

ECON 4311 – Economy of Latin America

Lecture 5A: Primary Commodities

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Introduction

- ▶ Commodities have been (and will likely continue to be) an important factor in the economic development of Latin America.
 - Commodities represent a significant percentage of total exports and GDP in many Latin American countries.
 - This means that changes in prices/quantities of these commodities can have ramifications in entire economies.

- ▶ Today, we'll try to understand:
 - Price patterns and commodity cycles.
 - Commodity dependence.
 - The resource curse.
 - The Dutch disease.

Primary Commodities

- ▶ **Primary commodities** are goods directly extracted from natural resources that have been minimally processed.
 - **Examples:** gold, silver, petroleum, copper, sugar, coffee, ...
- ▶ The abundance of commodities can present important challenges for a country, since these commodities are subject to:
 1. **Boom-and-bust cycles.**
 2. **Substantial price volatility.**

Boom-and-Bust Cycles

▶ Booms typically occur for two reasons:

1. Discovery of new commodities and subsequent widespread use.
 - ▶ **Examples:** coffee, tobacco, . . .
2. Discovery of new supply source.
 - ▶ **Examples:** Gold and silver in the colonization period.

▶ Commodities are subject to considerable price volatility.

- Price volatility refers to the price fluctuations of a commodity.
- Volatility is typically measured by the *date-to-date* percentage difference in the price of a commodity.
- The degree of variation, not the level of prices, defines the volatility of a market.

Commodity Booms in Latin America

<i>Commodity</i>	<i>Years</i>	<i>Countries</i>
Gold	1492–1550	Mexico, Peru
Silver	1550–1650	Mexico, Peru
Cochineal	1550–1850	Mexico, Guatemala
Indigo	1560–1880	Brazil, Guatemala, Honduras
Tobacco	1600–1700	Cuba, Brazil
Sugar	1625–1750	Brazil
Gold	1700–1760	Brazil
Coffee	1720–1850	Brazil, Colombia
Diamonds	1725–1860	Brazil ^a
Guano	1840–1880	Bolivia, Chile, Peru
Henequen	1860–1910	Mexico
Rubber	1879–1912	Brazil
Oil	1910–1920	Mexico
Oil	1973–1982	Ecuador, Mexico, Venezuela

A new commodity boom that is currently affecting Latin America (e.g., Bolivia, Argentina, Chile) has to do with lithium. Do you know why?

Commodity Busts

- ▶ Commodity booms typically succumb to:
 - Exhaustion of the resource (e.g., gold, guano)
 - Changes in technology (e.g., henequen and rubber).
 - Falling global demand (e.g., oil in the future?).

- ▶ Commodity prices are more unstable than most prices because of demand and supply conditions in these markets.
 - Seasonal commodities (e.g., coffee).
 - Exhaustible resources (e.g., oil, gold, silver).

Price Volatility

Price fluctuations in primary commodities can be extreme

Figure: World commodity prices, 2006–2013 (% change over previous year)

	2006	2007	2008	2009	2006	2007	2008	2009	2010	2011	2012	2013
All commodities	31.5	37.0	-2.0	-23.5	31.5	37.0	-2.0	-23.5	36.2	25.5	-13.9	-5.1
Food and tropical beverages	22.8	27.8	17.2	-5.9	22.8	27.8	17.2	-5.9	21.7	30.4	-1.9	-1.3
Vegetable oilseeds and oils	-2.7	50.0	41.4	-39.1	-2.7	50.0	41.4	-39.1	31.6	35.5	-11.2	-16.7
Agricultural raw materials	9.6	22.2	4.5	-17.6	9.6	22.2	4.5	-17.6	20.3	37.3	-10.7	-7.1
Minerals, ores, and metals	49.7	43.4	-10.2	-26.3	49.7	43.4	-10.2	-26.3	46.8	19.1	-17.7	-3.4
Crude petroleum	21.7	11.1	35.9	-35.7	21.7	11.1	35.9	-35.7	27.7	35.5	1.6	-2.3

Source: United Nations Conference on Trade and Development (2015).

Attempts to Limit Price Fluctuations: Cartels

- ▶ The **OPEC** (Organization of the Petroleum Exporting Countries) was founded in 1960 by Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela.
- ▶ **Current members:** **founders** + Qatar, Indonesia, Libya, the UAE, Algeria, Nigeria, Gabon, Angola, Equatorial Guinea, and Congo.
 - As in 2018, these countries accounted for about 45% of oil production, and were estimated to own 81.5% of the world's "proven" oil reserves.
- ▶ Among its purposes, the OPEC aims to achieve stable prices for oil in world markets. To this purpose, it sets **oil quotas** on members:
 - Country c can produce a maximum of x_c tons of oil.

Attempts to Limit Price Fluctuations: Cartels

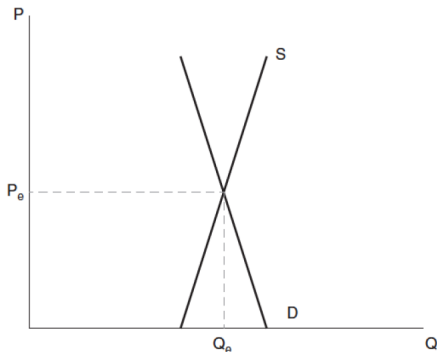
- ▶ The OPEC has never truly achieved stabilization in oil prices.
 - Sometimes quite the opposite (remember the oil crises of 1970–1980?)
- ▶ Although it has certainly reduced downward price flexibility. . .
 - “The price of oil rises like a rocket, but falls like a feather”
- ▶ Some difficulties in achieving price stabilization:
 - Hard to adjust production in the short run.
 - ▶ Little price insurance against large negative shocks.
 - Not full control of the world's oil production (< 50%).
 - ▶ Free-riding by non-OPEC oil producers.
 - Member countries have sometimes cheated in their quotas.

Limiting the Effects of Price Fluctuations: Funds

- ▶ In 1985, the Chilean gvt founded the Copper Stabilization Fund.
- ▶ The main objective was to insulate the Chilean economy from large price fluctuations in copper (a primary commodity export).
- ▶ The Fund worked as follows:
 - When the price of copper was above its “normal” level, the government put a proportion of revenues from copper sales into the fund.
 - When the price of copper was below its normal level, the government used these funds to boost economic activity.
- ▶ The fund was successful in limiting the effects of copper price fluctuations in driving business cycles.
- ▶ **Curiosity:** The Copper Stabilization Fund was replaced in 2007 by the Economic and Social Stabilization Fund (ESSF).

The Microeconomics of Commodities

- ▶ The prices and quantities supplied/consumed of commodities are determined by supply and demand conditions. Recall that:
 - Changes in prices \rightarrow *movement along curves*.
 - Changes not in prices \rightarrow *shift of curves*.



What Can Induce Shifts in Demand Curves?

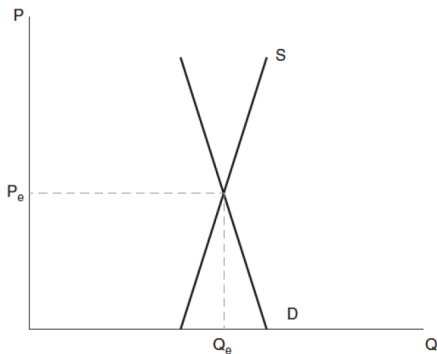
- ▶ Changes in population.
- ▶ Changes in income.
- ▶ Preference shift due new scientific evidence.
- ▶ Emergence of substitutes.
- ▶ Changes in prices of existing substitutes.
- ▶ ...

What Can Induce Shifts in Supply Curves?

- ▶ Geographical expansion:
 - E.g., Brazilian sugar and plantation expansions to the Caribbean.
- ▶ Changes in the costs of inputs.
- ▶ Exhaustion of resources.
 - Gold and silver.
- ▶ Erosion of agricultural lands.
- ▶ Weather.
- ▶ ...

Elasticity of Primary Commodities

- ▶ Notice that both supply and demand curve have very steep slopes.
 - These are **common features of primary commodities**, meant to reflect that **demand and supply are relatively inelastic**.
 - ▶ Changes in prices do not have very large impacts on the quantities supplied and demanded. (**Examples**: demand of oil, supply of produce).



Elasticity of Primary Commodities

- ▶ Supply and demand are even more inelastic in the short run.

- ▶ Short- vs. long-run elasticity of **demand** applied to commodities:
 1. **Oil.**
 - ▶ Short run: use less your own car.
 - ▶ Long run: consider replacing current gas car by electric car.

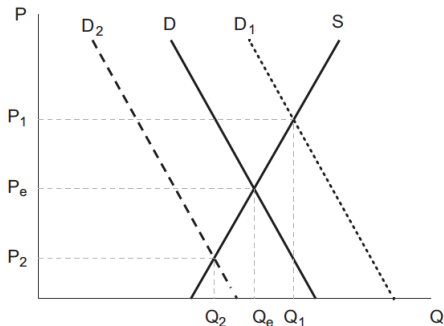
 2. **Tobacco.**
 - ▶ Short run: smoke less (hard due to habit formation).
 - ▶ Long run: quit or transition to e-cigs, vaps, ...

Elasticity of Primary Commodities

- ▶ Short- vs. long-run elasticity of **supply** applied to commodities:
 1. **Agricultural commodities.**
 - ▶ Short run: almost nothing to do for perishable goods (need to sell).
 - ▶ Long run: investment to develop better conservation/storage.
 2. **Minerals, oil.**
 - ▶ Short run: possible to increase supply by small amount.
 - ▶ Long run: heavy capital investment → discovery/extraction of new supplies.

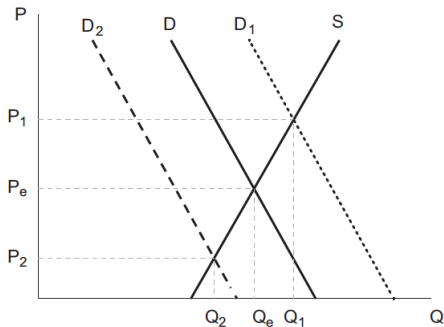
Commodity Booms and Busts and Their Effects on Prices

- ▶ **Booms.** Discovery of coffee and tobacco in LatAm in the 16th century was accompanied by an enormous increase in demand in Europe.
 - **Because supply of these products is inelastic in the short run, increases in demand translate into large movements in prices.**



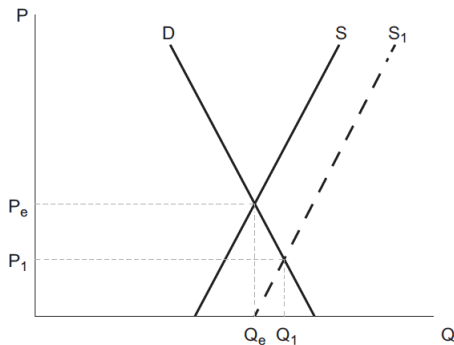
Commodity Booms and Busts and Their Effects on Prices

- ▶ **Busts.** Boom for cochineal came to an end when people discovered that purple sweet potatoes could also be used to achieve similar dyes.
 - **Because supply is inelastic, reductions in demand lead to large negative fluctuations in prices.**



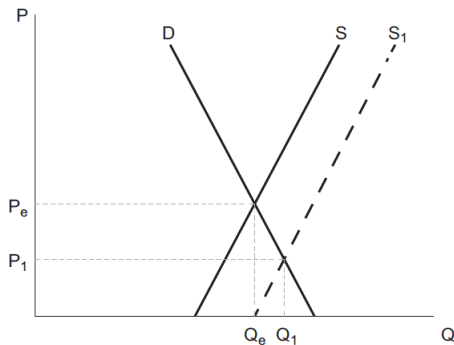
Commodity Booms and Busts and Their Effects on Prices

- ▶ Changes in supply can also cause commodity booms and busts.
- ▶ **Booms.** Discovery of gold/silver in Latin America, although reduced the price of these commodities, didn't reduce it by much.
 - **Because demand is relatively inelastic, increases in supply do not translate into large movements in prices.**



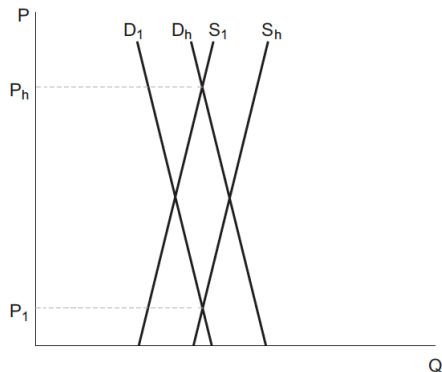
Commodity Booms and Busts and Their Effects on Prices

- ▶ **Busts.** Increases in the supply of sugar were so large (due to expansion of plantations to the Caribbean) that sugar prices collapsed.
 - These reductions in prices were so large that left producers with almost no incentives to produce.



Commodity Booms and Busts and Their Effects on Prices

- ▶ **Extreme price volatility.** Two situations (high demand–low supply and low demand–high supply) to exemplify substantial price variation.
- ▶ Thinking of these situations is useful to understand the observed volatility in commodity prices (see slide 7).



A Boom-and-Bust Example: Quinoa

- ▶ Quinoa, a grain originally from the Andes, is one of the most complete food products in the world (64% carbs; 14% protein; 6% fat).
- ▶ In the beginning of 21st century, it was mainly consumed by the poor in Bolivia and Peru.
- ▶ In the mid 2000s, health-conscious consumers in North America, Europe and Asia “discovered” quinoa.
- ▶ Between 2005 and 2013, the price of quinoa increased by 600%.
- ▶ Rising quinoa prices led producers to adopt better technologies and expand production to new regions → Supply increased dramatically.
- ▶ Quinoa prices fell substantially, but still remain well above \$0.25/lb.

The Macroeconomics of Commodities

- ▶ Recall that GDP is given by:

$$\underbrace{Y}_{GDP} = \underbrace{C}_{\text{consumption}} + \underbrace{I}_{\text{investment}} + \underbrace{G}_{\text{government spending}} + \underbrace{(X - M)}_{\substack{\text{net exports} \\ \text{(exports - imports)}}$$

- ▶ Effects of exporting new commodities or changes in prices of exported commodities can be clearly seen from this equation:
- They affect the trade balance, $X - M$.
 - If $(X - M)$ is an important contributor to GDP and exports play a large role, changes in prices or quantities of commodities exported can have a substantial effect in the entire economy.
 - ★ \uparrow commodity prices \rightarrow increase trade surplus or reduce trade deficit.
 - ★ \downarrow commodity prices \rightarrow reduce trade surplus or lead to trade deficit.

The Macroeconomics of Commodities

Figure: Commodities' share of exports and GDP in Latin America, 2017

	<i>Commodity exports</i>	<i>Exports (merchandise)</i>	<i>Commodity/ exports</i>	<i>Commodity exports/ GDP</i>
Argentina	39,072	58,622	66.7	6.1
Bolivia	6,423	7,846	81.9	17.1
Brazil	134,706	217,826	61.8	6.6
Chile	59,621	69,230	86.1	21.5
Colombia	28,168	37,881	74.3	9.0
Costa Rica	4,298	9,556	45.0	7.5
Ecuador	17,772	19,122	92.9	17.0
El Salvador	1,374	5,760	23.9	5.5
Guatemala	6,358	11,001	57.8	8.4
Honduras	3,351	8,675	38.6	14.6
Mexico	67,085	409,401	16.4	5.8
Nicaragua	2,493	5,170	48.2	18.0
Panama	1,050	11,093	9.5	1.7
Paraguay	7,702	8,680	88.7	19.4
Peru	33,007	45,275	72.9	15.6
Uruguay	6,305	7,888	79.9	11.2
Venezuela, RB	72,277	74,714	96.7	15.0
Latin America			61.3	11.8

Table Notes. Data from WTO. Data for Venezuela is for 2014.

Natural Resources: A Blessing or a Curse?

- ▶ Unequal endowment of commodities around the world, both in terms of mineral and agricultural goods.
 - Most Latin American countries occupy a privileged position in the world distribution of resources.
- ▶ LatAm countries are highly dependent on primary commodities. These constitute the main source of exports.
 - Commodity exports in the average Latin American country accounted for 61.3% of total exports in 2017.
- ▶ Commodity exports are a substantial part of GDP in LatAm.
 - Approximately 12% in the average country.
- ▶ Since commodity prices were shown to be very volatile, this volatility will translate into GDP, making stabilization of GDP complicated.

Development and Natural Resources

- ▶ **In theory, commodities should facilitate economic development.**
 - Commodity abundance generates a **major source of tax revenue**.
 - ▶ This tax revenue can be used to finance infrastructure, education, sanitation, . . .
 - Export of commodities **provides foreign currency**.
 - ▶ **Allows importing more easily capital equipment and technology**, fundamental in the development of infrastructure and manufacturing.
 - **Easy transition to manufacturing**: add value to a primary commodity.
 - ▶ On top of selling a good as it is (e.g., sugar), create more sophisticated products (e.g., candy, rum).
 - ▶ **Not so easy in practice**. Countries typically escalate tariffs and set quotas based on the stage of processing of commodities.

Natural Resources: A blessing or a curse?

- ▶ **In practice, many countries that are rich in natural resources are worse off than similar countries with little or no resources.**
 - **Example:** Venezuela vs. Puerto Rico.
 - Poor management can be detrimental to overall economic development.
 - This is related to the lecture on institutions. **How?**
 - ▶ Countries with more natural resources tend to have weaker institutions.
 - Based on this observation, many have wondered whether being abundant in natural resources is a blessing or a curse.

- ▶ **Natural resource curse.** Countries rich in natural resources have failed to show better economic performance than those without.

The Natural Resource Curse

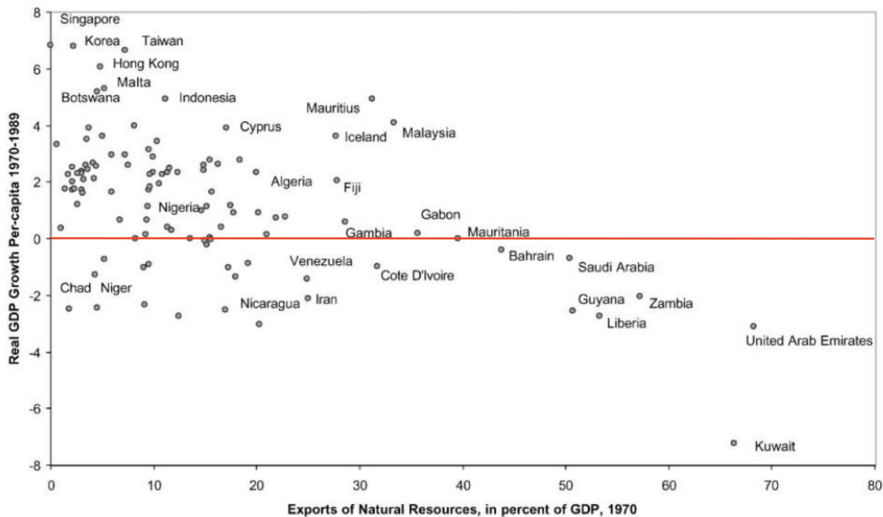


Figure Notes. Source: [Sachs and Warner \(2001\)](#).

Institutions and Natural Resources

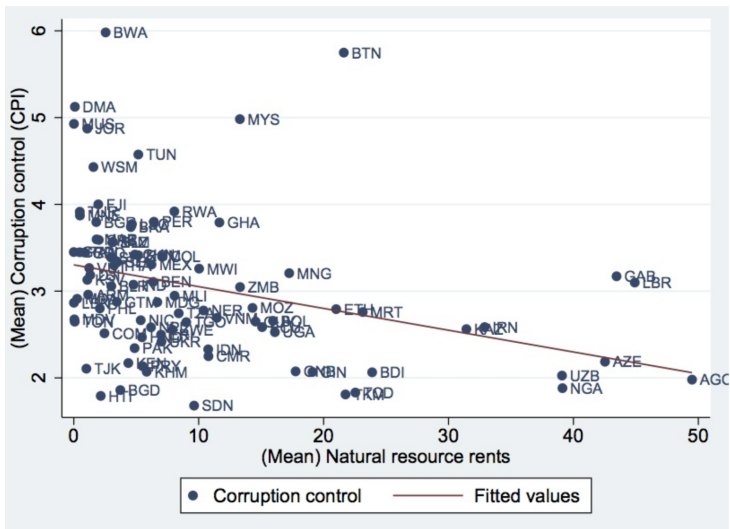


Figure Notes. Source: [Veisi \(2017\)](#).

Industrial Structure

- ▶ Countries with significant production of commodities have its industrial structure tailored to it.
 - **Industrial structure** refers to the percentage of output that is accounted for by each industry within a country.
 - **Example:** Mexico and Venezuela have substantial industrial structure in oil-producing sectors.
- ▶ Having the industrial structure very tied to particular sectors is a dangerous strategy:
 - Very vulnerable to the fall in prices of such commodities.
 - Hard transitions: not easy to move resources to other industries.

The Dutch Disease

- ▶ **The Dutch disease:** rapid development in one (natural resource) sector of the economy can have a negative impact in other sectors and ultimately in the overall economy.
 - Originally used to describe decline of the manufacturing sector in the Netherlands after the discovery of Groningen natural gas field in 1959.
- ▶ **Mechanism.**
 - Revenues in booming sector increase \implies currency appreciates.
 - Currency appreciates \implies Domestic sectors less competitive. (exports more expensive for others, imports cheaper for us).
- ▶ **Examples:**
 - Venezuelan oil during the 2000s.
 - Russian oil and natural gas in the 2000s.
 - North Sea Oil on manufacturing sectors in Norway/UK in 1970—1990.

The Dutch Disease and Industrial Structure

- ▶ When a sector is booming:
 - It attracts and prevents resources from going to other sectors.
 - ▶ Why? Higher rates of return in the booming sector.
 - This affects the industrial structure of an economy.
 - When commodity booms bust, resources need to be transferred to other sectors of the economy.
 - Changes in the industrial structure involve costly transfers:
 - ▶ Sector-specific knowledge.
 - ▶ Sector-specific capital and technology.
 - ▶ ...

Taking Stock

- ▶ **Primary commodities** have played (and will continue to play) a **crucial role in the economic development of Latin America**.
- ▶ Nevertheless, they present **important challenges**:
 - Frequent commodity **booms and busts**.
 - ▶ Basic economic theory can explain these phenomena.
 - Associated with **large price volatility**.
 - ▶ **Price stabilization attempts only partly successful in practice**.
 - ▶ This is due to the very nature of primary commodities.
- ▶ In theory, abundance of primary commodities should facilitate the economic development of a country/region.
- ▶ In practice, many countries that are rich in natural resources are worse off than those without (**natural resource curse**).
 - **Back to institutions?**

Thank You!