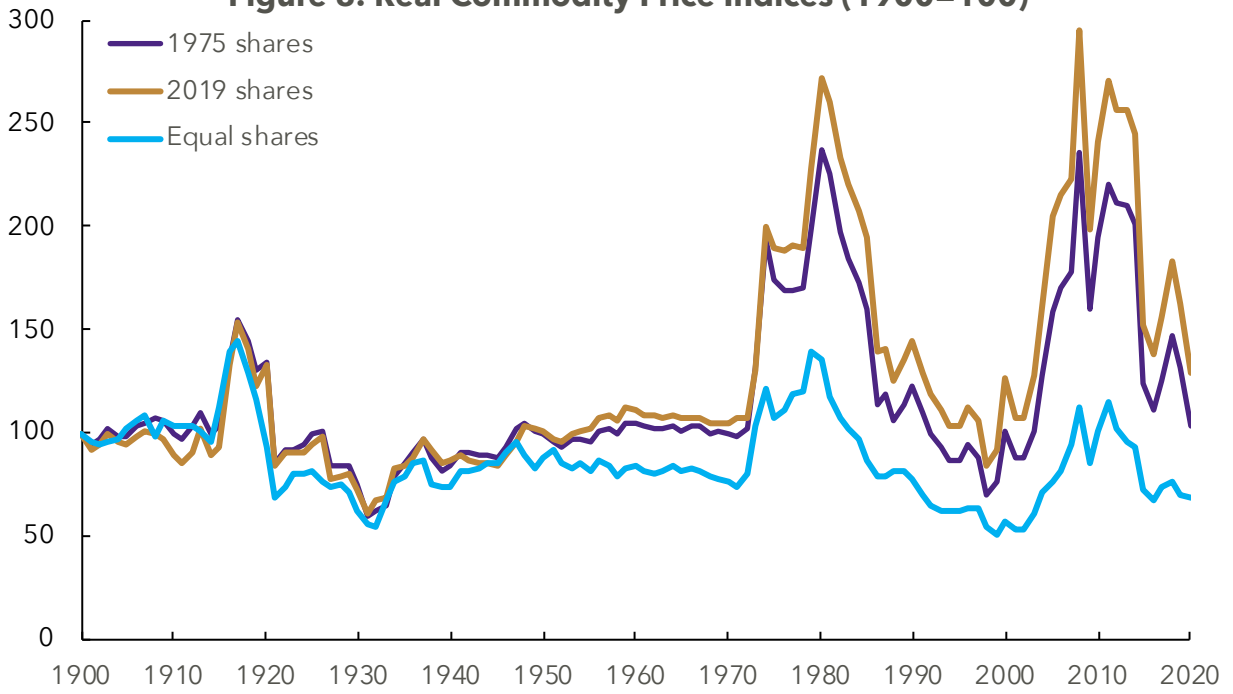
**Figure 7c: Real Soft Commodity Prices (1900=100)**



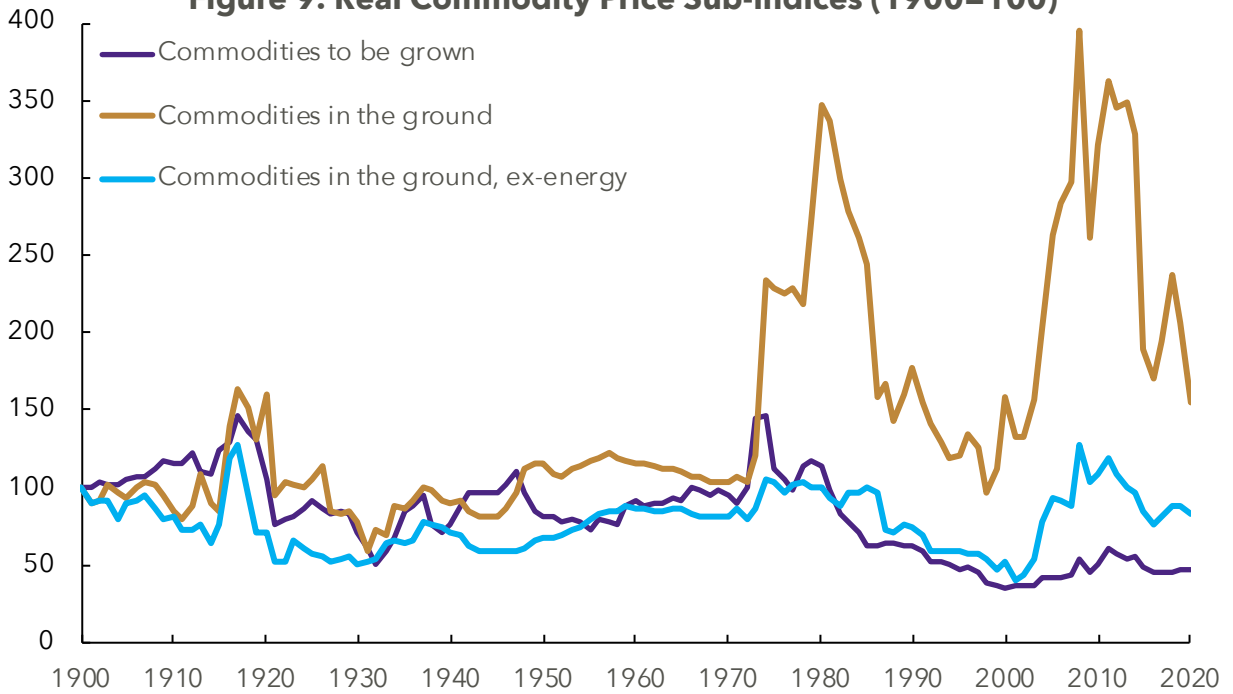
**Figure 7d: Real Soft Commodity Prices (1900=100)**



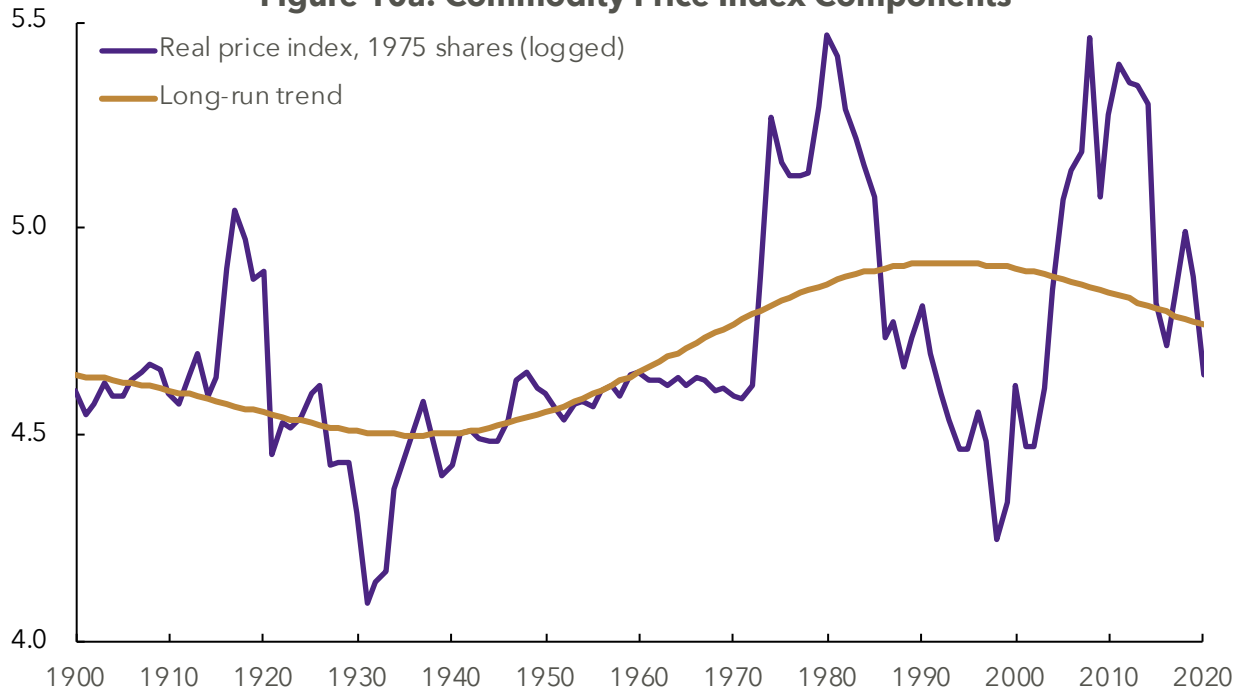
**Figure 8: Real Commodity Price Indices (1900=100)**



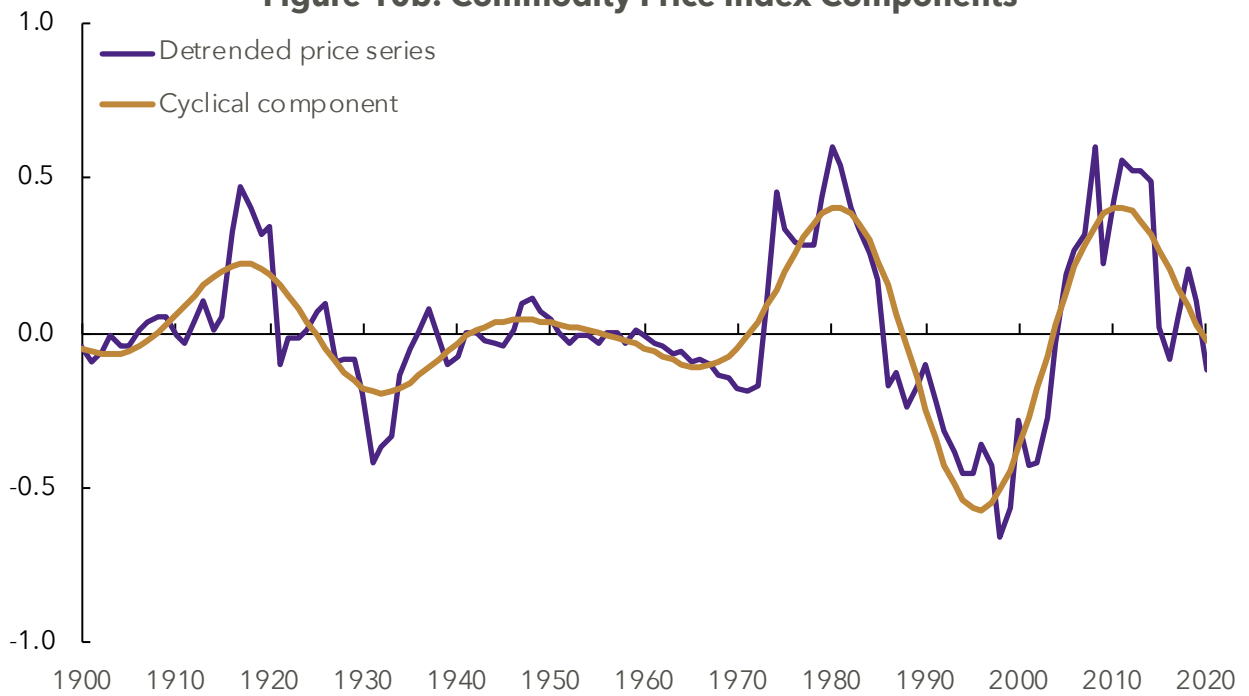
**Figure 9: Real Commodity Price Sub-indices (1900=100)**



**Figure 10a: Commodity Price Index Components**

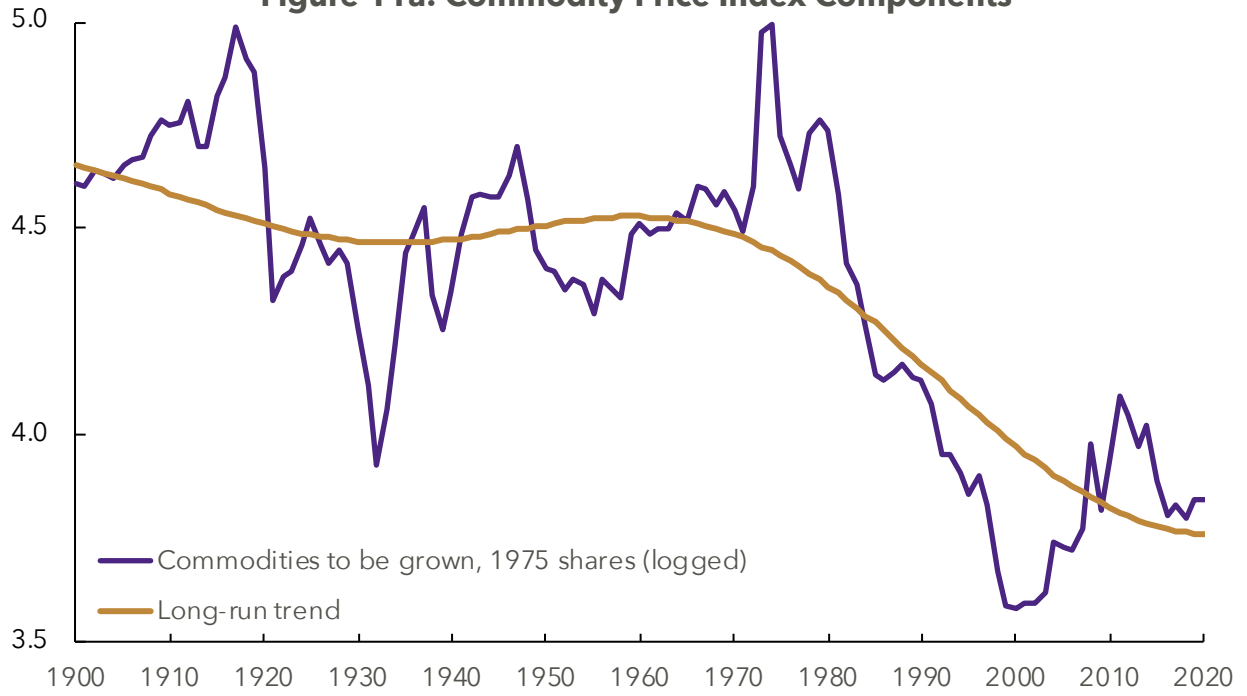


**Figure 10b: Commodity Price Index Components**

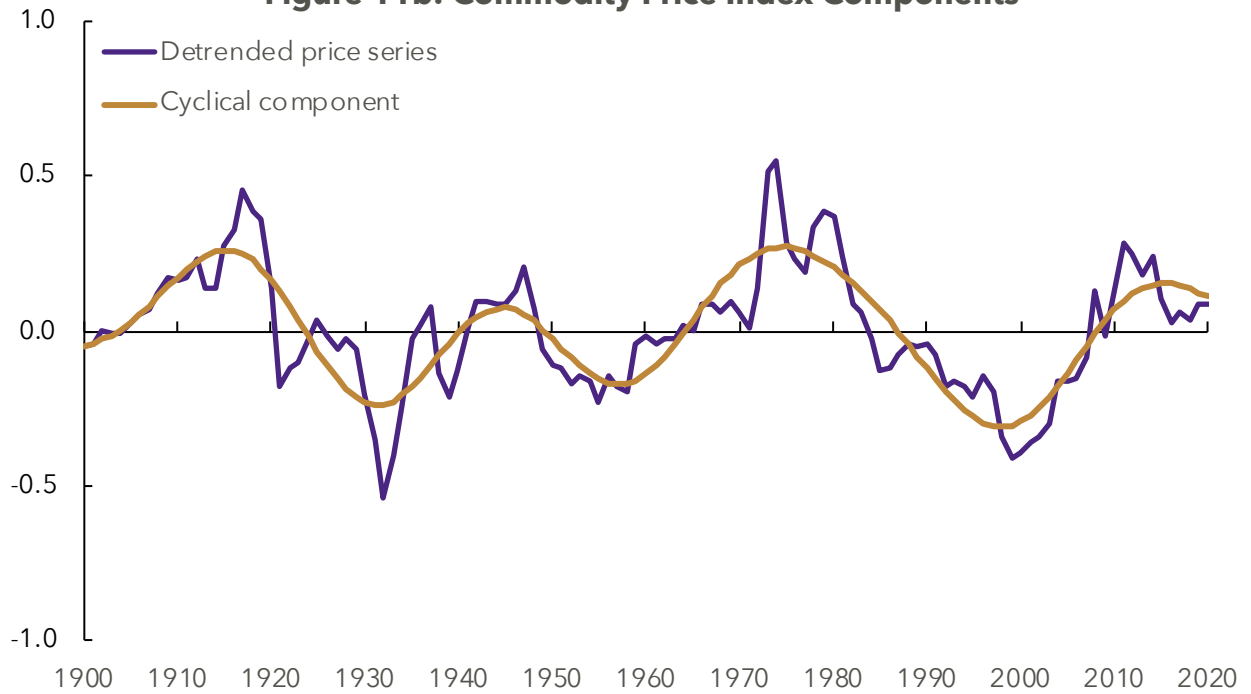




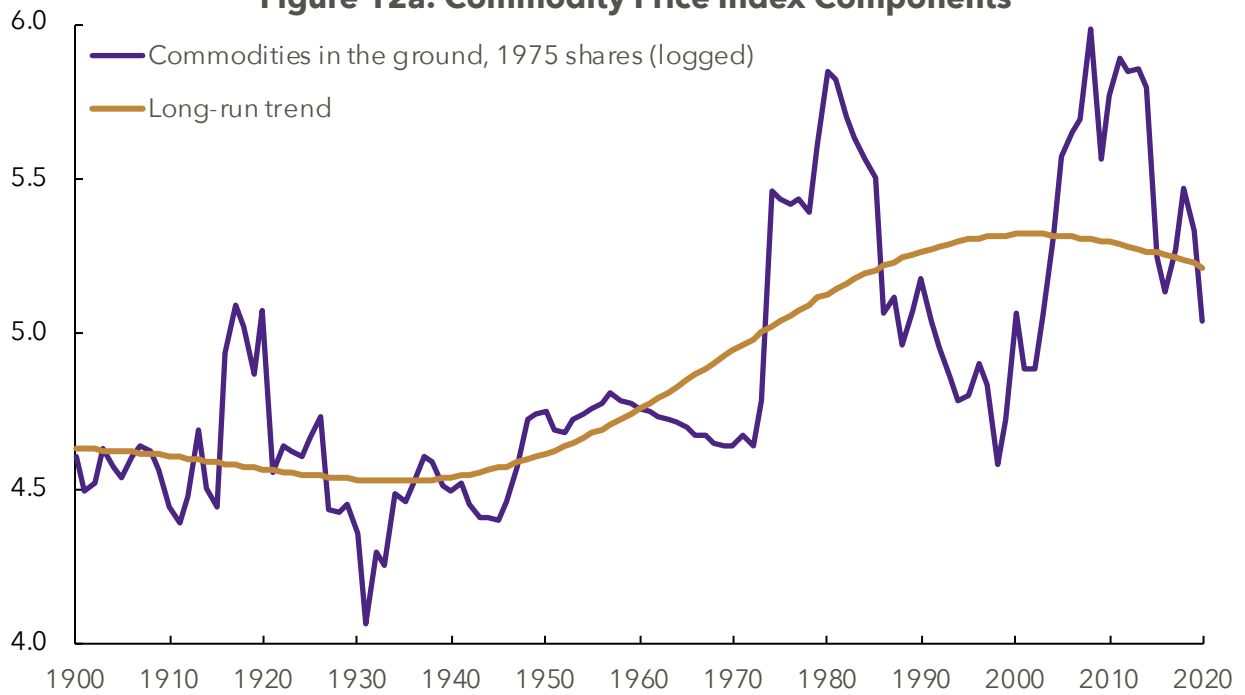
**Figure 11a: Commodity Price Index Components**



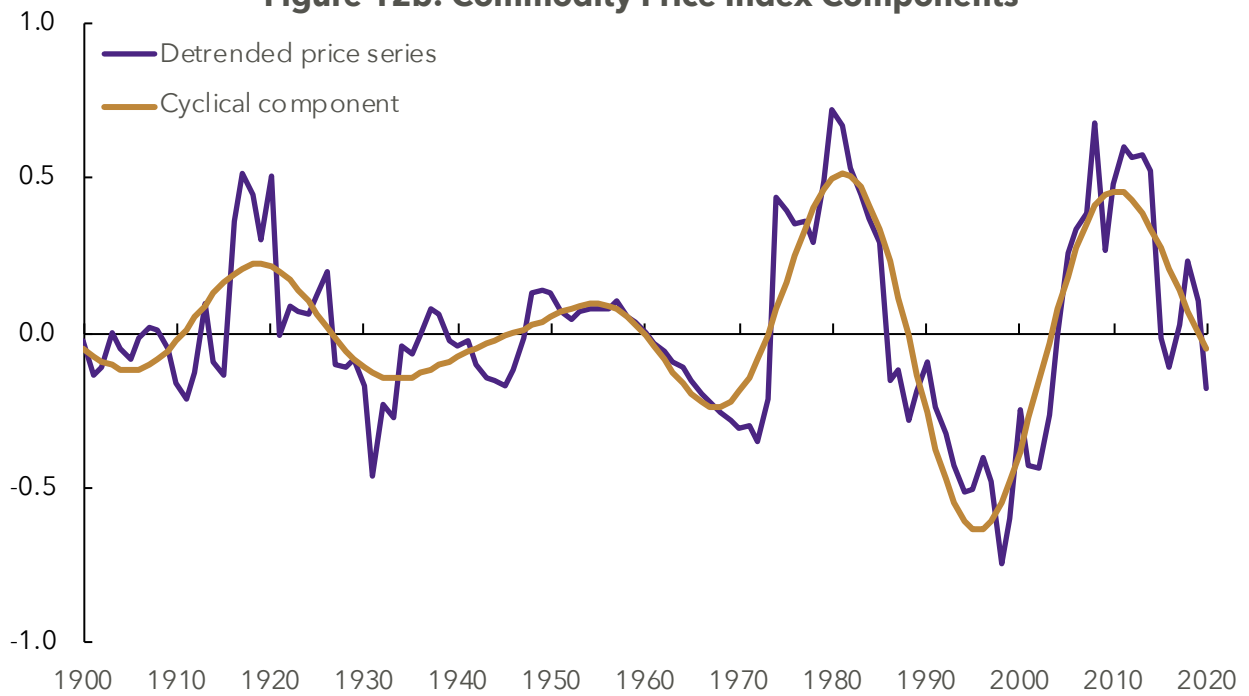
**Figure 11b: Commodity Price Index Components**



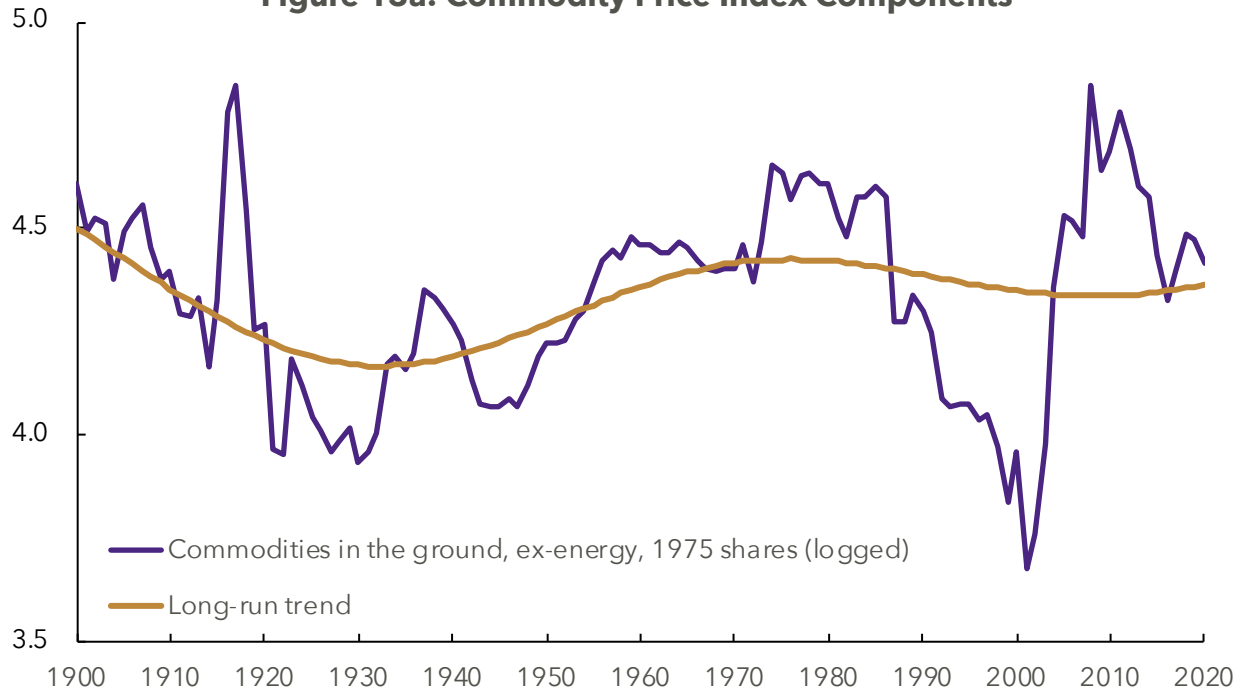
**Figure 12a: Commodity Price Index Components**



**Figure 12b: Commodity Price Index Components**



**Figure 13a: Commodity Price Index Components**



**Figure 13b: Commodity Price Index Components**

