MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
KYIV NATIONAL ECONOMIC UNIVERSITY
NAMED AFTER VADYM HETMAN

Faculty of International Economics and Management
Department of International Economics

BACHELOR DEGREE PROGRAM **«INTERNATIONAL ECONOMICS**
FIELD OF KNOWLEDGE **05 Social and behavioral sciences**
SPECIALTY **051 «Economy»**

Form of education: full time

BACHELOR THESIS

Analysis of market fluctuations in the world commodity markets

by Mohammed Malki

Academic Supervisor Ph.D, Associate Professor
(Scientific degree, academic status)

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Bachelor Thesis has been approved for defense at Attestation Examination Commission (EC)

Head of the Department of International Economics
Dr.of science, Professor Y.Stoliarchuk

Kyiv 2023

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AGREED
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INDIVIDUAL TASK
higher education applicant Mohammed Malki

form of education *full-time*

Bachelor Thesis
Title: **Analysis of Market Fluctuations in the World Commodity Markets**

The title of the bachelor's thesis has been approved by the Rector's Order «07» 12. 2022 №535

Bachelor Thesis is based on the analysis of international business investment activities of high-tech sectors of USA Economy and the determination of the prospects of attracting US foreign investment to the high-tech sector of the Ukrainian economy.

Deadline for submitting the final version of bachelor's Thesis to the Academic Supervisor *(20.05)*

Plan of Bachelor Thesis and the terms of it submission to the Academic Supervisor

Chapter 1 Theoretical Foundations of Cyclical Fluctuations in world commodity markets
Chapter 2 Mechanisms of formation of the conjuncture of world commodity markets and in Ukraine

Object of research:	The object of research is the world commodity market a cyclical fluctuations.
Subject of research:	The subject of research is the theoretical, methodolo and practical mechanisms of the formation of conjuncture of world commodity markets in Ukraine.
The purpose of Thesis:	The purpose of the research is to analyse the developme the world commodity market and the situation of Ukr international trade within it.

Specific tasks applicant has to accomplish to meet the objective:

In chapter 1 serves as a comprehensive introduction, laying a solid foundation for understanding the intricate nature of cyclical fluctuations. The chapter delves into the essence of the world commodity market, shedding light on its intricacies, stages of formation, and the diverse classifications that shape its structure. By delving into these different types, the chapter offers a nuanced understanding of the dynamics that drive fluctuations within the world commodity market, revealing the intricate interplay

between supply and demand, market forces, and external influences. Furthermore, through its examination of conjunctural indicators, the chapter showcases the meticulousness of the research, solidifying its credibility and paving the way for deeper insights into the world of commodity markets. Finally, it delves into the theoretical underpinnings that form the backbone of these fluctuations, offering a meticulous exploration that leaves no stone unturned.

In chapter 2 smoothly transitions into an in-depth and thorough examination of the intricate mechanisms that play a pivotal role in shaping the conjuncture within the global commodity markets, placing special emphasis on their impact within the Ukrainian context. The chapter initiates by meticulously deconstructing and scrutinizing the recent developmental path, structural composition, and ever-evolving nature of the world commodity market. The insights presented in this research endeavor go beyond surface-level observations, delving deep into the underlying drivers that fuel these fluctuations. By unveiling these factors influencing market fluctuations through examples and real-world applications, this research empowers us to navigate the ever-evolving market with clarity and precision.

The task has been set
by the Academic Supervisor _____ _____
(Signature) *(Name, Surname)*

"09" 01. 2023

The task has been given to
Applicant _____ Mohammed Malki

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"09" 01. 2023

ABSTRACT

Bachelor's qualification thesis contains 64 pages, 1 table, 6 Figures, and a list of references with 62 sources cited.

Analysis of market fluctuations in the world's commodity markets

This thesis delves into a comprehensive analysis of the cyclical fluctuations observed in the world commodity markets, placing a particular emphasis on unraveling the underlying mechanisms driving these fluctuations and examining their direct impact on Ukraine's international trade. The research is divided into two chapters. Chapter 1 sets the stage by providing a thorough exploration of the theoretical foundations of cyclical fluctuations. This chapter covers the essence, stages of formation, and classification of the structure of the world commodity market, along with the various types of cyclical fluctuations. As a testament to the meticulousness of the research, it further explores the conjunctural indicators that effectively gauge and assess the development of these world commodity markets. Chapter 2 seamlessly transitions into a comprehensive exploration of the mechanisms responsible for shaping the conjuncture within the global commodity markets, with a keen focus on the impact within the Ukrainian context. The chapter commences by dissecting and analyzing the recent developmental trajectory, structure, and dynamic evolution of the world commodity market. The invaluable findings presented in this research offer a nuanced understanding of the intricate dynamics governing market fluctuations in the world's commodity markets. By fostering a deeper comprehension of the underlying mechanisms driving these fluctuations, this research provides a robust foundation to better understand the evolving market dynamics.

Year of bachelor's qualification thesis completion: 2023. Year of thesis defense: 2023. Keywords: cyclical fluctuations, world commodity markets, Ukraine, international trade, theoretical foundations, conjunctural indicators.

Review of the bachelor's thesis
of the student of the Faculty of International Economics and Management
of the bachelor's degree program "International Economics"

Mohammed Malki on the topic of **Analysis of market fluctuations in the world commodity markets**

1. Relevance of the topic: Modern global challenges lead to cyclical fluctuations in world markets. Therefore, the study of these fluctuations in commodity markets is relevant.

2. Positive aspects of the bachelor's thesis: a high level of quality research on the theoretical foundations of cyclical fluctuations in global commodity markets, in particular, the essence, stages of formation and classification of the structure of the global commodity market are determined, types of cyclical fluctuations are systematized and the main indicators of the development of global commodity markets are determined. The Thesis contains a sufficient level of information support.

3. Presence of author's independent developments: the analysis of the state of development, structure and dynamics of the world commodity market was carried out, the author identified the main factors that influence the development of world commodity markets. A positive aspect of this thesis is the analysis of the dynamics of the development of Ukraine's international trade.

4. Value of theoretical conclusions and practical recommendations: lies in the possibility of using the generalizing trends of cyclical fluctuations of world commodity markets to determine the prospects for the development of Ukraine's international trade in the world market of trade in goods and services.

5. Presence of drawbacks: the author should have considered more broadly the factors influencing the development of world commodity markets, in particular, to characterize the influence of scientific and technical progress on the development of the innovative segment of commodity markets.

6. Overall assessment of the bachelor's thesis and its admission to defense: the research topic is fully disclosed, at a high level, the work is written according to the requirements, it is allowed to be defended before the Examination Committee with an assessment of **46 points.**

Supervisor:

Ph.D. in Economics, Associate Professor
of the Department of International Economics of KNEU Moskalyuk N. " 09 "
June 2023 year

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INTRODUCTION

The relevance of the topic. This thesis aims to explore the relevance of studying the world's commodity markets. The ever-changing nature of the world's commodity markets has led to a dynamic landscape with significant implications for global economies and trade. By embarking on this expedition, this thesis aims to unravel the intricate tapestry of market fluctuations pervading the world's commodity markets, fostering a profound and comprehensive comprehension of its multifaceted landscape.

Objective. Imbued with meticulous analysis and astute examination, this research endeavors to illuminate the enigmatic mechanisms and multifarious factors underpinning these fluctuations, which will enhance our knowledge and comprehension of the complexities involved. By dissecting the conjunctural indicators and discerning prevailing trends, this academic endeavor aspires to enrich the collective knowledge pertaining to the dynamic nature of global commodity markets, empowering policymakers, investors, and stakeholders alike with the knowledge necessary to navigate the interconnected and capricious global economy. Furthermore, this thesis will delve into the specific context of Ukraine's international trade conjuncture, shedding light on its idiosyncratic dynamics within the broader framework of the world's commodity markets. Through our analysis of evolving trends in cyclical fluctuations, we hope to shed light on the potential trajectory and future developments of these world commodity markets. By doing so, we aspire to provide conclusive insights that enable informed decision-making and facilitate strategic planning.

Research Object:

The object of research is the world commodity market and its cyclical fluctuations.

Research Subject:

The subject of research is the theoretical, methodological, and practical mechanisms of the formation of the conjuncture of world commodity markets in Ukraine.

Research Purpose:

The purpose of the research is to analyze the development of the world commodity market and the situation of Ukraine's international trade within it.

Research Tasks:

1. Determination of the essence, stages of formation, and classification of the structure of the world commodity market.
2. Classification of the types of cyclical fluctuations in world commodity markets.
3. Systematization of conjunctural indicators for the development of world commodity markets.
4. Analysis of the state of development, structure, and dynamics of the world commodity market.
5. Identification of factors influencing the development of world commodity markets.
6. Identification of trends in the development of cyclical fluctuations in world commodity markets.
7. Analysis of the dynamics of Ukraine's international trade conjuncture on world commodity markets.

Methodology. This research is based on a variety of sources, including academic journals, books, and online databases such as JSTOR, ProQuest, and Google Scholar. Additionally, data and statistics related to world commodity markets have been collected from reputable sources such as the World Bank, IMF, and UNCTAD. Practical examples, news articles, and other relevant sources have also been consulted to provide a comprehensive overview of the subject matter. The research methodology comprises

the following elements:

- Literature review: Conducting a comprehensive review of the relevant literature on the world's commodity markets, including market fluctuations, price trends, and trading patterns.
- Case studies: Analyzing case studies of specific commodities and their market trends to identify key factors that influence market fluctuations.
- Quantitative analysis: Using quantitative methods to analyze data on commodity markets, including financial data, market trends, and other relevant indicators.
- Comparative analysis: Comparing commodity markets in different sectors and regions of the world to identify similarities and differences in their dynamics.

Conclusion. The final section of this thesis draws together the findings from the research and provides conclusions and recommendations. The research will conclude by shedding light on the potential trajectory and future developments of world commodity markets and provide insights into the impact of global events on these markets. These conclusions will inform policymakers, investors, and stakeholders and enable them to navigate the interconnected and capricious global economy

CHAPTER 1.
THEORETICAL FOUNDATIONS OF CYCLICAL FLUCTUATIONS IN WORLD COMMODITY MARKETS

1.1. The essence, stages of formation, and classification of the structure of the world commodity market

The commodity market's definition and essence.

Before we dive into the world of commodity markets, it’s important to understand its key components. So, what exactly are commodities? Commodities are material items with monetary value. These goods are obtained in a variety of ways, including harvesting, mining from the earth's crust for materials like metallic ores or fossil fuels, or by extraction. Commodities may also originate from natural sources, such as grains, animal products, or even sunlight [1]. As a result, the term "natural resources" is sometimes used synonymously with "commodities," although not all commodities are exclusively of natural origin and not all of nature's products are valuable resources. The Oxford Dictionary defines a commodity as "a raw material or primary agricultural product that can be bought and sold, such as copper or coffee." While the U.S. Commodity Futures Trading Commission (CFTC) defines a commodity as "any material, article, product, or service for which there is a demand and which is produced in volume," [3].

Everybody needs agricultural products like food to survive or energy like gas and oil for daily use, so the importance of commodity markets extends beyond just global markets. At the grass-roots level, commodities such as food, energy, and metals are essential to our daily lives. Agricultural commodities like wheat, rice, and corn are the basis of our food supply, while energy commodities like oil and gas power our homes,

vehicles, and businesses. Metals such as copper, gold, and silver are used in the construction of buildings, electronics, and machinery.

Nevertheless, commodities are crucial to both international trade and investment. Commodity markets provide a mechanism for producers, consumers, and investors to manage the risks associated with price fluctuations and supply disruptions. For example, farmers may use commodity futures markets to hedge against the risk of falling prices for their crops, while manufacturers may use them to hedge against the risk of rising raw material costs. Additionally, commodities are crucial for the growth of many economies as many developing nations heavily rely on the export of commodities to finance their economies. For example, countries like Brazil and Russia are major exporters of agricultural and energy commodities, respectively.

In addition to their typical physical nature and significant influence on the world economy, commodities are distinguished by their fungibility [1], though this is not always the case. This means that the value of a commodity is determined by its intrinsic properties rather than its origin. This characteristic significantly affects commodity markets and economics, as consumers can easily switch from one source of a commodity to another, regardless of origin or source. One may argue that the composition of a commodity such as oil may be heavier and differ slightly in some parts of the world, but the general consumer values oil because of its intrinsic chemical composition of hydrogen and carbon, not because it happens to come from a particular place. The economics and markets of commodities are significantly affected by fungibility. An example given by Daniel P. Ahn in his book is and I quote “The owner of an oil field in a particular region would be concerned about the discovery of a new oil field located in another part of the world. This is because consumers all over the world can easily switch from buying his oil to that of the newly discovered one with closer proximity due to the fungibility of oil” [1].

The commodity market is a crucial segment of the financial market where raw materials and primary products are traded. By allowing producers and consumers to insure against price risks, commodities markets aid in price stabilization. This reduces uncertainty and encourages investment and production, which can help ensure a steady supply of goods.

Commodity markets are also crucial for economic growth, particularly in developing countries. They facilitate the fair exchange of commodities between producers, consumers, and traders, enabling fair prices to be set. Traders also have the opportunity to profit from the arbitrage that these fluctuations in prices offer. The dynamics of supply and demand dictate prices in the commodity market, much like in any competitive market. Weather patterns, geopolitical developments, and economic trends are just a few of the factors that have an impact on these forces, which lead to volatility and price swings in the commodity market [5].

Investors have the chance to invest in a variety of commodities, such as metals, energy, and agricultural goods, through commodity markets. Exchange-traded funds (ETFs) and commodity futures offer investors a variety of opportunities that diversify investment portfolios and act as an inflation hedge.

Overall, the commodity market's importance in the global economy stems from its critical role in providing a platform for the fair exchange of raw materials and commodities, which are critical inputs for many industries and businesses. Consequently, commodities markets are crucial for ensuring a consistent supply of necessities, stabilizing prices, fostering economic growth, managing risks, offering investment opportunities, and facilitating international trade.

Commodity market historical stages

Throughout human history, commodities have played an integral part in facilitating trade and the exchange of goods to satisfy needs and desires. The history of commodity markets dates back thousands of years, to the time when humans started to form civilizations and engage in trade. The commodity market is one of the oldest and most fundamental markets in the world. The sophisticated, developed, and interoperable market that we see today is an amalgamation of centuries of development and refinement. Just as Rome wasn't built in a day, the market has gone through several stages of evolution to become what it is today *(For better illustration refer to Figure 1.1)*.

The first stage of commodity markets is known as the **Barter System**, which is the exchange of goods without using a medium of exchange such as money, silver, gold, etc. Humans have been engaging in trade since prehistoric times, and bartering has always come naturally to them. This system was prevalent in ancient societies such as Mesopotamia, Egypt, and Greece. People traded goods such as grains, spices, metals, and textiles. However, this system had certain flaws. One couldn't always carry around large, bulky, or copious amounts of commodities for trade with them. Not all goods were equally exchangeable. For example, finding someone who has extra cloth willing to exchange it for wheat, while also finding someone who has extra wheat and is looking for cloth, can be a challenge[6]. Additionally, some goods are indivisible, for instance, a farmer might want to trade a cow for something meager, but it might not be feasible because the cow is too large to be transported or cut up into smaller pieces.

Despite its flaws, the skeleton of the barter system had potential and was improved upon. Its limitations of it paved the way for the creation of money as we know it today, which is a widely accepted medium of exchange that can be used to buy and sell goods and services.

Commodity markets evolved into more structured systems over time as societies became more developed. The **Mercantilist epoch** is the second stage that helped to shape the global commodity market, which began as a result of the economic hardships that European countries experienced in the 16th and 17th centuries. The term "mercantilism" was popularized by the economist Adam Smith in 1776, in his infamous book “The Wealth of Nations" [8]. The word is derived from the Latin words merx, which means "commodity," and mercari, which means "to run a trade."

Stiff competition from other countries, particularly the developed economies of the Ottoman Empire and China, which were major trading partners of the European countries, led to its popularity. Constraints like limited domestic resources and insufficient raw materials, as well as convictions like strong desires for power and wealth, drove the European nations. The world was largely agrarian at the time, and the majority of people farmed for subsistence. This led to superpowers establishing colonies all around the world in order to retrieve raw materials and important commodities and establish new markets where they could sell their exports.

Mercantilism, despite its dark history, was a pivotal moment that emphasized trade and wealth acquisition through exports, shaping the way goods and services are traded. European nations established colonies to secure raw materials, such as precious metals, spices, and sugar, and created markets for finished goods. Tariffs and trade restrictions were imposed to promote exports and discourage imports, leading to the expansion of the commodity market. To facilitate the buying and selling of commodities, commodity exchanges were established in major trading cities such as Amsterdam and Antwerp [7].

As a result of mercantilism, governments frequently played a protectionist role, prioritizing exports over imports to accumulate wealth, particularly through the export of raw materials. This focus on primary commodities expanded commodity markets

globally, with domestic products like cotton, sugar, and tobacco traded for precious metals. These markets became significant sources of revenue, contributing to the growth of mercantilist nations. Even today, many countries strongly encourage domestic development and production of goods, which illustrates the extent to which mercantilism has influenced commodity markets. The China-US trade war exemplifies the relevance of mercantilism today, with modern mercantilist policies including import tariffs, subsidies for domestic industries, currency devaluation, and restrictions on the migration of foreign labor. This can further explain the recent escalation of tariffs and trade restrictions between the US and China.

The **Industrial Revolution**, the third stage of market formation, was greatly influenced by the mercantilist era. It is not an exaggeration to say that the revolution was a direct result of the mercantilist era. Mercantilism resulted in significantly higher import tariffs, which discouraged imports while encouraging exports. The availability of colonial-recovered raw materials encouraged domestic production, resulting in market expansion and increased consumer demand, therefore opening up new business opportunities. The increase in demand and boom in domestic production resulted in a shift from labor-oriented production to capital-oriented production utilizing machinery, which aided in the advancement of economic development. This phase has influenced several sectors, among them the commodity market. The rapid mass production of goods increased their availability and affordability, which led to an increase in consumer demand. The coalescence of mercantilism and the industrial revolution led to an intense increase in domestic production, which became a turning point for commodity markets. New commodities like steel, chemicals, and machinery emerged as a result, which became essential elements of the expanding markets. The demand for these commodities increased substantially, which led to an increase in their imports, opening up a plethora of opportunities for trade, investment, and economic development.

Standardization was the fourth phase. The industrial revolution led to an increase in the demand for goods, which required raw materials for manufacturing and immediate delivery. The development of new technologies and the opening of new businesses necessitated a rapid commodity supply chain, placing a significant burden on conventional markets. As a result of all of these factors, new, larger markets and commodity exchanges have emerged in Europe and the United States. One of the first exchanges to trade commodity contracts like those for wheat and corn was the Chicago Board of Trade (CBOT), which was established in 1848. Furthermore, the purchase and trade of these contracts required the establishment of a set of rules. To enable trading prior to any actual transaction and to advance openness and fairness in the market, market participants had to establish standards that set forth the characteristics of the commodity, including the quality level and a conventional quantity. In recognition of this new pattern of buying and selling commodities, new markets such as futures contracts emerged, allowing producers and consumers to hedge against price fluctuations by locking in prices for future delivery of the standardized product.

Standardization also spawned new trading tactics and financial products, enabling people to buy and sell commodities through exchange-traded funds without worrying about storage or other logistical concerns. Thus, the standardization of commodity markets has helped to create more accessible and effective markets that benefit a wide range of stakeholders.

We are currently in the fifth and final stage of commodity markets, which is the culmination of all the stages preceding it. The expansion and formation of global commodity markets have been the fruits of our globalized world. As global economies became more interconnected, trade and commerce accelerated, resulting in the integration of global commodity markets. The rise of economies and multinational

corporations is inextricably linked to the expansion of global trade and growth. All of this was made possible by technological advances in communication and transportation, such as the Internet and container shipping. Along with the rising demand brought on by rising populations and the development of new markets in emerging nations like China, India, etc., trade has become more liberalized through the complete or partial removal of barriers, agreements made between nations to foster cooperation, and the creation of the World Trade Organization (WTO).

Figure 1.1 - The stages of market formation
Source: Built by author

Characteristics:

Generally speaking, commodities on the commodity market are popularly distinguished by their attributes or properties, such as:

1. Energy commodities: These include crude oil, natural gas, and coal, which are traded on exchanges such as the New York Mercantile Exchange (NYMEX) and the Intercontinental Exchange (ICE).
2. Agricultural commodities: These include crops such as wheat, corn, soybeans, and cotton, as well as livestock products such as cattle and hogs. They are traded on exchanges such as the Chicago Board of Trade (CBOT), the Kansas City Board of Trade (KCBT), and the Minneapolis Grain Exchange (MGEX).
3. Metal commodities: These include precious metals such as gold, silver, and platinum, as well as base metals such as copper, zinc, and aluminum. They are traded

on exchanges such as the London Metal Exchange (LME) and the Shanghai Futures Exchange (SHFE).

4. Soft commodities: They are typically grown or raised and are primarily used for food and clothing production. These include commodities such as cocoa, coffee, sugar, and orange juice, which are traded on exchanges such as the Intercontinental Exchange (ICE) and the New York Board of Trade (NYBOT).

5. Hard commodities: These refer to natural, non-renewable resources or raw materials that are extracted from the earth and used in manufacturing or construction. These commodities are generally finite in quantity and cannot be easily replenished. Hard commodities are often used in industrial processes, construction, and energy production. The New York Mercantile Exchange (NYMEX) and the London Metal Exchange (LME) are examples of hard commodity exchanges.

Classification of the Market by Types.

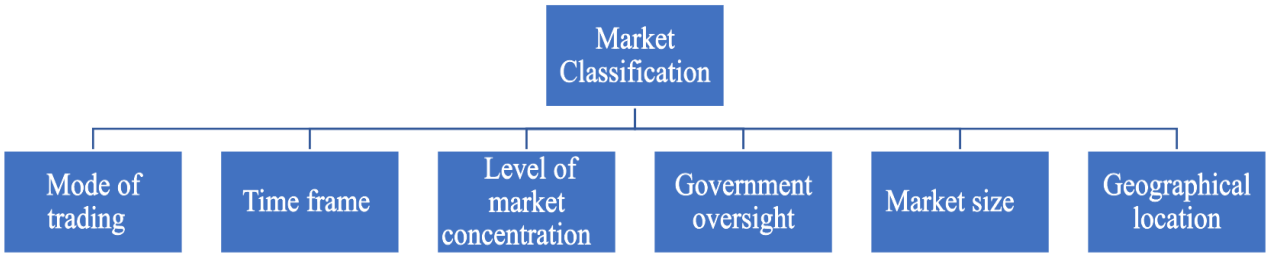


Figure 1.2 - Classification of the Market by Types

Source: Built by author

Mode of trading. In general, trading in commodities can be done over the counter (OTC) or through an exchange, depending on the buyer's preference for privacy, centralization, and transparency.

Exchanges are supervised and organized markets with rules and regulations through an established platform that standardizes the commodity contracts traded between a seller and a buyer. These contracts specify the quality, quantity, and underlined delivery

date of the commodity market. Examples of commodity exchanges could be the New York Mercantile Exchange (NYMEX) and the London Metal Exchange (LME). On the other hand, OTC transactions refer to the transaction of buying and selling contracts between two parties directly, without a set of legal standards for an exchange. These procedures are usually done through private contracts that are agreed upon between the buyer and the seller. OTC transactions are frequently used to trade commodities that lack standardized trading, such as crude oil and natural gas.

Over-the-counter (OTC) markets provide more flexibility and have higher counterparty risk, whereas exchange-traded markets (ETMs) are centralized through an intermediary and have higher levels of transparency, standardization, and regulatory oversight.

Time Frame. Spot markets and futures markets are distinguished by the time frame of the transaction. In a spot market, also known as a cash market, commodities are traded for immediate delivery. This means that the buyer pays the current market price for the commodity and takes delivery of the physical commodity immediately or within a few days. Whereas in a futures market, commodities are traded for delivery at a future date. Futures contracts are standardized agreements between two parties to buy or sell a commodity at a predetermined price on a specific date in the future. Futures contracts can be bought and sold before the delivery date, allowing traders to take positions on the future price movements of the commodity.

Depending on the individual's needs and whether they are long-term or short-term, spot markets provide liquidity for the immediate delivery of commodities, whereas futures markets provide a way for both buyers and sellers to manage price risk.

Level of market concentration. Commodity markets can be categorized according to the level of market concentration. Some markets are dominated by a few large firms, while in others, the market may be more fragmented with many small firms.

A concentrated market is characterized by the dominance of a small number of firms. Such firms have monopoly power, which means they can dictate and dominate the market and the terms under which the market will operate.

Conversely, in a fragmented market, several firms compete against each other, making the market more fair and transparent to the public. The market power of these small businesses is typically quite limited.

Concentrated markets with a small number of firms tend to have higher prices than other markets, even without considering the political power and reach these firms have depending on how critical the commodity they supply is. However, in a fragmented market, businesses are rewarded for their competitiveness and the innovation that they bring, which results in consistently low prices and better products for consumers.

Government oversight. This classification is based on the level of regulation. Regulated markets are those that are subject to government rules and regulations, while unregulated markets are those where there are few or no government regulations. In some cases, transparency may be essential for ensuring accountability and trust, while in other cases, privacy may be necessary for protecting personal security and autonomy. It is critical to keep in mind that unregulated commodity markets aren't always fraudulent or unlawful, but because of the lack of oversight and transparency, they could expose investors to higher risk.

Examples of regulated markets are the Commodity Futures Trading Commission (CFTC) in the United States and the Securities and Exchange Board of India (SEBI). OTC markets and dark pools are a few examples of unregulated markets.

Market size. Commodities are traded in commodity markets on a wholesale or retail basis. This categorization is based on the size of the market and the types of buyers and

sellers who participate. Wholesale markets are those where commodities are traded in large quantities, typically between businesses. Retail markets are those where commodities are sold to individual consumers in smaller quantities.

Starbucks, for example, purchases large quantities of high-quality coffee beans from coffee bean farmers and traders all over the world through wholesale markets. These beans are then transported to the roasting facilities of Starbucks, where they are roasted, ground, and blended into the various coffee blends before being delivered to their retail locations. Starbucks sells its finished goods, such as its well-known drinks, directly to individual customers in its retail markets, which are spread out across the globe.

Geographical location. The key concept here is that domestic markets are concerned with the internal trade of commodities, whereas international markets are concerned with the global trade of commodities.

Domestic markets refer to the trade of commodities within the borders of a country. For example, the U.S. grain market, where commodities such as wheat, corn, and soybeans are traded domestically, and the Brazilian coffee market, where coffee beans are traded domestically. In international markets, commodities trade across borders between countries. Such as the global oil market, where crude oil and petroleum products are traded internationally between countries such as Saudi Arabia, Russia, and the United States, or the global gold market, where gold is traded internationally between countries such as Switzerland, the United States, and China.

1.2. Characteristics and types of cyclical fluctuations of world commodity markets.

Conjunctural indicators of the development of world commodity markets

Cyclical fluctuations in commodity markets arise from different factors that have a direct or indirect effect on commodities. Policymakers and market participants must possess an in-depth understanding of cyclical fluctuations as they have a recurrent pattern that can have significant impacts on the global economy. These effects are not limited to just businesses; they also have a ripple effect on the general public. As our world becomes increasingly interdependent and globalized, the impact of these fluctuations amplifies, which further emphasizes the need for a comprehensive understanding of the factors that influence these patterns.

One of the most prominent characteristics of cyclical fluctuation, derived from its name, is its periodicity. These fluctuations are repetitive in nature and, on average, recur every three to seven years, involving fluctuations in consumption, production, and prices. These fluctuations can be observed in both short-term and long-term cycles and are caused by a variety of factors that impact the supply and demand of commodities.

Short-term cycles in commodity markets typically occur over a period of months or years. Commodity prices rise or fall sharply during this short period of time, with significant implications for businesses and individuals who operate in these markets.

Long-term cycles in commodity markets typically occur over a period of several years or even decades. Potential causes of it include things like population growth, technological advancements, and changes in international trade patterns. This can cause significant long-term price fluctuations, with prices sometimes reaching all-time highs or lows. A "commodity supercycle" means an extended period of boom and bust in the commodities markets, with prices falling significantly above or below their long-term trends. Commodities typically move together, like a big family, through long boom

(bull markets) and bust (bear markets) cycles. Because each cycle typically lasts between 15 and 20 years, they are called "supercycles," such as the one that began in the early 2000s and ended with the 2008 financial crisis.
Understanding the cyclical fluctuations in commodity markets is crucial for businesses, investors, and policymakers to make informed decisions. Analyzing historical data and identifying patterns can provide insights into the factors that influence these cycles and help develop strategies to navigate the complexities of the market and to mitigate their effects.

Speculators also play a massive role in driving market movement. Speculation refers to the anticipation of a price surge or decline that drives investors to buy and sell a commodity. When a large number of investors believe in the same forecasted trend, it can lead to a self-fulfilling prophecy in which the market does not reflect the value of the commodity but rather what people believe the value would be. Volatility in commodity prices can also be caused by speculation, as traders may buy and sell based on short-term price movements rather than long-term trends.

Commodity market sensitivity to the world economy serves as the third defining characteristic of cyclical fluctuation. The performance of the commodity markets is highly correlated with economic growth. This association makes them vulnerable to shifts in economic conditions that can exert a substantial influence on commodity prices. During periods of economic expansion, the demand for commodities generally rises, resulting in higher prices. As opposed to periods of economic contraction, demand for commodities tends to decline, resulting in lower prices.

The standard economic theory states that producers seek to maximize profits by making adjustments within the production constraints of resource inputs and

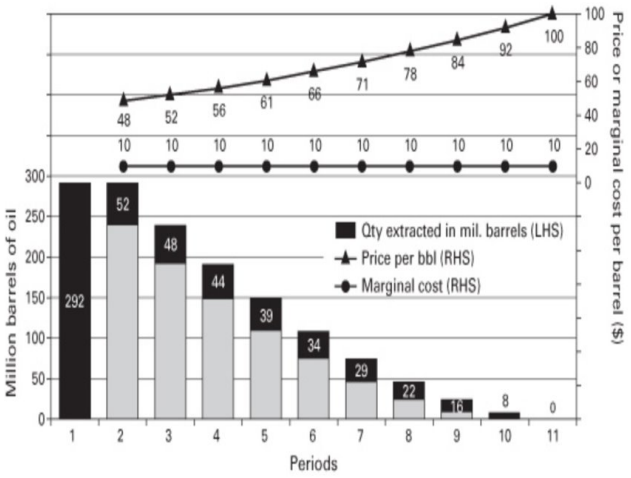
technological viability. Similarly, consumers strive to maximize their utility from consumption while staying within their financial constraints. Let us look at two models or frameworks that aim to mirror the observed patterns in energy supply as a primary example, specifically the oil market example, influenced by global supply and demand imbalances.

The first model is the **Hoteling production with a nonrenewable resource**. This model was developed in 1931 by the famous American economist Harold Hoteling. In its simplest form, Hoteling's analysis focuses on a single mine. Assuming that the mine has a finite amount of resources available and that they are being extracted at a constant rate. There is an increase over time due to the scarcity of the resource, and firms are incentivized to extract and sell more.

The key concept of this model, taking into account the time value of money, is optimal extraction such that the rate of increase in the price of the resource over time is equivalent to the discount rate utilized to evaluate future profits. In other words $\lambda = p - c$ should satisfy $\lambda_1 = \lambda_0(1 + r)$
(λ profit, λ_1 profit in period 1, λ_0 profit in period 2, r interest rate, p price, c cost)

An example of this model was set by Daniel P. Ahn in his book “Principles of Commodity Economics and Finance” [1], where he started his example with an oil field with a capacity of 292 million barrels that can produce at marginal costs equal to Mc = $10 per barrel. With an inverse demand equation $p = 100 - q,$ and a discount rate of r = 10% per annum. Using the same intuition as above, Hotelling’s Rule states that economic rent, which is again prices minus costs, should be rising at the rate of interest: $\lambda_t = \lambda_{t-1}(1 + r)$, where $\lambda_t = p_t - c$

Inserting the prices going backward for every individual period, he used the equation to find the quantity extracted in the earlier periods until he reached the very beginning. (*See Figure 1.3 for a better illustration.*)



Time period	Stock (BoP)	Stock (EoP)	Qty extracted (*q*)	Price (*p*)	Marginal cost (MC)	Rent (*p* – MC)	Profit per period (in $Mill.)	PV (profit) (in $Mill.)
1	292	240	52	48	10	38	1,978	1,978
2	240	192	48	52	10	42	2,016	1,833
3	192	148	44	56	10	46	2,024	1,672
4	148	109	39	61	10	51	1,991	1,496
5	109	75	34	66	10	56	1,907	1,302
6	75	46	29	71	10	61	1,754	1,089
7	46	24	22	78	10	68	1,513	854
8	24	8	16	84	10	74	1,162	596
9	8	0	8	92	10	82	669	312
10	0	0	0	100	10	90	0	0
							NPV =	**11,133**

Note: BoP, beginning of period; EoP, end of period; PV, present value; NPV, net present value.

Figure 1.3 Multiperiod Hotelling model simulation [5]

Source: Principles of Commodity Economics and Finance Daniel P. Ahn

Following its publication, the Hotelling model quickly gained prominence in the industry. However, it soon encountered challenges regarding the assumptions it relied upon [9]. The first criticism relates to the backstop technology assumption. This challenge considers the possibility of a technology that makes a substitute's price equal to or lower than the primary resource being extracted, which would result in unpredicted market behavior. The Hotelling model is also criticized for assuming perfect competition in the market for resources, with companies acting as price takers in an attempt to maximize their extraction rates [10]. This assumption has been subject to scrutiny as it may not always accurately reflect the real-world dynamics of resource markets. However, in reality, certain producers may possess market power and, therefore, influence prices. A prime example of this is the Organization of the Petroleum Exporting Countries (OPEC). The final criticism leveled at the Hotelling model concerns variable mine quality, as resource mines may exhibit non-uniform quality and

extraction costs due to geological, geopolitical, and technological factors. For instance, onshore oil fields in the Middle East may have extraction costs as low as $10 per barrel, while oil sands in Canada generally break even at around $80 to $100 per barrel. This challenges the assumption that extraction is controlled uniformly across all mines [10].

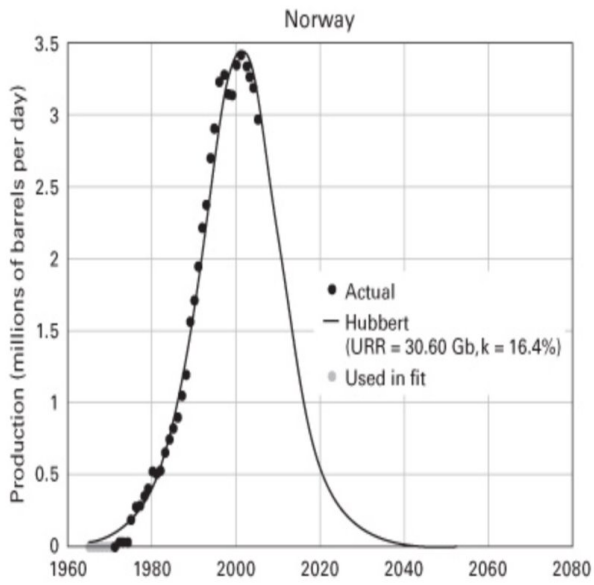
Let us now shift our attention to Marion King Hubbert's (1903–89) model. In contrast to Hotelling's analysis, which has come under fire for a number of assumptions and for ignoring the engineering and geological difficulties involved in finding and extracting resources, Hubbert's approach gives these challenges a lot of weight while treating them as core components of his research. Hubbert's theory, in its simplest form, predicted that the extraction rate of any oil field within a region would eventually peak and then decline as the reserves became depleted. This decline in production would correspond to a bell-curve pattern, occurring when approximately half of the resource has been extracted. Hubbert also predicted that this pattern would be applicable to global oil production [11].

Hubbert's assumption has had a significant impact on the study of energy resources and has been used to inform discussions about the future of global oil production and the need for alternative energy sources, despite its straightforward and deterministic approach. Hubbert's assumption has proven to be a reasonably accurate predictor for certain geological regions. For instance, the Hubbert model has worked well in forecasting Norway's lifetime extraction trajectory, as Norway can be considered a distinct geological region *(Figure A- 1.4)*.

In situations where Hubbert's model is applied to larger countries like the United States, the model's reliability in accurately forecasting resource production decreases. Hubbert's model overlooks the role that technological advancement may play in making previously unfeasible resource basins economically viable. To elaborate, Hubbert's

model assumes that resource production follows a bell-shaped curve, which may not be the case in a country as geographically uneven and regionally imbalanced as the United States. Beginning in the early 2010s, U.S. oil production diverged markedly from that predicted by Hubbert's model. This was the result of the unconventional shale or "fracking" revolution, and it reveals much about the shortcomings of Hubbert's model *(Figure B-1.4)*.

A - Hubbert's bell curve for Norway.



B - Hubbert's curve broken: U.S. crude oil production vs. Hubbert's curve.

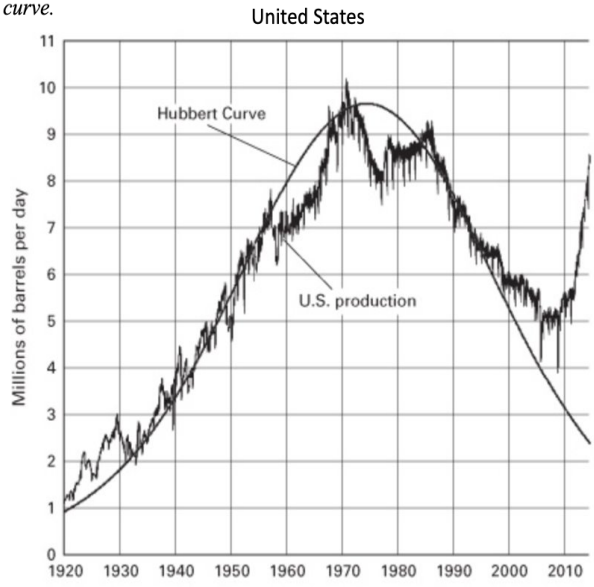


Figure 1.4 - Hubbert's Model Illustration
Source: Principles of Commodity Economics and Finance Daniel P. Ahn

Commodity Cycle Types.

There are mainly three types of cyclical fluctuations that occur in world commodity markets: secular, seasonal, and cyclical.

Secular cycles (super cycles). The term "secular" refers to long-lasting or enduring changes that reflect long-term changes that are not influenced by short-term events.

These cycles typically range between 20 and 30 years *(Figure A- 1.5)*, and they are considered the longest among the cycles. They are mainly characterized by the trend the market experiences during these periods, either an uptrend or a downtrend [12]. Secular cycles, like any other cycle, are heavily influenced by factors such as changes in supply and demand, technological innovations, and geopolitical events. On the other hand, shifts in supply and demand have the most impact. Natural disasters, the depletion of resources, changes in production technologies, and other factors can all have an impact on the supply of commodities. Likewise, shifts in the state of the global economy, population expansion, and consumer preferences have an impact on commodity demand. The example given in the prompt of an increase in oil demand during the post-World War II period is a typical manifestation of a secular bull market in commodity prices. The surge in oil demand was propelled by rapid economic growth, urbanization, and the rise of the automobile industry.

Technological advancements and innovations also play an important role in the formation of cycles. Improved production efficiency through technology leads to increased supply, resulting in price declines. Conversely, limited supply caused by a lack of technology drives prices higher. To give an example of the influence of technology, we can turn back to our earlier example from 2010 [13]. The emergence of shale gas production in the United States triggered a secular bear market. The utilization of hydraulic fracturing, commonly referred to as "fracking," allowed for the extraction of natural gas from shale formations, leading to a significant increase in supply. This surge in supply, in turn, sparked a protracted downward trajectory in natural gas prices, which continues to persist.

Seasonal cycles. Seasonal cycles are usually shorter, driven by weather patterns and harvest season timing. Although seasonal cycles affect the energy market, such as

the increase in gas prices in the winter, they are most prevalent in agricultural commodities such as wheat, corn, and soybeans. Several variables, including weather patterns, supply and demand, and geopolitical events, have an impact on the seasonal cycle of agricultural commodities. For example, if there is a drought or other extreme weather that affects crop yield, the price of the commodity may increase due to a limited supply. Conversely, if there is a sudden surge in demand for a particular commodity, the price may also increase. Farmers, traders, and investors closely monitor the seasonal cycle of agricultural commodities as it can have a significant impact on the profitability of agricultural businesses and the performance of commodity markets. For example, the trading months for corn, soybean, and wheat futures are standardized to align with the seasonal patterns for planting, harvesting, and marketing these crops. During the old crop months *(August to June and September to June)*, when supply is typically lower, grain tends to be priced higher than in the farther-out new crop trading months. Conversely, during the new crop months, typically June and July *(Figure B - 1.5)*, when supply is higher, many of the grain markets tend to reflect their lowest seasonal prices. The wheat markets have a tendency to decline between spring and the July harvest, then begin to rise from these harvest lows into fall and winter. Soybeans tend to follow a pattern where prices begin to decline in the July-August time frame, continuing through "February break," before reaching their seasonal highs in the summer. This information can help traders and investors make informed decisions about when to buy and sell grain futures contracts based on seasonal trends in supply and demand [14].

Cyclical cycles. These commodity cycles tend to be medium-term in duration and are triggered by changes in supply and demand that transpire over several years [15]. This type of cycle is most observable in industrial commodities like copper, aluminum, and steel, which are commonly utilized in the construction and manufacturing sectors. The

pricing of these commodities is highly sensitive to fluctuations in economic conditions, such as recessions and booms, that can alter their demand and supply dynamics.

During recessions, for instance, the demand for copper, which is used in construction, and aluminum, which is used in manufacturing, typically declines, leading to a corresponding decrease in copper prices. This trend is attributable to a drop in construction activity and investment, as well as reduced consumer spending resulting from economic uncertainty and lower levels of disposable income, as illustrated in *Figure C - 1.5*. During this time, there was a high risk of uncertainty and fear of recession, hence, the price declined sharply. On the other hand, during economic booms, demand for these commodities tends to increase, which drives up prices as more people turn to manufacturing and construction to meet the rising demand. Investors and other market participants, therefore, monitor the cyclical trends in these commodities closely, as they have a significant impact on the profit margins of the construction and manufacturing sectors.

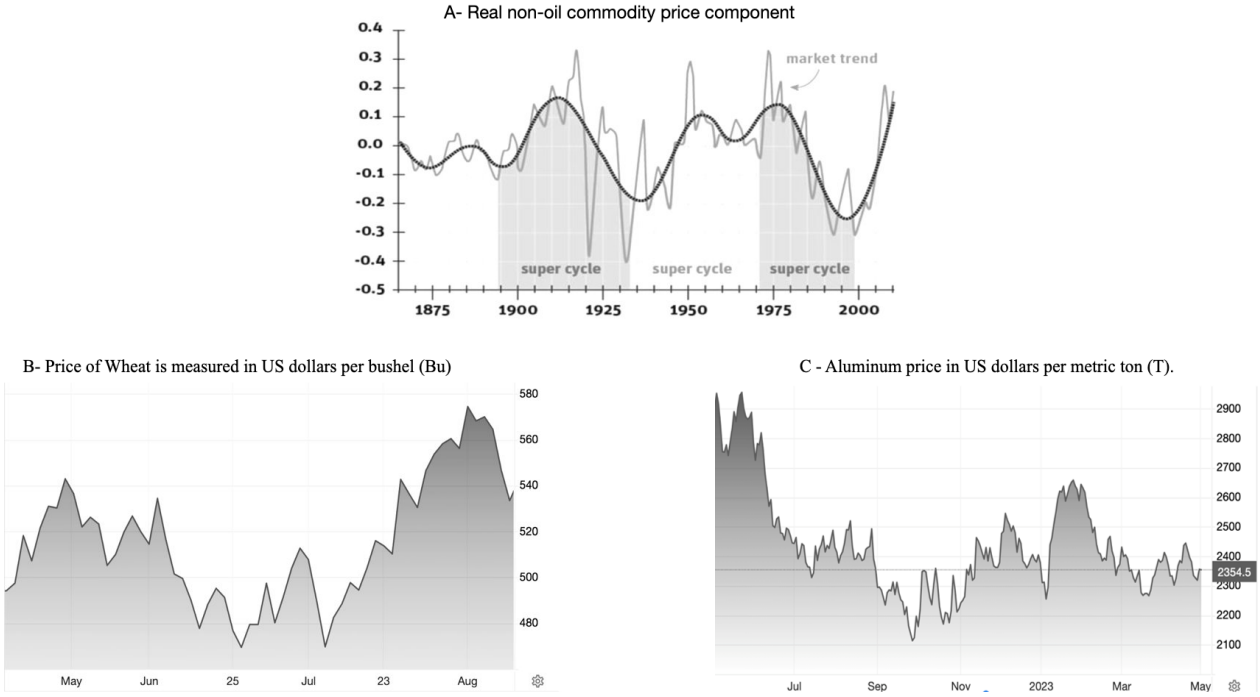


Figure 1.5 Commodity cycles patterns

Source: Built by the author based on data *Trading Economics*

In retrospect, the commodity markets demonstrate cyclical fluctuations that can be categorized into secular, seasonal, and cyclical. These cycles are influenced by various factors, including economic conditions, geopolitical events, and weather patterns. The comprehension of these fluctuations is crucial for policymakers and investors who aspire to adeptly manage the intricate and dynamic domain of commodity markets.

1.3. Conjunctural indicators of the development of world commodity markets

Conjunctural indicators are economic metrics that furnish valuable information on the prevailing economic conditions and offer predictive capabilities for future trends. In the realm of global commodity markets, multiple conjunctural indicators can be employed to assess their progress. These indicators are not constrained to a single one

but may include a number of market-influencing variables. We will now delve into the significance of these conjunctural indicators in gauging the evolution of world commodity markets.

Price Movements. The most important conjunctural indicators of the global commodity markets are price changes. For instance, an increase in oil prices can increase the cost of transportation and production, leading to higher inflation and reduced economic growth, and vice versa. Effective monitoring and analysis of price movements are essential for making informed decisions in commodity trading and investment. The forces of supply and demand in the market thus govern commodity prices. Consequently, changes in the prices of commodities like copper, gold, and oil offer important insights into the state of the market as a whole, i.e., a significant increase in oil prices could indicate a surge in global demand or a decrease in the supply of oil.

Inventory Levels. A further conjunctural indicator that can be used to assess the progress of international commodity markets is the level of inventory of various commodities. If there is a surplus of a particular commodity, it may lead to a decline in prices. Conversely, if inventory levels are low, it could lead to higher prices.

The process of keeping track of inventory levels plays a crucial role in understanding the dynamics of supply and demand in the world of commodities. As such, the ability to monitor and analyze inventory levels accurately can help traders and investors make prudent decisions on when to enter or exit a particular commodity market. Having access to real-time inventory data enables traders and investors to stay ahead of the curve, forecast price changes, and make wise trading decisions.

International trade. Looking at the volume and direction of international trade in commodities can help us better understand how supply and demand dynamics, which

in turn affect prices, work. For instance, when a country is importing a large amount of a particular commodity, it may indicate high demand and prices. Conversely, when a country is exporting a large amount of a particular commodity, it may indicate a surplus of the commodity and low prices.

Furthermore, it is necessary to keep track of trade agreements, trade volumes, and trade policies in order to monitor and analyze international trade effectively. Trade agreements have a big effect on how commodities are traded. For instance, a trade agreement that lowers trade barriers and tariffs between two countries can increase the volume of trade of commodities between the countries, ultimately affecting the global supply and demand balance of the commodity. Trade policies, such as subsidies, quotas, and import/export restrictions, can also impact the trade of commodities.

The extent and flow of international trade in commodities offer valuable insights into the supply and demand balance of commodities, which can ultimately impact prices. Monitoring and analyzing international trade requires constantly staying up-to-date on latest developments as well as a thorough understanding of trade agreements, trade volumes, and trade policies. Given the complex and dynamic nature of international trade, it is essential to approach it with a multifaceted perspective. This means that monitoring and analyzing international trade should not be limited to a single aspect or dimension but rather necessitate a holistic approach. The dynamics and development of the global commodity markets can therefore be influenced by the effective monitoring and analysis of global trade, which can help traders and investors make well-informed decisions.

Currency exchange. They indicate how valuable one currency is in relation to another. They are subject to change as a result of various political and economic factors such as inflation, interest rates, governmental regulations, and global events. Since

commodities are traded in US dollars or other major currencies, fluctuations in exchange rates can significantly impact their price.

When the value of a currency rises, it can lead to a decline in commodity prices. This is because commodities become more expensive for buyers using other currencies. Conversely, when the value of a currency falls, it can lead to an increase in commodity prices as commodities become cheaper for buyers using other currencies. Given the importance of exchange rates, it is essential to keep a close eye on them, as the influence of exchange rates on commodity prices extends beyond just transactions between buyers and sellers. Exchange rates have a dynamic and complex relationship with commodity prices, influencing the global supply and demand balance and thus impacting prices. Understanding this connection is crucial to making the best possible decisions in the commodity market.

Conclusion.

As we conclude this chapter, reflective of the insights gained, we gain a better understanding of how pivotal commodity markets are for the global economy. Without these markets, the flow of goods and services that form the backbone of our economies would be severely hampered, disrupting the delicate balance of supply and demand. Additionally, we acknowledge the several classifications and categorizations of different commodities, allowing for a more tailored and personalized approach when selecting commodities. Whether one prioritizes discretion or values accountability, by understanding and leveraging the various categorizations available, traders, investors, etc. can navigate the complex landscape of commodities more effectively and make choices that truly resonate with their goals.

The interplay and confluence of several factors of supply and demand, international politics, price volatility, etc. are also studied to understand their repercussions on the economics and markets of commodities. Through this, we achieve a detailed perception of commodity markets and the role they play in driving economic growth, mitigating risks, offering investment opportunities, and enabling seamless international trade.

CHAPTER 2.
MECHANISMS OF FORMATION OF THE CONJUNCTURE OF WORLD COMMODITY MARKETS AND IN UKRAINE

2.1. Analysis of the state of recent developments, structure, and dynamics of the world commodity market

The global consumption of goods derived from natural resources has grown significantly at all levels over the past 50 years. Commodities such as base metals, energy materials, and food commodities have experienced substantial growth at varying rates. For instance, aluminum consumption has increased more than sixfold, a significant divergence, since the outbreak of the Ukrainian war [5]. During 2022 Q3, Brent crude oil prices saw a sharp decline of almost one-quarter relative to their peak in June 2022, due to concerns about a global recession in 2023 and tighter financing conditions [4]. Although prices partially rebounded in October following the announcement by OPEC+ members on October 5th to reduce their production target by 2 million barrels per day, they have continued to remain volatile since. The price of natural gas in Europe reached an all-time high in August 2022 due to political conflicts, the aggressive actions of several countries to rebuild their inventories, and reduced gas flows from Russia. Since then, Russia has reduced gas supplies via Nord Stream 1, i.e., a gas pipeline that runs beneath the Baltic Sea from Russia to Germany, supplying natural gas to Western Europe. In June, it cut deliveries through the pipeline by 5%, from 170 million cubic meters of gas a day to roughly 40 million cubic meters. In July, Russia shut it down for 10 days, citing the need for maintenance. When it reopened, the flow was halved to 20 million cubic meters a day [16]. Finally, by late August, it shut down Nord Stream 1 entirely, blaming problems with equipment. The pipeline has not been open since then. As inventories reached their target levels and demand decreased,

prices fell sharply. Subsequently, Norway has come to Europe's aid, reaping handsome rewards. Petoro earned about $50 billion in 2022, almost three times what it made in 2021, and Equinor reported record adjusted earnings of $75 billion. Revenues from oil and gas contributed $125 billion to the Norwegian state in 2022, according to government estimates—about $100 billion more than in 2021 [17]. On the other hand, coal prices continued to increase in 2022 Q3 as other countries turned to coal as an alternative to natural gas. Over the past four quarters, the average prices of natural gas in Europe and seaborne coal have been 420 percent and 180 percent higher, respectively, than their average over the previous five years.

Non-energy prices declined by 13 percent in 2022 Q3 quarterly. The prices of metals declined the most, primarily due to weaker global growth and concerns about a slowdown in China. The prices of precious metals fell by 9 percent (q/q) as global interest rates rose sharply. In Q3 (q/q) 2022, the cost of agricultural commodities decreased by 11%. Although concerns about food shortages gradually subsided, it was anticipated that there would be shortages of some important commodities, particularly maize, during the current season. This, combined with unfavorable weather and high energy costs, could keep prices high. However, exports from Ukraine eventually restarted, and inventories of key crops remained above historical levels, providing a buffer for the ongoing 2022–23 season. Despite the decline in agricultural commodity prices from their highs in March 2022, they are still nearly 9 percent higher than a year ago.

The Energy Sector. The energy sector, specifically Brent crude oil prices (*Figure A-2.1*), have declined sharply from their record highs in June 2022, reaching $90 per barrel in September 2022, due to a confluence of factors including sluggish global growth, political as well as trade wars, and concerns about a possible global recession [20], persistent pandemic restrictions in China, and releases of crude oil from strategic

reserves. While there was a partial rebound to $97/bbl in October as OPEC+ members agreed to cut production, the actual reduction may be just over half of the headline figure, indicating that the market remains uncertain about future supply and demand dynamics.

Meanwhile, European natural gas prices reached an all-time high in August before falling by about two-thirds, and coal prices reached an all-time high in July and have broadly plateaued. Energy prices are expected to decline over the next two years but remain well above their recent five-year average. Natural gas and coal prices are expected to ease as consumption softens (for natural gas) and production rises (for coal), but additional bouts of pronounced energy price volatility are likely, particularly given the key risk of further supply disruptions, particularly for crude oil and natural gas, and the small global spare production capacity buffers.

In terms of global oil consumption growth, this has slowed over 2022 due to COVID-19 lockdowns in China and weakening demand elsewhere, particularly in advanced economies *(Figure B- 2.1)*. The deceleration in oil demand growth has been partially offset by power generators switching from natural gas to oil products in response to much higher natural gas prices. There is demand for oil, yet the demand has shifted due to misaligned and differing political agendas.

EU nations stopped importing all Russian oil after Russia invaded Ukraine, and nations like the US and UK stopped buying it entirely. Since India and China did not participate in the Western sanctions against Moscow, Russia is currently exporting more crude oil to those countries. The G7 nations, however, have limited Russia's oil export earnings by capping their price at $60 per barrel. Meanwhile, global oil production rose by 2 percent in 2022 Q3, with OPEC and its partners (OPEC+) accounting for half of the increase. However, most of the OPEC+ countries subject to production quotas failed to meet their targets, and their combined output was around 3.5 mb/d below their September target.

In recent years, the global natural gas market has witnessed a significant increase in demand. This growth is largely attributed to natural gas being perceived as a cleaner alternative to other fossil fuels, making it a popular choice for power generation and heating. Consumption rose by 2.8% from 2018 to 2019, with Asia being the largest market, led by China, followed closely by Europe and North America, with consumption increasing by 3.6% and 3.1%, respectively.

Global production of natural gas has also increased by 4.9% in 2019, driven by increased demand and new developments in shale gas and liquefied natural gas (LNG) production. Natural gas prices have been volatile in recent years (Figure C- 2.1), with oversupply and mild weather leading to low prices in the United States in 2019. In contrast, increased demand and limited supply resulted in high prices in Europe and Asia. However, the COVID-19 pandemic in 2020 led to a decrease in demand, subsequently causing a decrease in prices globally. In the third quarter of 2022, there was a significant drop in natural gas consumption. In Europe, demand for natural gas has fallen by around 10% (as shown in Figure D- 2.1). This decline is primarily due to a decrease in demand caused by persistently high prices, particularly in energy-intensive industries like fertilizer plants, where output has been reduced.

Additionally, many power generation facilities have switched to other fuels, and households have reduced their natural gas use in response to higher prices. The mild weather in October has also played a role in reducing demand. Government policies aimed at reducing energy consumption, including natural gas, have contributed to the fall in demand. Finally, weather patterns have also had an impact on natural gas consumption.

The International Energy Agency has predicted that the demand for natural gas across the world will persist in increasing at a rate of 1.5% per year until 2025. Nevertheless, the natural gas market may face challenges from the growing popularity of renewable

energy sources and the prospect of government policies aimed at reducing carbon emissions.

One should note that the natural gas market has undergone significant growth in terms of both consumption and production in recent years. However, the market's future remains unclear due to potential and unforeseen challenges it may face, including competition with renewable energy sources and prospective government policies focusing on carbon emissions reduction.

Overall, the development of the energy market remains uncertain, with significant risks to both supply and demand. There are upside and downside risks to the energy market, specifically in the oil sector. The downside risks arise primarily from threats to global consumption stemming from a global recession and new, prolonged COVID-19 restrictions in China. On the downside, the risk of a global recession poses a threat to oil consumption. The severity of these declines can vary, but historically, global recessions have been linked to significant drops in oil consumption. If the global economy experiences a recession, oil consumption is likely to weaken, which could lead to a decline in oil prices [20]. Additionally, prolonged COVID-19 restrictions in China could also threaten global oil consumption and negatively impact oil prices. On the upside, supply issues are the primary risk, with various factors potentially impacting the oil supply. These include new trade measures that could impact Russia's oil exports, OPEC+ supply decisions, possible disappointments in US production, and lower levels of strategic oil reserves. If these factors impact the oil supply, it could lead to an increase in oil prices. However, the passage also notes that there are uncertainties surrounding some of these factors. For example, while the IEA expects Russia's exports to decline due to additional sanctions, there is considerable uncertainty around these estimates, and market participants may find ways to circumvent the sanctions. Additionally, while OPEC+ has shown a willingness to alter production targets to support prices, there are

concerns about low levels of spare capacity. Last but not least, further releases of strategic oil reserves run the risk of reducing supply buffers and leaving the world with dangerously low levels of inventories.

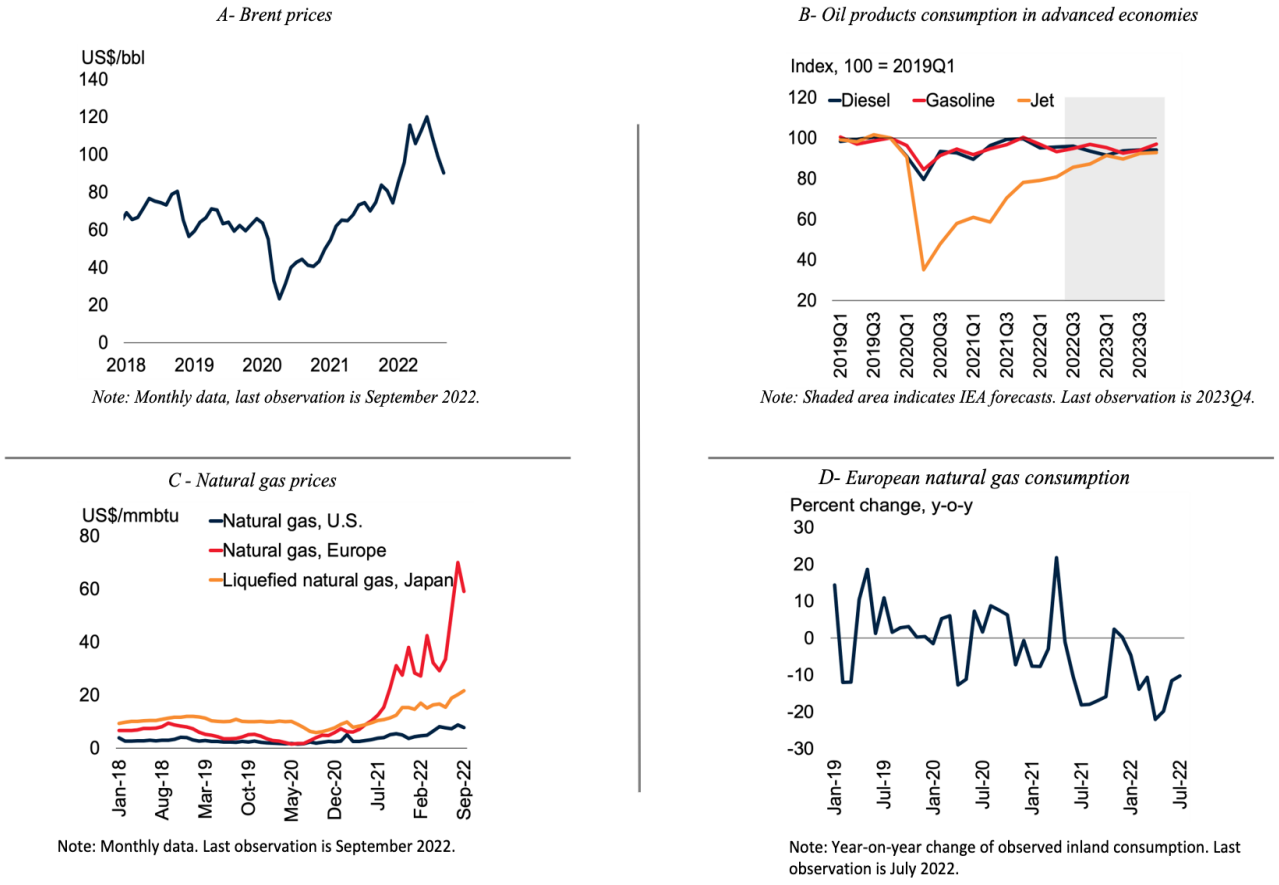


Figure 2.1: Trends in the Energy Sector.
Source: World Bank

The Agriculture Sector. The ongoing Ukrainian war is continuing to alter geopolitical relations between countries, expose cracks in the global supply chain, and strengthen the dominance of countries that are well-positioned to benefit from the food crisis. Global grain and food prices experienced a decline in the third quarter of 2022, with the grain price index dropping by 12 percent and the broader food price index decreasing at a similar pace [26]. The global wheat supply has been severely disrupted

by the ongoing imposition of new Western sanctions, the blockade of Black Sea ports, the loss of life, and the destruction of Ukrainian agricultural fields. According to the Food and Agriculture Organization of the United Nations (FAO), the FAO Grain Price Index declined by 1.7 percent on a monthly basis while falling 19.8 percent on an annual basis to an average of 136.1 points in April. Despite this decline, the grain price index is still nearly 20 percent higher than a year ago [27]. The lowering of grain prices has largely been attributed to a favorable global wheat crop and a UN-mediated agreement that facilitated grain exports from Ukraine. However, global food inventories are projected to decline slightly relative to projected demand during the 2022–23 season, with the stocks-to-use ratio falling to 0.27.

The U.S. Department of Agriculture is estimating that global production of the three main grains (wheat, maize, and rice) will decline by 2.3 percent this season, or 57 million metric tons. This decline is in contrast to the average annual growth of 35 million metric tons during the past three decades. Wheat prices dropped nearly 20 percent in 2022 Q3 but remain one-quarter higher than a year ago. Maize prices fell 10 percent in the same period but are still 20 percent higher than a year ago [16]. Rice prices declined 4 percent in 2022 Q3 but remained 6 percent higher than a year ago.

Ukraine is normally the world's top producer and exporter of sunflower meal, seeds, and oil. In June 2022, Ukraine exported 2.17 million tons of grains, pulses, oilseeds, and by-products, which is 470,000 tons, or 25% more, than in the previous month. The oil and meal price index saw the largest drop among key food price indexes, declining more than 18 percent in 2022 Q3 [16]. However, the index remains 5 percent higher than a year ago. Lower prices reflect improved crop prospects for most edible oils and oilseeds, Indonesia lifting its ban on palm oil exports, and weakening global demand due to consumer affordability issues and faltering growth prospects [28]. In comparison to the long-term average growth of 5.5 million metric tons, the global production of the eight most significant edible oils, including soybean and palm oil, is anticipated to

increase by more than 4%, or 9.6 million metric tons, this season. All eight edible oils are anticipated to see an increase in supply, but palm, rapeseed, and soybean oils will see the biggest gains due to favorable growing environments in South America (soybean oil) and East Asia (palm oil) [28]. Production of the seven major oilseeds is also expected to grow even more strongly than that of edible oils, at 4.5 percent, led by soybean and rapeseed.

Numerous variables, including weather patterns, geopolitical developments, and global demand, influence future trends in the price of grains and other foods on a global scale. However, current projections indicate that these prices will show a degree of relative stability in the coming seasons, with the possibility of a slight further decline in the near future.

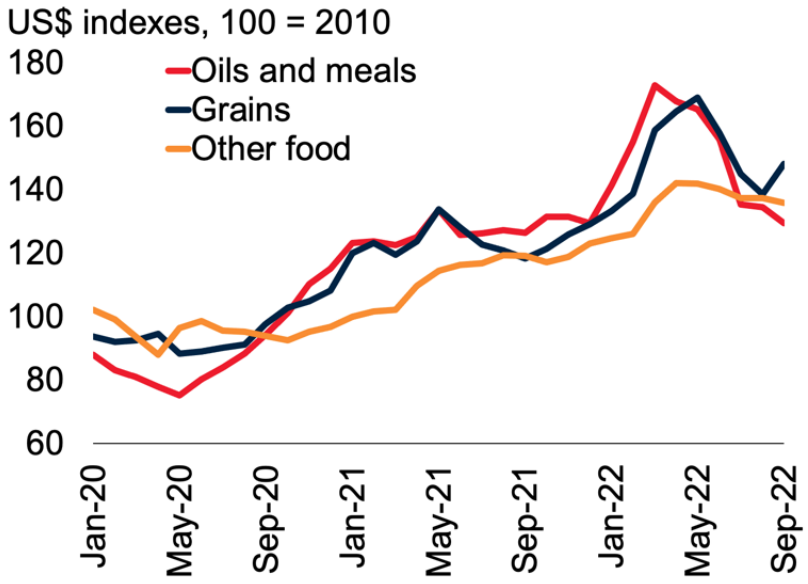


Figure 2.2: Agriculture price indexes

Source: World Bank
Note: Monthly data; last observation is September 2022.

Metals, and minerals. During the third quarter of 2022, the World Bank's metals and minerals price index experienced a significant decline. The drop was primarily due to weakening global economic activity and concerns about a possible recession. The pandemic-induced surge in demand for industrial commodities has also subsided, contributing to the decline [16]. Furthermore, stress in China's property sector, the world's largest metal consumer, played a role in the index's downward trajectory. Ukraine is one of the top 10 producers of titanium in the world, exports iron and steel to Europe, and aspires to be a significant supplier of the vital minerals that Europe needs to achieve its electrification goals and reduce its reliance on Russian energy. Prior to the war, the mining and metal complex of Ukraine provided about 10% of the country's gross domestic product and 33% of its exports. In January–October 2022, Ukrainian enterprises exported 273,400 metric tons of titanium ores, 38.9% less than in the prior-year period [16].

Ukraine aims to boost graphite output and start effectively utilizing its abundant copper and lithium deposits. But because of Russia's blockade of Ukraine's Black Sea ports, European transit hubs are finding it difficult to receive the refined iron, steel, and other mineral products from Ukraine by rail. Ukraine currently imports all of its iron ore from Europe, up from 45% before Russia's invasion [29].

Iron ore, aluminum, copper, and lead prices were notably impacted by reduced steel production, weak global manufacturing activity, and the slowdown in demand for batteries and vehicles. Due to decreased steel production and weak global construction activity, iron ore prices experienced the biggest decline in Q3, falling by 23 percent. The oversupply of iron ore in the market, despite falling exports from some of the significant suppliers, is expected to pressure prices downward in the future. In addition to limiting steel production and iron ore consumption, China's decarbonization initiatives may also have a negative impact on demand.

Aluminum prices also suffered a significant decline of 18 percent in Q3 due to weak demand in global manufacturing activity and fears over a possible recession *(Figure (Figure A- 2.3)* [16]. Due to high energy prices and power rationing in Europe, production cuts have further weakened the aluminum market. The strong production capacity of China and the opening of new smelters, however, partially offset the production decreases elsewhere *(Figure B- 2.3)*. The long-term energy transition could boost aluminum demand, especially in electric vehicles, solar power, and long-distance transmission lines [16].

Copper prices experienced a sharp drop of 19% in Q3 of 2022 *(Figure C- 2.3)*. Concerns and predictions about a global recession, rising inflation, political turmoil, and trade wars are some of the possible causes [30]. However, China's sluggish economic growth due to COVID restrictions played a massive role in the decrease in copper prices. Power shortages, supply and logistical disruptions, a shrinking labor force, and reduced output in China's metal refining regions further exacerbated copper prices. Despite this, many speculate on a rising trend for copper. This optimistic perspective believes that demand for copper will increase in the long run, boosted by the increased production of electric vehicles, renewable energy generation, and related infrastructure, particularly in today's environmentally conscious world [31, 32].

Additionally, lead prices also sustained a decline. It experienced a 10% decline in the third quarter, possibly due to weakness in the auto industry, sluggish consumption growth, or China's Zero COVID policy. At least 80% of lead is used in the production of batteries, and it is also used to line tanks that store corrosive liquids [16]. Although there were no major production setbacks in general, the shift toward electric vehicles and other renewable energy sources may have an impact on the demand for lead batteries in the future. As the pandemic recedes and additional mining projects

containing lead ore are put into operation, according to Shanghai Metal Market (SMM) News, the supply of lead concentrates is anticipated to rise in 2023.

The prospects of metals and minerals seem dull at the moment, and forecasts predict a downward trend in 2023 based on global recession risks, extended lockdowns, and collapses in different sectors of major economies like China's deteriorating real estate sector [18]. Even so, if energy prices rise above expected levels, the potential for additional closures of energy-intensive smelting operations could result in an upside price risk. There is an upside though; the rising popularity and shift towards renewable and clean energy sources may benefit many metals like aluminum and copper due to their various applications in electric vehicles, batteries, etc. *(Figure D- 2.3)*

In the third quarter of 2022, the World Bank's precious metals index fell by 9% due to weak investment and physical demand, despite the safe-haven demand related to the war in Ukraine and rising inflation [21, 16]. Gold, silver, and platinum prices fell, with silver seeing the sharpest decline of 15% as industrial demand dropped significantly. Interest rates increased to curb inflation and rising aggregate demand; simultaneously, the strength of the US dollar also contributed to the fall in precious metal prices, outweighing geopolitical risks [22]. Despite ongoing central bank purchases, gold prices dropped by 8%. The decline was primarily caused by exchange-traded fund outflows and weak jewelry demand [23]. Silver and platinum prices also saw a drop in demand due to waning industrial demand, while concerns around Russian and South African supply supported platinum and palladium prices [24].

Physical demand for gold picked up slightly but remained weak, and physical purchases are unlikely to offset the monetary headwinds facing investment demand. As interest rate hikes are likely to continue well into next year, gold prices are projected to fall by 4% in 2023. Silver prices are expected to remain low in 2023 due to lackluster

physical and investment demand. Platinum prices fell nearly 8% amid weak industrial and jewelry demand amid a global economic slowdown, despite recovering automotive demand, where platinum is used in catalytic converters. Looking ahead, platinum prices are projected to remain firm in 2023 with limited mine supply but may face headwinds from the energy transition with increasing EV penetration [35].

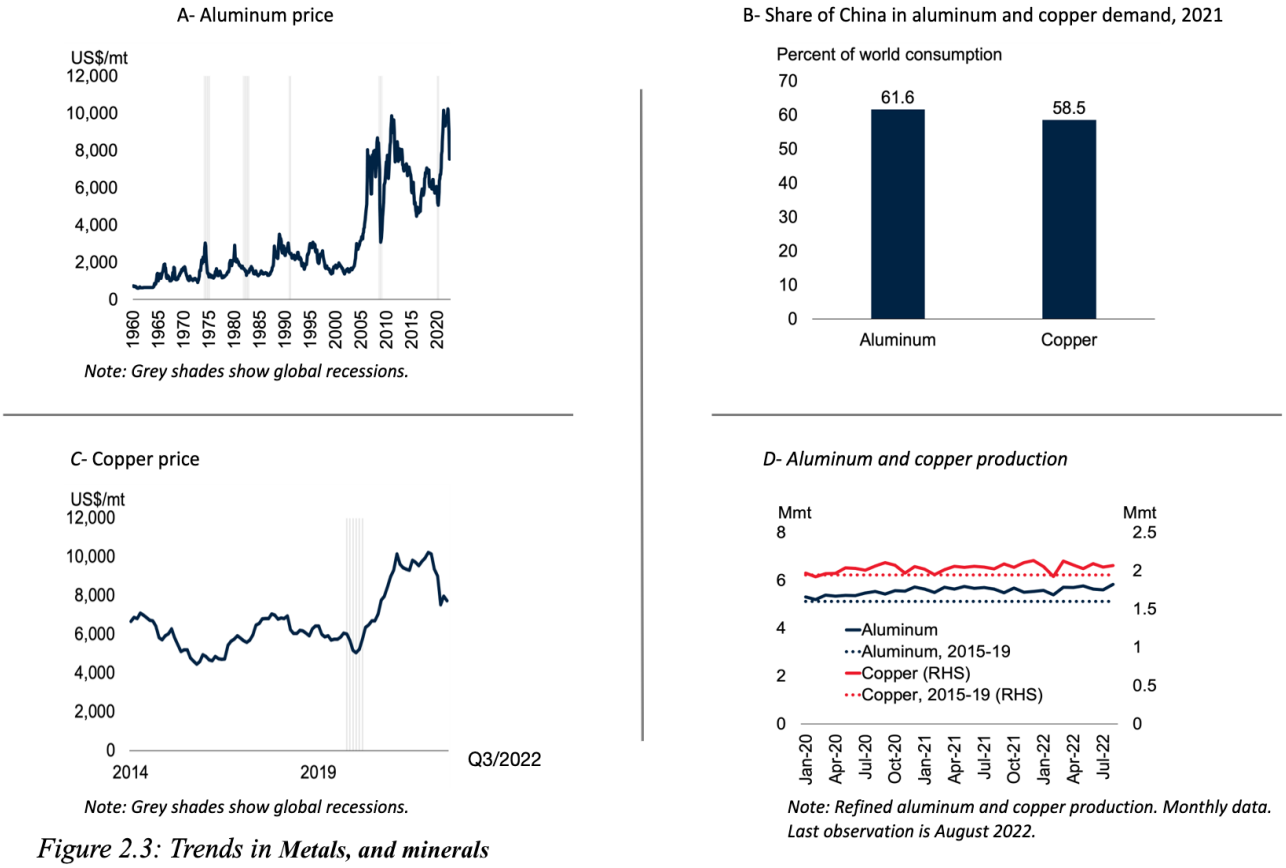


Figure 2.3: Trends in Metals, and minerals
Source: World Bank.

However, despite the challenges faced by the metal and mineral sector in Ukraine, there are silver linings in the industry that offer potential for it to thrive. Certain metals within the sector hold the promise of upside price risks, presenting potential avenues for growth and profitability. Furthermore, the increasing global demand for clean energy sources provides new and fertile ground for exploration and expansion. As the world increasingly focuses on sustainable and renewable energy solutions, metals like copper

and aluminum, which are essential in the production of electric vehicles and batteries, are likely to experience a surge in demand. This shift towards clean energy not only aligns with global environmental goals but also opens up new markets and avenues for Ukraine's metal and mineral sector to explore. Additionally, embracing technological advancements, investing in research and development, and fostering partnerships with key stakeholders can further enhance the sector's competitiveness and resilience. While the road ahead may be challenging, the metal and mineral sector in Ukraine possesses the resilience and potential for growth. By closely monitoring the ever-changing dynamics, Ukraine can adapt their strategies and operations accordingly, capitalizing on emerging opportunities and mitigating risks.

2.2. Factors influencing the development of world commodity markets

Global economic growth

Although mentioned briefly in our theoretical analysis, one of the main factors that influence the development of the world commodity market is global economic growth, as it has heavily influenced the demand for raw materials and finished goods. The unprecedented reaction of different markets to the pandemic saw gold reach record highs and oil reach record lows. The global economy faces a pronounced slowdown as the impact of COVID-19 continues to threaten economic recovery.

According to the latest Global Economic Prospects report from the World Bank, global growth is expected to slow down from 5.5 percent in 2021 to 4.1 percent in 2022 and 3.2 percent in 2023 due to dissipating pent-up demand and the withdrawal of fiscal and monetary support across the world. The world economy expanded by 3.6% in 2017, and this growth continued in 2018 to reach 3.8%, according to the World Bank. This growth is reflected in the commodity market, as the prices of various commodities

increased during this period. For example, the price of crude oil increased by 32% in 2017 and by 28% in 2018. Similarly, the prices of metals such as copper, nickel, and zinc also increased during this period [33].

Currency fluctuations

The prices of commodities traded on the international market are notorious for their unpredictability. This volatility can be attributed to a combination of factors that mainly come from the global nature of the market; those factors include market fundamentals that we have discussed in many of the sections above and fluctuating exchange rates.

The impact of currency fluctuation is significant on the commodity market and is primarily manifested through changes in commodity prices. Fluctuations in exchange rates can have a direct influence on commodity prices, which can impact demand and supply dynamics in the global commodity market. As most commodities are priced and traded in US dollars, fluctuations in exchange rates between the US dollar and other currencies can have a direct influence on their prices. When a currency gains strength against the US dollar, commodities denominated in that currency may experience a decrease in prices, making them more accessible to buyers.

Conversely, when a currency weakens in comparison to the US dollar, commodities denominated in that currency may see an increase in prices, potentially leading to reduced demand from buyers. In addition, currency fluctuations can also impact the costs of production and transportation for commodities. If a country's currency gains strength against the US dollar, it may become cheaper for that country to import raw materials and equipment needed for production, which could lower the costs of producing commodities.

For instance, during the period from February 2022 to September 2022, the price of Brent crude oil, when denominated in US dollars, experienced a decline of almost 6 percent. However, the impact of this price decrease was not uniform across all countries, particularly those that import oil and have emerging markets or developing economies. This is because currency depreciations occurred in these countries, affecting the domestic currency prices of commodities.

As a result, despite the decline in oil prices denominated in US dollars, nearly 60% of these oil-importing nations saw an increase in their domestic oil prices. This is due to the fact that, when expressed in their domestic currency, the decline in the price of oil globally is offset by the local currency's appreciation against the US dollar [19]. In other words, the weaker local currency made the imported oil relatively more expensive for these countries, contributing to higher domestic-currency oil prices.

Furthermore, the impact of currency depreciation was not limited to oil prices. In fact, almost 90 percent of these economies also experienced a larger increase in wheat prices when denominated in their local currency as compared to the rise in US dollar-denominated wheat prices. This can be attributed to the fact that most commodities, including wheat, are also priced and traded in US dollars, and currency fluctuations can directly impact their local currency prices [16]. Commodity-driven inflationary pressures may be more persistent in countries with depreciating currencies as a result of these currency-driven effects on commodity prices. Despite the recent declines in global commodity prices, the depreciation of their local currencies can offset or even outweigh the downward pressure on prices, resulting in higher domestic-currency prices for essential commodities like oil and wheat. This can pose challenges for these countries in managing inflation and stabilizing their economies, as the impact of currency fluctuation on commodity prices can have lasting effects beyond the immediate changes in global commodity markets.

Geopolitical Factors

Geopolitical events wield significant influence on the trajectory of commodity market development. The agendas pursued by nations to achieve their short or long term objectives often clash with political and economic partnerships, leading to conflicts that manifest as trade disputes, sanctions, wars, and political instabilities. A better way to showcase the impact of these events is by giving some examples and demonstrating their consequences on the world commodity market.

The imposition of tariffs by the United States and China on each other's commodities during the U.S.-China trade dispute had far-reaching implications for global supply chains and commodity markets [34]. The availability and cost of these commodities were directly impacted by the disruption of supply chains brought on by tariffs on steel, aluminum, soybeans, and other commodities.

According to data from the United Nations Conference on Trade and Development (UNCTAD), global trade in steel declined by 13% and aluminum by 7% in 2019 due to the trade dispute, reflecting the significant disruptions in the flow of these commodities *(Figure A- 2.4)* [35]. Global commodity markets were impacted by the ensuing decline in trade, which affected supply and demand dynamics and increased price volatility. Market fluctuations were significantly triggered by the ambiguity surrounding trade negotiations between the United States and China. Traders and investors reacted to the changing trade policies, resulting in price volatility in various commodity markets. For instance, soybean prices, which were heavily impacted by the trade dispute, experienced significant fluctuations. The U.S. Department of Agriculture reported a drop of around 20% in soybean prices in the year following the onset of the trade dispute as China, a major soybean importer, halted its purchases from the U.S. due to retaliatory tariffs *(Figure B- 2.4)*.

Furthermore, the U.S.-China trade dispute had ripple effects on other commodity markets globally. China shifted to alternative sources, heightening the trade dispute by increasing its imports from other countries, such as Brazil and Argentina [36, 37]. This shift in consumer patterns altered global trade flows and impacted commodity prices at all levels, demonstrating the interconnectedness of commodity markets and their universal impact.

The U.S.-China trade dispute serves as a pertinent example of how tariffs and trade tensions can disrupt global supply chains, create price volatility, and have ripple effects on commodity markets worldwide. The statistical evidence and data highlight the significant impact of geopolitical events on commodity market dynamics, underscoring the need to carefully monitor and analyze such events for a comprehensive understanding of the global commodity landscape.

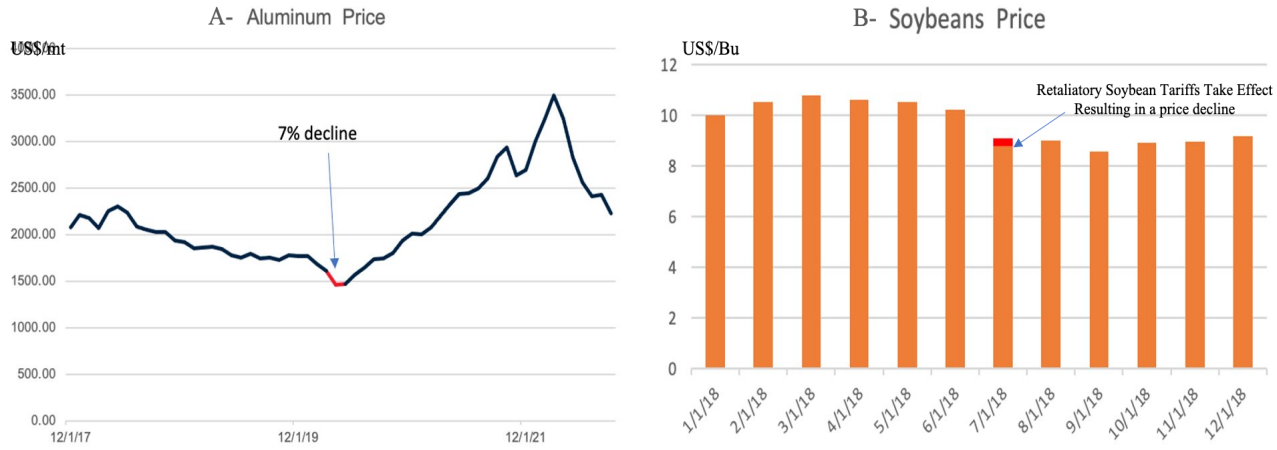


Figure 2.4: Commodity prices reaction to Geopolitical Factors

Source: Built by the author based on data Farm Bureau

Government Policies and Regulations

Governmental oversight plays a significant role in the dynamics of the world commodity market. These policies can impact the global commodity market in various

ways, ranging from general rules and requirements, trade tariffs and sanctions, environmental regulations, export and import restrictions, subsidies and incentives, production quotas and regulations, to quality standards and certifications.

The World Bank report, "Commodity Markets: Evolution, Challenges, and Policies," states that over the past 25 years, global macroeconomic shocks have been the primary cause of short-term commodity price volatility, with global demand shocks accounting for 50% of the variance and global supply shocks accounting for 20% [16].

Strong macroeconomic frameworks that offer countercyclical fiscal and monetary policies can aid in the creation of buffers, enable governments to better control the detrimental economic effects of fluctuations in commodity prices, and support the growth of a more stable and reliable commodity market. Among commodity exporters, oil exporters tend to be less diversified than metal and agricultural exporters. In comparison, they rely far more on oil for exports and as their sole source of fiscal revenue. As a result, oil-exporting economies are quite vulnerable to fluctuations in oil prices.

Policy frameworks that enable countercyclical macroeconomic responses have become increasingly common and beneficial. Mexico is an example of a country that has successfully implemented countercyclical macroeconomic policies to mitigate the impact of commodity price fluctuations. During the 2011–2016 oil price crash, Mexico implemented a flexible exchange rate regime that allowed its currency, the peso, to depreciate against the US dollar. This helped to offset the decline in government revenue from oil exports, as the weaker peso made Mexican exports more competitive in international markets. Mexico has also implemented monetary policies, which act as a fiduciary to maintain fiscal discipline and prevent the government from overspending. These fiscal rules limit government spending and borrowing while also establishing a stabilization fund to smooth out fluctuations in government revenue.

As a result of these countercyclical macroeconomic policies, Mexico was able to weather the shock of the oil price crash with minimal impact on commodity market growth. Despite a slight drop in government revenue from oil exports, the Mexican economy continued to grow and maintain its competitiveness in the global commodity market. This success demonstrates the importance of implementing countercyclical macroeconomic policies to mitigate the impact of commodity price fluctuations and other market shocks [39, 41].

Commodity agreements between countries regulate the production, supply, and price of specific commodities, such as natural resources or agricultural products. By coordinating production and consumption levels among participating nations, these agreements seek to stabilize prices and lessen price volatility.

However, policy tools such as subsidies, trade interventions, and international agreements (e.g., the China-US trade war) have had mixed outcomes, and coordinated supply management efforts have been used in many commodity markets over the past century to stabilize markets in response to short-term disruptions or to raise or stabilize prices over the longer term.

The failure of the 2016 oil production agreement exemplifies the negative ramifications that these agreements can have on economies. Initially, the agreement was successful in reducing global oil production, and oil prices began to recover. However, some countries, including Russia, began to increase production in violation of the agreement [42]. Additionally, the COVID-19 pandemic caused a sharp decline in global demand for oil, which further exacerbated the oversupply of oil in the market and led to a sharp decline in oil prices.

As a result, the 2016 Oil Production Agreement did not succeed in stabilizing oil prices; rather, throughout the course of the agreement, oil prices showed a high degree

of volatility. Despite attempts to extend the agreement and implement production cuts, oil prices continued to fluctuate, reaching record lows in April 2020.

The failure of the 2016 Oil Production Agreement serves as a stark reminder of the challenges associated with implementing commodity agreements, particularly in the face of shifting market conditions and the actions of non-participating countries. It also highlights the importance of monitoring and enforcing compliance with the terms of the agreement in order to achieve the intended goals.

In addition, laws promoting sustainability or going green might be well-intended but have negative implications for the agricultural sector. Agricultural exporters are likely to experience differing effects of climate change and will need to build resilience to extreme weather shocks. For longer-term trends, such as the energy transition and climate change, policymakers in EMDEs can take steps now to prepare for and build resilience to potential shifts in commodity demand, even though the speed at which these shifts will occur is uncertain. In some countries, notably fossil fuel exporters, expected long-term trends require efforts to reduce their exposure to resource sectors over the medium to long term. For metals exporters, strong demand for certain metals arising from the energy transition may lead to windfall revenue, which will require policies to ensure that these revenues are used strategically and equitably.

The examples mentioned are just a small number among many others that illustrate the impact of various policies and legislation on commodity market development and support our research findings that policy frameworks should be tailored to the type of shock and the terms-of-trade effects faced by different types of commodity exporters and importers. Strong macroeconomic frameworks with countercyclical fiscal and monetary policies can aid in creating buffers and enable authorities to better control the detrimental economic effects of volatility in commodity prices. Agreements should be

made comprehensively in the context of stabilizing prices to promote a sound, well-organized market that develops at a rate convenient to the relative changes and innovations done without extreme policies such as pro-environment regulations that can hurt the market. The commodity market is simply not just a financial market; it is the market that interconnects all the markets, as fluctuations in it could lead to radical changes in the global economy and impact the livelihood of the base consumer.

2.3. Dynamics of Ukraine's International Trade Conjuncture on World Commodity Markets

Ukraine's economy is classified as a mixed, lower-middle-income, emerging economy. The agriculture sector holds great significance in the country's economy and is often referred to as Europe's "breadbasket." The Ukrainian economy owes its development largely to its international trade activities, which have been significantly influenced by its abundant natural resources such as iron ore, coal, and agricultural products. With its vast fertile land, which accounts for about one-third of all arable land in Europe, Ukraine has become among the world's largest exporters of wheat. Prior to the war, the economy made impressive strides, which were reflected in a sharp rise in exports. This upward trajectory can be partially attributed to the country's efforts to diversify its agricultural exports, particularly wheat, maize, and sunflower oil.

Additionally, Ukraine's continued economic growth has been facilitated by the expansion of its trade ties with the European Union and countries in South Asia. The latest available country-specific data shows that 57.2% of products exported from Ukraine were bought by importers in: mainland China (12.1% of the global total), Poland (7.6%), Turkey (6.1%), Russia (5.1%), Italy (4.9%), Germany (4.2%), and so on. Although there is a diversified export portfolio, Ukraine still relies heavily on some parties and has few transactions with others [45].

Ukraine has consistently faced challenges in its international trade, including the impact of the global economic downturn and political instability, followed by the act of aggression committed against it by the Russian Federation. The global economic downturn that began in 2008 resulted in a decrease in natural resources, leading to a decline in the prices of commodities such as iron, ore, and steel, which have the highest export value of US$13.1 billion, representing 19.9% of the total exports of the country [46]. Ukraine has been a constant target of political instability, beginning with the annexation of Crimea by Russia in 2014, leading to international sanctions that have adversely affected its economy which have severe implications even today. Nothing, however, compares to the aggression Russia committed against Ukraine in 2021 with its ongoing repercussions, which dealt a serious blow to Ukraine's trading abilities.

The iron industry has been severely affected by the ongoing conflict with Russia. The Zaporizhstal plant, owned by the Metinvest Group, is operating at less than 50% capacity due to its inability to export its products. Its diminished output is also due in part to steelworkers joining the army or doubling as humanitarian volunteers. Russia's invasion has battered the steel industry and put it on a war footing, as the focus has shifted to creating armor, barricades, and defenses instead. While the plant has enough raw materials, it cannot get them to the market as exports of bulk iron ore have stopped entirely after being blocked by Russia[47]. There is no agreement to allow vessels ferrying other goods to transit the Black Sea. As a result, Ukraine's supply chain relations and trade have been affected.

The logistical challenges have been further compounded by Ukraine's railways, which operate on a different gauge track than those in Western Europe, meaning cargo has to be transferred at the border. Additionally, two steel mills in Mariupol, including the Ilyich Iron and Steel Works, which had more than 14,000 employees, were seized by Russian and Moscow-backed separatist forces [48]. The company had more than 200,000 tons of steel products stored at its Mariupol plants and planned to export them

to countries like Turkey, China, and parts of the European Union [47]. Due to worries about the conflict and the associated geopolitical unrest, these buyers may have become less inclined to buy steel products from Ukraine, which may have decreased demand for Ukrainian steel. This could worsen the situation faced by the steel company and other Ukrainian exporters, leading to reduced revenue and economic impact.

The wheat industry was not safe either from the impact of the conflict, as grain yields from Ukrainian farms could be down by up to 50% in 2023. Before the war, Ukraine and Russia were among the world's top producers of commodities such as wheat and barley, but the conflict has caused a global shift in the trading of grains, leading to volatility in global wheat prices throughout the year. Prices have since stabilized, dropping around 13% in 2023.

The Black Sea Grain Initiative, a deal brokered by the UN in Turkey to guide ships safely out of Ukrainian ports, was only extended by 60 days in March, a reduction on the previous 120-day period [50]. Similarly, many other trade relations have been affected due to a diplomatic or political stance taken by other participants or countries. This impact may have been caused by the participants or countries aligning themselves with one side or the other, thereby influencing the dynamics of Ukraine’s trade relations.

Lack of access to finance, fertilizers, fuel, and labor, as well as low grain prices, are a few other factors that have contributed to lower acreages or areas devoted to wheat and corn crops in Ukraine. According to Citi Research's Aakash Doshi, head of commodities for North America, Ukrainian grain exports and harvests this year may be down as much as 50% from pre-war levels. However, in the longer term, supply will shift towards countries such as North and South America [49].

The EU's decision to keep farm exports flowing from Ukraine to the world market would benefit the supply and demand for Ukrainian agricultural products, particularly in the Middle East and Africa. The EU has granted five eastern member countries the right to temporarily ban some of the most problematic produce while allowing all farm

products to transit onward. The deal would essentially accept the national bans on four of the five main products, including wheat, maize, rapeseed, and sunflower seeds, that account for most imports.

The EU would also assess whether other products, including sunflower oil, should be included. The EU provided 100 million euros more in special aid on top of an initial support package of 56.3 million euros to help farmers in the affected countries [51]. Overall, lifting the import tariffs seriously skewed local markets in the nations closest to Ukraine. In Poland, wheat imports went from 2,375 tons in 2021 to 500,008 tons last year. Maize went from 5,863 tons to more than 1.8 million over the same period. Similar huge increases were also evident in Hungary, Slovakia, and Romania. However, some eastern EU member states, such as Poland, Hungary, Slovakia, and Bulgaria, introduced bans on imports of cheaper Ukrainian grain, oil seeds, dairy products, and meat, leading to the European Commission condemning the ban by these member states.

The ongoing conflict with Russia has severely affected its exports and caused significant damage to its infrastructure. The conflict in Ukraine and its impact on trade relations, prices, and supply-demand economics are complex and multi-faceted and can have significant implications for businesses and economies in the region. It's possible that the impact on Ukrainian grain exports and harvests will persist, causing volatility in wheat prices around the world. However, in the longer term, supply will shift towards other countries, such as North and South America. For this reason, it is crucial for Ukraine to diversify its export base and forge closer commercial ties with other nations in order to lessen its reliance on particular parties. Additionally, to create an edge, the country needs to severely invest in its infrastructure, improve its logistics, and adopt modern technologies to compete in the global market.

2.4. Trends in the development of cyclical fluctuations in world commodity markets.

The Increasing Influence of China on Global Commodity Prices

China's increasing influence on commodity prices can be attributed to its growing share of global demand for major commodities, as reported by the World Bank. For instance, in 1990, China's demand for crude oil accounted for only 2% of the world's total, while in 2019, it increased to 14%. Similarly, China's demand for iron ore surged from 13% in 1990 to 70% in 2019 [52, 53].

China's increasing influence on commodity prices has a significant impact on commodity cycles. As China's demand for commodities has grown rapidly, it has disrupted traditional commodity cycles by creating a significant increase in demand for raw materials. This increase in demand has caused prices to surge and become more volatile as the global supply struggles to keep up with China's demand. In some cases, China's dominance in certain commodity markets has allowed it to influence prices through its purchasing decisions, leading to further disruptions in the commodity cycles.

Moreover, China's role as the largest producer of many commodities means that any disruptions in Chinese production can have a significant impact on global commodity prices, further exacerbating the volatility of commodity cycles. For instance, China's export restrictions on rare earth metals in 2010 China imposed export restrictions on rare earth metals, which are a group of 17 elements used in many high-tech products such as smartphones, electric vehicles, and wind turbines.

China's move to limit the export of rare earth metals created a significant disruption in the global supply chain of these metals, as China produces about 80% of the world's rare earth metals.

The export restrictions led to a sharp increase in the price of rare earth metals as other countries scrambled to secure their supplies. The prices of some rare earth metals, such as neodymium, which is used in magnets, soared by more than 10 times their usual level. The sharp increase in prices created concerns among manufacturers of high-tech products, who rely heavily on rare earth metals, and forced them to look for alternative sources of supply [54,55].

China lifted the export restrictions on rare earth metals in 2015 after facing pressure from other countries and the World Trade Organization. However, the incident highlighted China's influence on the global supply chain of commodities and its ability to control prices through its production and export policies. For a recent reference, we can take the example of China's COVID Zero policy, which seeks to eradicate all domestic COVID-19 cases and is having a significant impact on the commodity market. The policy involves strict lockdowns, travel restrictions, and mass testing that can disrupt supply chains and decrease demand for commodities.

As a result, Chinese factories may have to temporarily shut down, leading to a decrease in demand for raw materials. Moreover, the high power prices resulting from the policy may increase production costs, further pressurizing the prices of commodities.

The policy's uncertainty may also discourage investors and traders from taking positions in the market, leading to lower liquidity and increased price volatility. Additionally, China's dependence on foreign soybeans, which account for 85% of its needs, is also a cause for concern. The recent surge in soybean prices may further exacerbate inflation in the country, which may have ripple effects on the global commodity market [57].

Importance of Environmental Factors in Shaping Commodity Markets

The importance of environmental factors in shaping commodity markets is significant, given the increasing integration of global value chains and the expansion of global trade. There are complex relationships between trade and the environment, and policymakers need to consider the potential positive and negative impacts of trade on the environment while devising trade policies.

Trade can have both positive and negative impacts on the environment. While trade expansion can lead to economic growth and development, it can also cause environmental degradation, such as pollution and the depletion of natural resources. Trade liberalization can also lead to the concentration of pollution-intensive activities in countries with weaker environmental policies. For example, between 1998 and 2007, China's share of global sulfur dioxide emissions increased from 23% to 30%, largely due to increased industrial production driven by foreign investment [57].

However, trade can also contribute to a more efficient use of resources and provide incentives for firms to adopt more stringent environmental standards. Therefore, policymakers should focus on implementing appropriate environmental policies to minimize the negative impacts of trade on the environment. And we know that could happen based on the study conducted by the international resource panel.

According to the study, increased trade in goods and services has helped to decouple economic growth from environmental impact. During the period 2010-2019 Global trade in goods and services grew by 90%, while global greenhouse gas emissions increased by only 25%. This suggests that trade can contribute to economic growth without leading to a corresponding increase in environmental impact.

"Decoupling" refers to breaking the link between economic growth and environmental degradation. This means achieving economic growth without a

corresponding increase in negative environmental impacts such as greenhouse gas emissions, pollution, and resource depletion *(Figure 2.5)*.

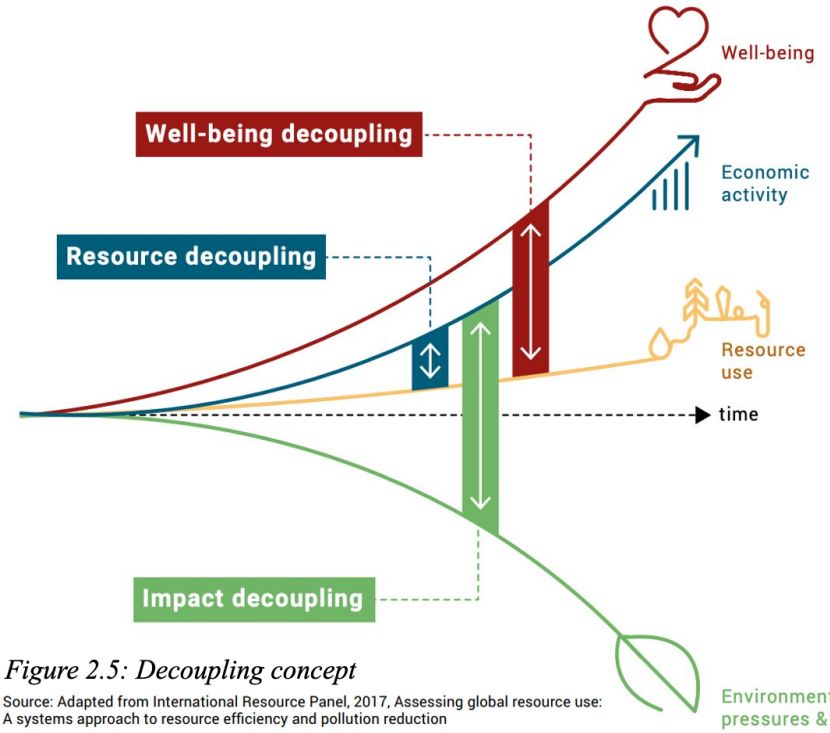


Figure 2.5: Decoupling concept

Source: Adapted from International Resource Panel, 2017, Assessing global resource use: A systems approach to resource efficiency and pollution reduction

Climate change can have significant consequences for trade by disrupting supply, transport, and distribution chains, particularly maritime shipping. This can lead to output losses and a decrease in global trade volume. At the same time, climate change may also present opportunities, such as the opening of Arctic shipping routes, albeit with potential environmental costs.

To optimally combine trade and environmental policies, policymakers should establish effective environmental policies and institutional frameworks at the local, regional, national, and international levels. The WTO and bilateral and regional trade agreements can play a vital role in harmonizing environmental regulations between developed and developing countries.

The inclusion of environmental provisions in trade agreements can help build a multilateral framework for international trade while discouraging the "race to the bottom" and promoting the first-mover advantage.

In conclusion, policymakers must consider the impacts of trade on the environment while devising trade policies. By implementing appropriate environmental policies, harmonizing environmental regulations, and including environmental provisions in trade agreements, policymakers can harness the benefits of trade while minimizing the environmental costs, leading to more sustainable and inclusive growth.

Macroeconomic Instability and Geopolitical Risks.

Ray Dalio's book released in 2021, "The Changing World Order: Why Nations Succeed and Fail," discusses how geopolitical risk can impact economies and markets. According to Dalio, geopolitical concerns, no matter how small, such as political instability, trade disputes, and wars, should be considered by investors and policymakers when making decisions, as these risks are pervasive and can have a ripple effect that can significantly impact global markets.

In light of this, we can derive a similar conclusion for ongoing conflicts such as China-Taiwan, Europe-US tensions further fuelled by the French prime minister’s support towards Beijing, and finally, the frequent discussions revolving around the creation or formation of new currencies to substitute the dollar as a reserve currency ("de-dollarization").

The currency has been weaponized by the west's allies and is not considered safe for usage as a reserve currency. De-dollarization, or the reduction of the U.S. dollar's dominance in global trade and finance, could have significant effects on world commodity cycles [61]. The U.S. dollar has been the primary currency for pricing and

trading commodities, particularly oil, for many years. Therefore, any shift away from the U.S. dollar could have profound implications for commodity markets.

If de-dollarization were to occur, it could lead to a decrease in demand for U.S. dollars, which could result in a depreciation of the currency. A weaker U.S. dollar would make commodities priced in dollars cheaper for other countries, increasing demand and potentially leading to higher commodity prices. However, if the shift away from the U.S. dollar is sudden and significant, it could create uncertainty in the market and potentially lead to a decrease in demand for commodities. Furthermore, this could lead to greater volatility in commodity prices as exchange rates between these currencies fluctuate. It could also lead to changes in the behavior of commodity producers and consumers as they adjust to new pricing and trading mechanisms.

Consequently, countries including Brazil, Russia, India, China, and Saudi Arabia, collectively known as the BRICS, along with several other countries wishing to align with or join the BRICS, have opted to conduct transactions using their respective currencies or are contemplating creating a new currency. This means relying less on external currencies and promoting the usage of their own. Additionally, there are initiatives to establish new currencies, as evidenced by the recent agreement between Brazil and Argentina, aimed at fostering greater financial autonomy and reducing dependence on the U.S. dollar. This shift signifies a strategic move by these nations to assert their economic sovereignty and reshape the landscape of international financial transactions.

According to a McKinsey Global Survey on economic conditions, geopolitical conflicts and inflation are seen as the two most pressing economic risks for the coming year. One of the key findings is that nine out of ten respondents say their companies have seen cost increases in the past six months, with rising energy prices having the most significant impact in Europe [62]. This suggests that commodity price

fluctuations, particularly in the energy sector, could have a significant influence on the cyclical fluctuations of commodity markets.

While inflation remains the top concern for most respondents, volatile energy prices have surpassed supply chain disruptions as the third-most-cited global risk. Respondents in Europe express deeper concerns over energy price volatility and have a more somber view of their domestic economies compared to respondents in North America. In contrast, those in Greater China are primarily positive about the present and the future.

The interconnectedness of commodity markets and the global economy means that disruptions in one region can reverberate across the globe. Increased prices, supply uncertainties, and trade disruptions can have economic implications, affecting industries, businesses, and consumers in different countries.

When geopolitical tensions escalate, such as in the case of the Ukraine-Russia conflict, it often leads to increased uncertainty and risk perception among investors and market participants. This can result in heightened price volatility and supply disruptions in commodity markets. For instance, Germany has been diversifying its agricultural imports by turning to countries like France, the Netherlands, and Brazil for wheat and corn. Turkey, on the other hand, has increased its focus on domestic production and explored new trade partnerships for agricultural commodities, including countries like Brazil, Argentina, and Kazakhstan, among others, in addition to Ukraine and Russia (non-bordering regions).

These efforts have been aimed at diversifying sources of supply and ensuring stable access to essential commodities amidst the ongoing conflict between Russia and Ukraine. Therefore, it becomes crucial for policymakers, market participants, and international organizations to closely monitor and manage political risks and macro instability. Mitigating these risks can help ensure stability in commodity markets,

promote global economic growth, and safeguard the interests of various stakeholders in an increasingly interconnected world.

CONCLUSION

Through a comprehensive exploration of the theoretical foundations surrounding cyclical fluctuations, our understanding of the world commodity market's essence, formation stages, and structural classification has significantly expanded. Our analysis of market fluctuations in the world's commodity markets indicates that these markets are intricate and constantly evolving systems, encompassing the interplay of numerous elements that dictate the ebb and flow.

This thesis has allowed us to recognize the interconnected nature of these processes, where even minor disruptions reverberate into massive disturbances. Through a holistic approach, we utilize several models like Hotelling and Hubert’s to gain insight into a particular aspect of the economics of resource supply, but at the expense of abstracting from other complexities that are in tension with each other. Hotelling's model illuminates the behavior of producers as they strive to optimize the production of finite resources across different time periods. This intertemporal optimization allows them to effectively manage resource extraction in the face of scarcity and changing market conditions.

On the other hand, Hubbert's logistical model provides a valuable approximation of the exploration and development life cycle of a singular geological basin. It assumes a scenario where prices remain stable and all other relevant factors remain constant.

By embracing these diverse models and acknowledging their limitations, we aim to shed light on their multifaceted nature of resource supply economics and their impact on global commodity markets. As analyzed through this thesis, real-world examples such as the China-US trade war and the Ukraine-Russia conflict reveal how such events reverberate, extending their tendrils by exerting profound effects on prices, trade relations, supply chains, and the emergence of imbalances.

The commodity markets of Ukraine have been adversely affected by the ongoing conflicts, resulting in a significant slowdown in production and trade dynamics across various sectors like minerals, energy, etc. The intricate analysis conducted reveals a significant paradigm shift, where Ukraine and Russia's trading partners have experienced fluctuations in their utilization of these trade channels, strategically aligning themselves with either party involved or opting to distance themselves from the conflict altogether.

However, there is a silver lining. The ongoing conflict has acted as a catalyst for forging new alliances and cultivating friendships with Ukraine, resulting in the expansion of its trade partnerships. Even in the face of adversity, Ukraine has found unwavering support from these emerging trade partners, whose contributions, no matter how modest, have played a crucial role. These partners have demonstrated their unwavering commitment to Ukraine, thus playing a major role in fostering economic growth and facilitating development during these tumultuous times. Additionally, we discuss the impact of regulations and policies on the global commodity markets and their cyclical fluctuations.

Through examples, we establish the effects of macroeconomic frameworks that offer countercyclical policies that enable governments to better control the detrimental economic effects of fluctuations in commodity prices and contribute towards a stable and reliable commodity market.

The growth of de-dollarization as a global trend and decoupling, along with the United States facing a potential cash shortage and China's strict Zero COVID policy, have triggered a chain of events that have had a profound impact on the global economy, introducing disparities and instabilities all across. These developments have given rise to discrepancies and price volatility that reverberate through the realm of commodities, subsequently exerting far-reaching effects on consumer prices, demand patterns, inflationary pressures, fluctuations in interest rates, and even employment rates. Such

disturbances in the commodity markets can consequently spur supply disruptions, political risks, and fuel inflationary pressures.

By delving into the complexities of market dynamics, this research equips decision-makers with the foresight required to make informed choices, mitigate risks, and capitalize on emerging opportunities. It further highlights how to understand these complexities better, to anticipate emerging trends, and devise sustainable strategies for achieving economic growth and stability.

BIBLIOGRAPHY

1. Daniel P. Ahn, Principles of Commodity Economics and Finance. 2018. p.38-73

2. Gary Gereffi, and Miguel Korzeniewicz, Commodity Chains, and global capitalism. 1994. p. 17-48 and 245-281.

3. A Guide to the Language of the Futures Industry | CFTC https://www.cftc.gov/LearnAndProtect/AdvisoriesAndArticles/CFTCGlossary/index.htm#:~:text=(1)%20A%20commodity%2C%20as,futures%20trading%20in%20onions%2C%20and

4. What has happened to the global aluminum market since the conflict between Russia and Ukraine 2022 https://news.metal.com/newscontent/101803453/what-has-happened-to-the-global-aluminum-market-since-the-conflict-between-russia-and-ukraine-institutional-research-report

5. John Baffes, Wee Chian Koh, The Evolution of Commodity Markets over the Past Century 2023. p. 26 -102

6. Jose Noguera, Barter Economies and Centralized Merchants 2009. p. 69.

7. Joy Elmer Morgan, Free Trade and Protection 1869 p. 78

8. Adam Smith, The Wealth of Nations, 1776. p.

9. Margaret E. Slade Henry Thille, Whither Hotelling: Tests of the Theory of Exhaustible Resources 2009.

10. V. V. Chari Lawrence J. Christiano, The Optimal Extraction of Exhaustible Resources. 1991

11. Pierre-Noël Giraud, A Note on Hubbert's Thesis on Mineral Commodities Production Peaks and Derived Forecasting Techniques. 2013.

12. Erten, José Antonio Ocampo, Super Cycles of Commodity Prices Since the Mid-Nineteenth Century Bilge. 2013.

13. Robert Rapier, How The Fracking Revolution Broke OPEC's Hold On Oil Prices Robert Rapier | Forbes 2018. https://www.forbes.com/sites/rrapier/2018/07/22/how-the-fracking-revolution-broke-opecs-hold-on-oil-prices/?sh=fdbe9dd48efd

14. Understanding Seasonality in Grains | CME Group. https://www.cmegroup.com/education/courses/introduction-to-grains-and-oilseeds/understanding-seasonality-in-grains.html

15.Amine Ben Amar a, Stéphane Goutte b, Mohammad Isleimeyyeh c, Asymmetric cyclical connectedness on the commodity markets: Further insights from bull and bear markets. 2022 https://www.sciencedirect.com/science/article/abs/pii/S1062976922000539

16.John Baffes and Peter Nagle, Commodity Demand: Drivers, Outlook, and Implications. 2023

17.Alain Kabundi, Garima Vasishtha, and Hamza Zahid, The Nature and Drivers of Commodity Price Cycles. 2022

18.Jeetendra Khadan and Franziska OhnsorgeSPECIAL FOCUS Forecasting Industrial Commodity Prices | World Bank 2017 https://openknowledge.worldbank.org/server/api/core/bitstreams/835bf2df-f6eb-4890-83f1-f7f03035f157/content

19.Baffes, J., and P. Nagle, Commodity Markets: Evolution, Policies, and Challenges. World Bank, Washington, DC, eds. 2022.

20. Guénette, J.D., M. A. Kose, and N. Sugawara, “Is a Global Recession Imminent?” Equitable Growth, Finance, and Institutions Policy Note 4. 2022. World Bank, Washington, DC.

21. Haver Analytics INTERNATIONAL ENERGY STATISTICS (ENERGY) | Haver https://www.haver.com/our-data-international-energy-statistics

22. Bloomberg: Precious and Industrial Metals https://www.bloomberg.com/markets/commodities/futures/metals

23. Reuters: Record central bank buying lifts global gold demand, WGC says | Reuters, 2022. https://www.reuters.com/markets/commodities/record-central-bank-buying-lifts-global-gold-demand-wgc-says-2022-11-01/

24. Bloomberg: Platinum Buyers May Shun Russian Metal When Contracts Renewed | Bloomberg, 2022 https://www.bloomberg.com/news/articles/2022-09-04/platinum-buyers-may-shun-russian-metal-when-contracts-renewed

25. Gold, silver and platinum prices drop | Opportimes 2020 https://www.opportimes.com/gold-silver-and-platinum-prices-drop/#:~:text=Platinum%20prices%20fell%20nearly%208%25%20in%20the%20third,and%20jewelry%20demand%20amid%20a%20global%20economic%20slowdown.

26.Currency Depreciations Risk Intensifying Food, Energy Crisis in Developing Economies | World Bank 2022. https://www.worldbank.org/en/news/press-release/2022/10/26/commodity-markets-outlook

27. World Food Situation | FAO 2020 https://www.fao.org/worldfoodsituation/foodpricesindex/en/

28. FAO price indices for oilseeds, vegetable oils, and oilmeals | FAO https://www.fao.org/markets-and-trade/commodities/oilcrops/fao-price-indices-for-oilseeds-vegetable-oils-and-oilmeals/en/

29. Anthony Barich, Metals and the invasion: Ukraine aims for critical minerals after the war | S&P Global 2023. https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/metals-and-the-invasion-ukraine-aims-for-critical-minerals-after-the-war-

74205684#:~:text=Considering%20Ukraine%27s%20recorded%20graphite%20reserves%20are%20about%2013.7,raw%20materials%20and%20to%20attract%20investments%20to%20Ukraine.

30. Trefis Team, Lower Copper Prices Will Weigh On Freeport's Q3 Results | Forbes 2022 https://www.forbes.com/sites/greatspeculations/2022/10/12/lower-copper-prices-will-weigh-on-freeports-q3-results/

31. COVID-19 Outbreaks and Headwinds Have Disrupted China's Growth Normalization - World Bank Report | World Bank 2020

32. COVID-19 Outbreaks and Headwinds Have Disrupted China's Growth Normalization - World Bank Report

33. Pippa Stevens A coming copper shortage could derail the energy transition, report finds | CNBC 2022 https://www.cnbc.com/2022/07/14/copper-is-key-to-electric-vehicles-wind-and-solar-power-were-short-supply.html

34. Global Growth to Slow through 2023, Adding to Risk of 'Hard Landing' in Developing Economies | World Bank 2020 https://www.worldbank.org/en/news/press-release/2022/01/11/global-recovery-economics-debt-commodity-inequality

35. Amani Elobeid, Miguel Carriquiry, Jerome Dumortier, David Swenson, Dermot J. Hayes, China-U.S. trade dispute and its impact on global agricultural markets, the U.S. economy, and greenhouse gas emissions, 2020. https://onlinelibrary.wiley.com/doi/10.1111/1477-9552.12430

36. Trade and Development Report 2022 | UNCTAD 2022 https://unctad.org/tdr2022

37. China to buy 1 mil-1.5 mil mt | S&P Global 2022 https://www.spglobal.com/commodityinsights/en/market-insights/latest-

news/agriculture/112822-argentina-restarts-soy-dollar-program-until-year-end-china-to-buy-1-mil-15-mil-mt

38.China Buying More Brazil Soy in Sign of Shifting Trade Flows | Bloomberg 2021 https://www.bloomberg.com/news/articles/2021-11-16/china-is-buying-more-brazil-soy-in-signs-of-shifting-trade-flows#xj4y7vzkg?leadSource=uverify%20wall?leadSource=uverify%20wall?leadSource=uverify%20wall

39.Causes and consequences of metal price shocks | World Bank 2021 https://thedocs.worldbank.org/en/doc/c5de1ea3b3276cf54e7a1dff4e95362b-0350012021/related/CMO-April-2021-special-focus.pdf

40. Javier Duclaud Chapter 15. Mexico's Oil Price–Hedging Program | IMF https://www.elibrary.imf.org/display/book/9781616353797/ch015.xml

41.Saudi Arabia's Foreign Policy and the Failure of the Doha Oil Negotiations | MARTIN BECK 2016 https://www.e-ir.info/pdf/64331

42. World Integrated Trade Solution | 2021World Bank. Retrieved from https://wits.worldbank.org/

43.Ministry of Economic Development, Trade and Agriculture of Ukraine. (2022). Foreign Trade of Ukraine in 2021. Retrieved from https://www.me.gov.ua/Documents/List?lang=uk-UA&id=eacb2306-31d6-45da-bf02-654be9d12da7&tag=ZovnishnijHandel2022

44.Export Promotion Office of Ukraine. (2022). Export Strategy of Ukraine 2030. Retrieved from https://epo.org.ua/en/strategy/

45. Ukraine (UKR) Exports, Imports, and Trade Partners | OEC - The Observatory of Economic Complexity https://oec.world/en/profile/country/ukr/

46. Daniel Workman, Ukraine's Top 10 Exports | World's Top Exports 2022 https://www.worldstopexports.com/ukraines-top-10-exports/

47.Russia's war in Ukraine pushes Ukrainian steel production to the brink | National Public Radio 2022 https://www.npr.org/2022/08/12/1116312634/russia-ukraine-war-steel-iron-industry

48. Russia's war in Ukraine pushes Ukrainian steel production to the brink | HPPR 2022 https://www.hppr.org/2022-08-12/russias-war-in-ukraine-pushes-ukrainian-steel-production-to-the-brink

49. Ukraine's corn and wheat exports are set to plummet. Here's what that means for the world's food supply | CNBC 2023 https://www.cnbc.com/2023/04/20/what-ukraines-declining-grain-production-means-for-global-food-trade.html

50. The Black Sea Grain Initiative | UN 2023 https://news.un.org/en/story/2022/09/1126811

51.Ukraine welcomes EU deal on continued farm exports | AP News 2023 https://apnews.com/article/eu-ukraine-grain-exports-war-russia-d1fae3b978f2893c13d74fa2e152603b

52.Country Analysis Executive Summary: China | US Energy Information Administration. 2022 https://www.eia.gov/international/content/analysis/countries_long/China/china.pdf

53.Iron Ore Prices: China's Fight With Iron Ore 'Guerrillas' Triggers Price Rout | Bloomberg https://www.bloomberg.com/news/articles/2022-02-15/china-s-fight-with-iron-ore-guerrillas-triggers-price-rout#xj4y7vzkg

54.China's Growing Conflict with the WTO: The Case of Export Restrictions on Rare Earth Resources | Intereconomics https://www.intereconomics.eu/contents/year/2013/number/4/article/chinas-growing-

conflict-with-the-wto-the-case-of-export-restrictions-on-rare-earth-resources.html

55. World trade in rare earths, Chinese export restrictions, and implications https://www.sciencedirect.com/science/article/pii/S0301420715001002
56. China's soybean production, imports and import dependence https://pmarketresearch.com/chinas-soybean-production-imports-and-import-dependence-in-2023/
57. Shenshen Su, Bengang Li,* Siyu Cui, and Shu Tao, Sulfur Dioxide Emissions from Combustion in China: From 1990 to 2007. https://pubs.acs.org/doi/pdf/10.1021/es201656f
58. The impact of trade opening on climate change https://www.wto.org/english/tratop_e/envir_e/climate_impact_e.htm
59. Ray Dalio, The Changing World Order: Why Nations Succeed and Fail. 2022
60. Macron sparks anger by saying Europe should not be 'vassal' in US-China clash | Emmanuel Macron | The Guardian https://www.theguardian.com/world/2023/apr/10/emmanuel-macron-sparks-anger-europe-vassal-us-china-clash
61. Dedollarisation - Wikipedia https://en.wikipedia.org/wiki/Dedollarisation
62. Alan Fitz Gerald, The latest global economic outlook & conditions | McKinsey 2022. https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/economic-conditions-outlook-2022#section-header-Dec

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PRIORITY AREAS OF UKRAINE'S INTEGRATION INTO THE GLOBAL COMMODITY MARKET

Ukraine's integration into the global commodity market post-COVID-19 pandemic and its ongoing conflict with Russia are complex, evolving situations. The cataclysmic impact of the COVID-19 pandemic reverberated across the globe, casting its shadows on Ukraine's commodity market integration. Supply chains were severed, lockdowns paralyzed industries, and widespread lockdowns and travel restrictions choked off the flow of goods. Consequently, Ukraine, like countless other nations, has grappled with the task of maintaining export volumes while adapting to evolving market dynamics. Moreover, the ongoing conflict with Russia has added an additional layer of complexity to Ukraine's integration efforts. The turmoil in eastern Ukraine has inflicted significant disruptions upon critical infrastructures [1], trade routes, and supply chains, thereby directly impinging on Ukraine's ability to export various commodities, including agricultural products, metals, and energy resources. Beyond the immediate impact on trade, the conflict has engendered geopolitical tensions and uncertainties that influence the market's perception of Ukraine as a dependable trading partner. According to trusted sources such as the OEC, Ukraine's total exports reached US$68.9 billion in 2021, indicating a 51.7% increase since 2017 and a 33.4% growth from 2020 to 2021 [2]. In addition, according to the State Statistics Service of Ukraine, Ukraine's exports declined by 37.1% year-on-year in February 2023, with falling sales of products due to the ongoing conflict [3]. However, with the gradual recovery of the global economy and the resumption of international trade, Ukraine finds itself presented with a unique opportunity to rebuild and fortify its position in several priority areas within the global commodity market.

Ukraine's export profile is currently dominated by iron and steel, cereals, and ores, which diversifies its export product base in order to reduce dependency on a few sectors and importers (Figure 1) [4].

Figure 1: Percentage of Ukraine exports as of 2021

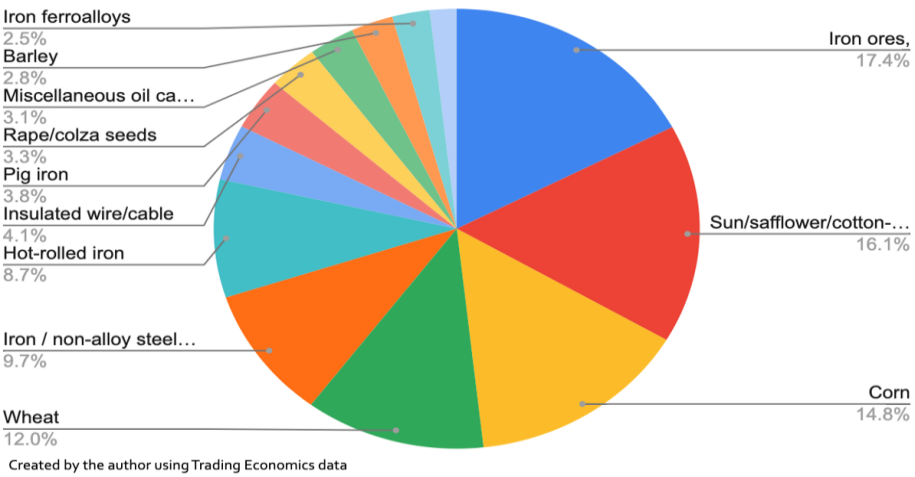

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Figure 1. The structure of Ukrainian exports to 2021

Source: Created by the author based on [4].

To unleash its full potential, Ukraine must explore untapped opportunities in sectors beyond its traditional strengths such as in machinery, manufacturing, technology, infrastructure, etc. One promising sector with immense untapped potential in Ukraine is chemicals. Ukraine, blessed with abundant resources, holds a natural advantage in this field. However, to fully capitalize on this potential, Ukraine needs to invest in capacity building and skill development to foster global competitiveness. By bolstering its expertise in chemical manufacturing, Ukraine has the potential to emerge as a leader in this industry, offering a diverse range of high-quality chemical products to meet global demand.

Despite accounting for only 4.8% of total exports, the machinery manufacturing industry, with its existing expertise and access to raw materials, has the potential to leverage Ukraine's potential and scale up its machinery manufacturing capabilities. By prioritizing skill development initiatives and enhancing production capacity, Ukraine can position itself as a formidable player in the global machinery market, catering to a wide range of industries and contributing significantly to its export earnings.

Ukraine can further enhance its competitiveness in the global commodity market by embracing innovation and harnessing advanced technologies. By making strategic investments in research and development, facilitating technology transfer, and fostering a culture of innovation across key sectors like manufacturing and energy, Ukraine can unlock new opportunities for growth and elevate its position in the global market. These efforts can pave the way for the development of high-value products, streamlined production processes, and heightened productivity, ultimately leading to increased export earnings and economic prosperity.

One area where Ukraine can capitalize on its potential for growth is the vibrant IT industry. With exports surpassing $3.5 billion in 2017, accounting for over 3 percent of the GDP, and attracting substantial foreign direct investment, the IT sector presents fertile ground for further expansion and development [5 , 6]. By nurturing this vibrant industry, Ukraine can tap into its technological prowess, foster innovation, and leverage digital solutions to drive growth and competitiveness across various sectors.

Moreover, it is vital for Ukraine to establish strong partnerships and collaborations with international organizations, industry leaders, and research institutions. These collaborations can facilitate the exchange of knowledge, and technology transfer and foster an environment for Ukraine to gain access to cutting-edge technologies and stay on top of global trends, giving it a competitive edge in the global commodity market. Furthermore, promoting entrepreneurship and supporting startups can foster a culture of innovation and creativity within Ukraine's business ecosystem. By providing favorable conditions, access to funding, trade facilitation measures, and supportive policies, Ukraine can unleash the potential of its entrepreneurial talent, leading to the emergence of new, innovative enterprises that can disrupt traditional industries and drive economic growth.

The devastating impacts of the conflict with Russia highlight the urgent need for infrastructure recovery and reconstruction. According to a report published by the Statista Research Department, the damages to Ukraine's infrastructure during the war amounted to a staggering 36 billion U.S. dollars [1]. As Ukraine enters a phase of reintegration and rebuilding, prioritizing infrastructure recovery is paramount to reigniting economic development and regaining lost ground.

By revitalizing damaged infrastructure, Ukraine can effectively resume its development trajectory and reestablish its presence in the global commodity market. This requires a concerted effort to repair and upgrade roads, railways, bridges, and other critical transportation networks. Investing in advanced technologies and efficient logistical systems will enhance the resilience and efficiency of Ukraine's supply chains, enabling the seamless movement of goods and positioning the country as a reliable and efficient trading partner. This can be achieved through measures such as improving logistics and transportation infrastructure, which can significantly improve the efficiency of commodity exports, stimulate economic activity, reduce export costs, expedite trade flows, create employment opportunities, and generate sustainable economic growth.

Ukraine's integration into the global commodity market has been notable, but this sustained progress requires a strategic approach that encompasses prioritizing and focusing on certain aspects or areas through diversification of products, markets, trade facilitation, and infrastructure development. By undertaking economic reforms, broadening trade partnerships, and focusing on non-traditional exports, such as machinery and chemicals, Ukraine aims to strengthen its position and seize new growth opportunities. The pursuit of export diversification will allow us to successfully synchronize with the dynamic temperaments of the world, reduce our reliance on specific sectors, and mitigate risks associated with global market fluctuations. By prioritizing trade facilitation measures and investing in infrastructure, Ukraine can enhance its competitiveness, attract investment, and foster economic prosperity.

References

1. Estimated total war damage value in Ukraine from February 24, 2022, to February 24, 2023, by sector. URL: https://www.statista.com/statistics/1303344/ukraine-infrastructure-war-damage/
2. Ukraine trade. OEC. URL: https://oec.world/en/profile/country/ukr
3. Ukraine's foreign trade in goods in the 1st quarter of 2023. URL: https://ukrstat.gov.ua/
4. Ukraine’s Top 10 Exports . World’s Top Exports. URL: https://www.worldstopexports.com/ukraines-top-10-exports/
5. The growing IT sector in Ukraine. BBC. URL: https://www.bbc.com/storyworks/future/ukraine-innovating-for-the-future/ukraines-dynamic-it-sector
6. Ukraine’s an IT Powerhouse. So Why Isn’t It Making More? Atlantic council. URL: https://www.atlanticcouncil.org/blogs/ukrainealert/ukraine-s-an-it-powerhouse-so-why-is-it-stuck-mostly-outsourcing/

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PROSPECTS FOR THE DEVELOPMENT OF INTELLECTUAL CAPITAL IN UKRAINE IN THE POST-WAR PERIOD

The war in Ukraine causes a tremendous impact on the country, leading to a significant migration and population crisis and the loss of both human and intellectual capital. To address this