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REVIEW ARTICLE

Policy issues in commodity futures trading: A critical review

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Abstract

Commodity futures trading plays a vital role in today's financial markets by facilitating price discovery and price risk management. However, in India, commodity futures trading faces several challenges, including issues related to trading, price discovery, price risk management, hedging, speculation and the regulatory environment. These challenges hinder the sustainable growth of the futures markets in the country. The paper specifically aims to critically review the challenges faced by commodity futures trading and the resulting consequences for stakeholders. The review is expected to provide insights into potential policy measures that could improve the efficiency and effectiveness of commodity futures markets in India. Additionally, price discovery in Indian commodity futures is often influenced by external factors, including global price fluctuations, making it difficult for market participants to rely solely on domestic futures contracts. By analysing these issues, the study offers insights into policy interventions and regulatory frameworks that could enhance market efficiency, encourage participation and improve the overall functioning of commodity futures trading in India. This study also serves as a valuable resource for policymakers and stakeholders, supporting more informed decision-making and aiding in the development of an optimal regulatory approach. Addressing these challenges is essential for fostering a transparent and well-functioning commodity futures market that benefits the stakeholders. Strengthening regulatory mechanisms and improving market infrastructure can significantly enhance the long-term growth and sustainability of the sector.

Keywords: circuit filters; commodity futures; cooling-off period; hedging; policy measures; speculation

Introduction

Commodities are the products produced by the primary sector of the economy (1). A commodity market exchanges primary products including soft and hard commodities. Soft commodities include agricultural items such as wheat, maize, cotton, coffee and spices. Hard commodities, such as precious metals and crude oils, are mined (2). Commodity futures trading involves the purchase and sale of standardized contracts for the future delivery of commodities at predetermined prices (3). In a futures trading agreement, the buyer and seller agree that the seller will deliver a specific quality and quantity of commodities to the buyer on a specific date at a specific location (4). Commodity futures trading in India has a long history, with the country's experience in commodity markets dating back thousands of years. Kautilya's Artha Sastra contains references to such Indian markets in ancient India. The East India Company arrived in India in 1600 for the spice trade and later expanded its trade to include cotton and raw jute. In 1875, the Bombay Cotton Association Limited was established to organize the futures market in India for cotton (5). In 1952, the Forward Contract Regulation Act (FCRA) came into existence and from 1953 onward, The Forward Markets Commission (FMC) began regulating and promoting the activities of commodity derivatives in India (6).

From 2003, pan-India national commodity exchanges began operating. Prior to 2003, only regional-level exchanges were available for conducting futures trading (1, 6). The Indian commodity futures market comprises several discrete regional markets and, like the cash market, remains dispersed and fragmented, with distinct trading communities operating in different locations (7, 8). To improve the efficiency of the commodity futures market, the FMC was merged with the Securities Exchange Board of India (SEBI) in 2015. This move aimed to achieve convergence and regulation of the securities market and commodity derivatives markets and to enhance economies of scope and scale for exchanges, financial institutions and other stakeholders (9).

The purpose of this study is to provide insights into the challenges faced by commodity derivatives in India. It offers new direction and measures to address these issues and challenges for the efficient and effective performance of commodity derivatives in country. The commodity futures market has been regulated by SEBI since the 2015 merger with the FMC. There are both national-level and regional-level commodity exchanges for trading in commodity derivatives.

The value and volume of the derivatives traded on the electronic platforms have been increasing since the inception of national-level commodity exchanges during 2003, which aim to provide proper price signals to the participants in the commodity chain for price discovery and price risk management.

Several capacity-building programmes and awareness campaigns-conducted by the FMC, SEBI and leading commodity exchanges such as the multi commodity exchange (MCX) and national commodity and derivatives exchange (NCDEX)-have been implemented across the country. These initiatives aim to popularise the functioning of commodity futures, build confidence among participants and clarify the roles of various stakeholders. Fig. 1 depicts the functioning commodity markets in India (10).

Methodology

The inclusion and exclusion criteria for article selection were defined to ensure relevance and quality. Articles were included if they focused on commodity futures trading, price discovery, hedging, speculation or policy measures. Studies not directly related to these topics or those lacking empirical evidence were excluded. The articles were collected from reputable databases such as Scopus, Web of Science and Google Scholar. The keywords used for the search included commodity futures trading, price discovery, hedging, speculation and policy measures.

A total of 300 hundred articles were initially collected. These papers were then filtered sequentially based on the quality of the research and their relevance to the topic. Ultimately, 78 articles were included in the study, as depicted in Fig. 2.

Categorizing the challenges in commodity markets

Despite a positive growth trend, several issues hinder the sustainable development of commodity futures trading in India and those challenges can be broken into to several categories.

Based on stakeholder

Commodity futures trading involves a wide range of producers and several key stakeholders participate in the futures trading platform, including farmers, traders, aggregators, investors, hedgers, speculators and regulatory authorities.

Producers

Futures trading platforms present several challenges for producers. Limited participation of producers due to cost and information barriers, such as high transaction fees, lack of awareness and limited access to market intelligence, reduces the effectiveness of price discovery and hedging. This, in turn, leads to deviations in future risk premiums, as the market fails to fully reflect the supply-demand dynamics and risk perceptions of primary producers (11). Large producers may manipulate the future prices and can increase their profits and reduce competition from smaller producers (12). Minimal intervention in illegal transactions, insufficient contracts and delivery centre, discrepancies between spot and future prices and speculative trading further act as barrier to the participation of small-scale farmers in futures trading platforms (13). Several factors motivate for farmer participation in the futures market, including price risk management, low transaction costs, storage availability and structured finance (13).

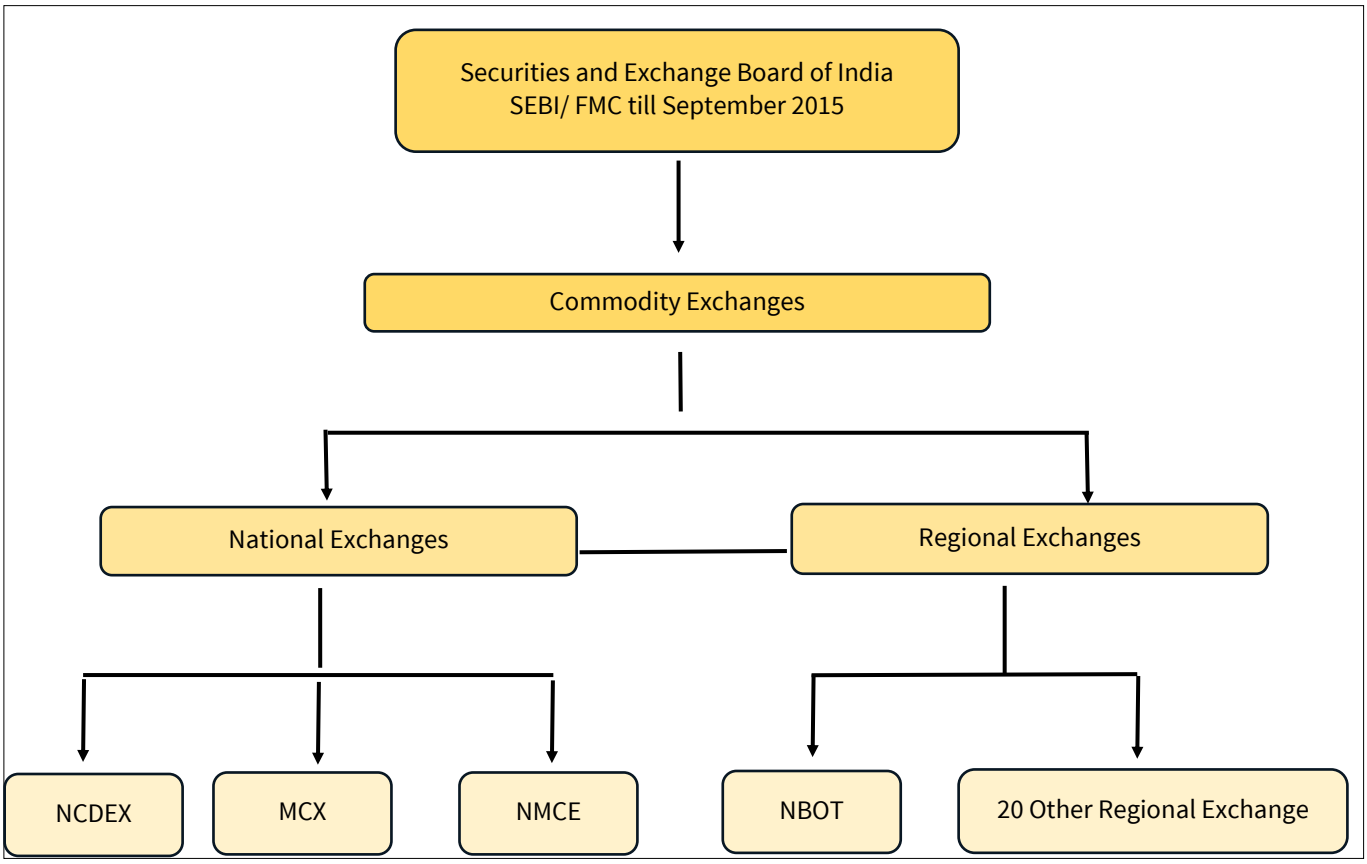

Fig.1. Functioning commodity markets in India (10).

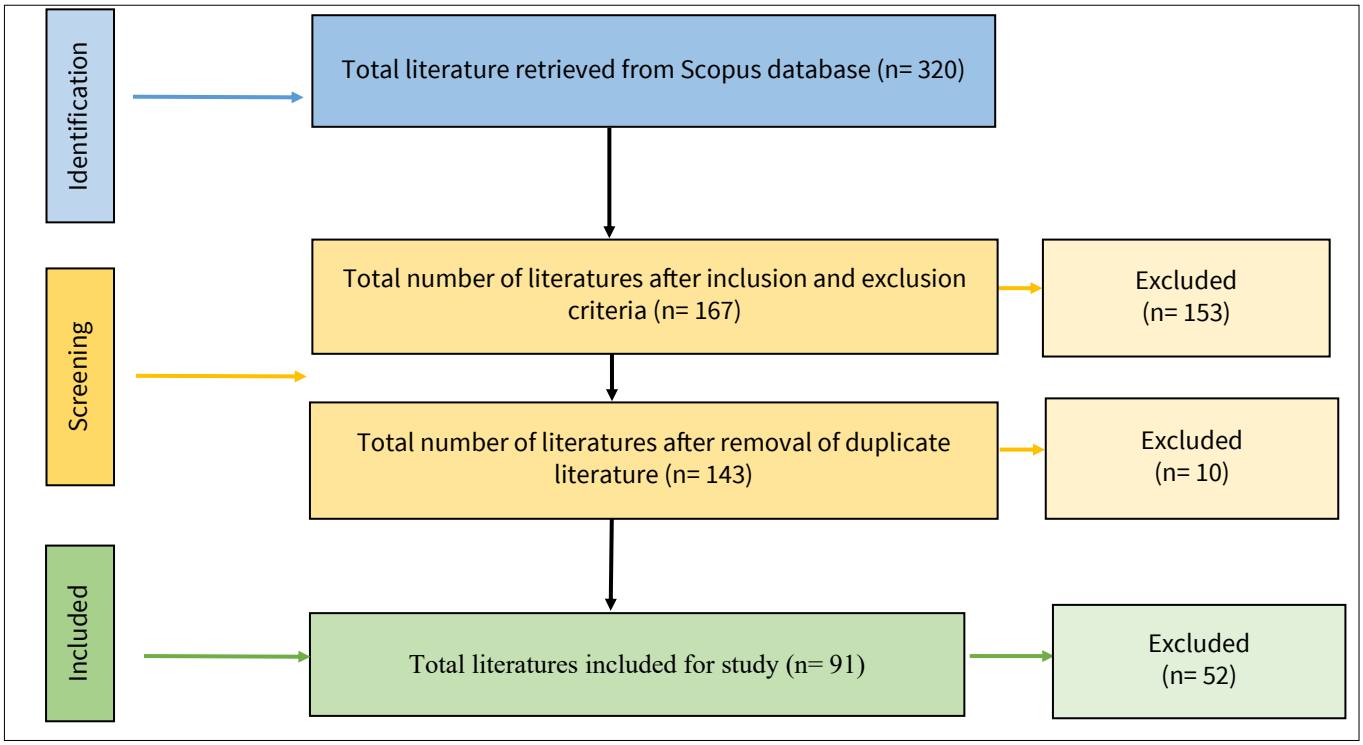

Fig. 2. PRISMA diagram depicting systematic screening process.

Aggregator

Commodity futures trading faces several challenges for aggregators. A lack of financial literacy, insufficient trading knowledge and inadequate infrastructure facilities create significant obstacles (14). High trading costs and the need for specialized knowledge also serves as barriers to entry for some traders into the futures market (11). Collectively, these factors contribute to the challenges faced by aggregators.

Traders

Traders faces several challenges including exchange rate fluctuations and basis risk (15). Despite potential benefits, a lack of awareness and knowledge can lead traders to perceive greater risk in commodity futures trading. Increasing of trading cost, both implicit and explicit, limits the market participation (10).

Hedging

Hedging is one of the major important functions in commodity derivatives in India. Hedging contributed to reducing price risk (16). The success of the commodity derivatives can be determined by hedging effectiveness (17). The important factors influencing hedging construction and effectiveness are basis risk, hedging horizon and correlation between futures and spot prices (18). Hedging is successful in India through increased hedging efficiency (19). Hedging faces several challenges, such as the unpredictable and volatile nature of risk. The effectiveness of hedging can reduce basis risk. Few commodities suffer from low trading and high transaction costs and this leads to ultimate liquidity risk and hinders hedging effectiveness (17, 20). Traders are required to maintain a minimum margin in futures trading accounts to cover the losses. These margin requirements can affect hedging effectiveness, liquidity and cash flow in future exchanges (21, 22). Regulatory changes, trading rules and imposition of taxes can impact hedging activities and effectiveness in the futures market (22, 23).

Speculation

Speculation plays a major role in price discovery, risk management and directly contributes to market liquidity and risk-taking (24). Some of the short-comings and obstacles in commodity futures trading regard speculation due to the frequent change in regulation and policy measures in the security exchange board (SEBI) and forward markets commission (FMC), which creates uncertainty in the market and leads to an increase in speculators (25). Frequent regulatory interventions are made for speculation and price manipulation leads to disruption in the price discovery process (26). The presence of fragmented markets and fragmented trading platforms also leads to challenges in price discovery (25). Limited availability of options, swaps restricted the ability of market participation which leads to increase in speculation activity in the market (27).

Investors

Investors pose several challenges in commodity futures trading. Lack of proper regulation, regulatory body, insufficient market awareness, education and inadequate software systems are major obstacles (28). Indian commodity futures observed significant growth, but investors of futures platform face various risks (29). Security characteristics like term structure, momentum strategies and focus on portfolio diversification can help investors to mitigate their challenges (30). For effective informed decision making and to hedge risk effectively by investors risk management techniques are crucial (29).

Warehousing and technological infrastructure

Inefficiencies in capacity, quality control and logistics in warehousing and logistics sector impact significantly on commodity futures trading (31). The lack of effective and efficient infrastructure facilities is a major obstacle for development of the Indian commodity futures market (32). Similarly, the technological infrastructure including high-

frequency trading and modern trading platforms has both positive and negative impacts on commodity futures trading (31, 33).

Based on homogeneity

Homogeneity of commodities plays a major role in the futures market, as success in derivatives trading relies on the uniformity of the underlying asset. For example, cotton being a standardized, storable and graded commodity facilitates smooth futures trading, whereas fruits, which vary in size, quality, perishability and regional varieties, pose challenges for standardization and are less suited for futures contracts. The success of contracts is positively related to the homogeneity of goods. The homogeneity of commodities is based on their physical properties and makes it easier for exchanges in futures trading (34-37).

Based on hedging efficiency

The success of a contract is based on hedging risk efficiency. Hedging risk efficiency is defined as the ratio of variance eliminated by hedging (38). It helps to know the extent to which hedgers can reduce price risk in future contracts (36, 39 -41). Hedging plays a major role in futures contracts and the success of futures contracts is positively related to hedging efficiency.

Based on government intervention

There is an inverse relationship between futures trading bans and commodity success. Successful contracts are based on commodities whose prices are not much influenced by government manipulations like price support schemes, export and import activities, quotas and other crop insurance schemes, but these are market determined mechanisms which influences for price discovery (42). The government impose ban on the commodity which affects the volume of the commodity in futures platform (35).

Risk

There are several risks involved that affect the marketing and production of agricultural commodities. The major types of risk are market risk, price risk, production risk and credit risk. An increase in price variability results in production risk, which influences the supply and demand of commodities. Futures trading plays a major role in the price risk management of commodities in the market.

Risk types

Basis risk

Basis risk refers to the potential mismatch between spot and futures prices and arises when perfect hedging is impossible due to market incompleteness (43). This risk is mainly relevant to commodity storage and currency hedging (44). Basis risk impact can be significant with geographic cross-hedging, as price differences between the local spot market and the futures market may vary across regions. However, this impact diminishes with increased spatial aggregation-that is, when data or trading positions are pooled from multiple regions-because regional price variations tend to average out, reducing the mismatch between local and benchmark prices (45).

Leverage risk

Leverage in futures trading poses substantial risks and influences outcomes significantly, as it allows investors to control large positions with relatively minimal capital, thereby amplifying both potential gains and losses (46, 47). Due to capital efficiency leverage attracts both hedgers and speculators (47). Generally, leverage negatively affects the overall trading performance in futures trading by increasing trading cost and liquidation (46). Leverage risk in futures trading can be mitigated by implementing risk management methodologies and hedge fund management (48).

Liquidity risk

Liquidity risk exhibits a significant impact on futures trading platform (49). This risk reduces the optimal hedge ratios and leads to use options on futures trading to manage risk (50). Studie on agricultural commodity futures have discovered a positive relationship between the market liquidity and information asymmetry risk (51). These risks in futures trading can also impact price variability, hedging strategies and risk premia across various commodities and markets.

Market risk

Market risk in futures trading arises from price volatility and leverage (52). This risk discourages market participants from taking or maintaining full hedging positions, as the uncertainty in price convergence between spot and futures markets undermines the effectiveness of the hedge. As a result, participants remain partially exposed to price fluctuations, which can lead to substantial daily losses (53). Market risk significantly affects the hedging strategies, which reduces futures positions and maximizes loss (53). Information asymmetries between traders and brokers and trust issues in online futures trading which causes market risk (54). Market risk can be mitigated by using different risk assessment and management techniques.

Price risk

Price risk in futures commodity market caused by imbalance in demand and supply which originates from business cycle, unexpected weather patterns or geo-political events (11). This risk is perceived mainly by producers, processors and traders (12). Price variability is a central concern for all market participants. Changes in market forces, leads to price volatility which arises price risk in commodities futures market (55). Price risk can be evaluated at both company level and specific market level. It can also be evaluated through the overall market level and macro-economic level. Various econometric tools and methods can be used to observe this risk at market levels (56-58).

Regulatory risk

Regulatory risk in the futures market concerns both traders and utilities. Changes in specific regulations, such as trading rules, margin requirements, position limits and reporting obligations, can significantly impact revenue systems and trading strategies (59). This risk can be analysed through the policy variable uncertainty within the regulatory objective function (60). Impact of regulatory risk on firms affects the demand and its curvature (60). Effective risk management strategies, such as hedging and other appropriate models can help to manage these risks (61).

Regulatory tools

Many regulatory tools in commodity futures trading have evolved to address market challenges and to protect stakeholders. Positional limits, transparency measures, cooling period, circuit filters, special margins and enforcement mechanisms are key strategies to mitigate risk in futures trading (62). These all-tools lead to more efficient regulatory structure of futures trading platform (63).

Positional limits

Positional limits are an important regulatory tool that helps to reduce price volatility and market manipulation in futures trading platform (62). Positional limits have both positive and negative consequences on futures trading (64). These limits reduce market liquidity and potentially increase speculator market power in futures trading (64). Positional limits are counterproductive, exacerbating market power and reduces marketing efficiency (65). These positional limits are part of regulatory strategies aimed at increasing transparency and to curb speculation in commodity futures market (62).

Transparency measures

Transparency measures reveal mixed effects on market dynamics. Increased transparency alters trading behaviour in futures market (66). Greater transparency tends to lower the trading costs for uniform traders (67). Transparency can also increase market impact costs (68). Transparency measures act as a major regulatory tool to regulates market liquidity, trading costs and price formation in futures markets.

Cooling-off period

Cooling-off period and price limits are regulatory tools used in futures market to control price volatility and market aberration. Cooling-off period is determined as regulatory mechanism in futures trading platform which helps to improve price efficiency, but it may vary welfare implications. Longer cooling-off periods decreases price efficiency and benefits for outside investors (69). Cooling-off periods act as an effective regulatory tool to manage market aberration in futures markets.

Circuit filters

Circuit filters are automated regulatory tools used in futures market to prevent price volatility and market crashes (70). Circuit filters help to reduce volatility and stabilizes the settlement systems in low-liquidity situations (71). They may also decrease the trading volume of commodities and delay information dissemination (70, 71). These filters act as a market stability tool. Circuit filters evolved as a major effective and efficient regulatory tool to manage commodity futures market.

Special margins

Special margins typically used in futures market as regulatory tool; margins are increased during the period of high market volatility and reduced when market stabilize (72, 73). These adjustments aim to minimize the default risk in future exchanges (73). As more increase in special margins can impact on market dynamics by reducing volume, increasing price impact cost and decreasing open interest. Special margins play a major role to curb price volatility in futures market and it can be used as an efficient and effective regulatory tool in futures market.

Enforcement mechanism

Enforcement mechanism in futures markets is crucial for ensuring fair and efficient markets. Future markets can use to hedge risk and maintain load balance in electricity markets which promotes transparency and liquidity (74). Computing-assisted UAV networks, a future-enabled resource trading mechanism is proposed to address challenges like negotiation latency and trading failure (75). Dispute resolution mechanisms can use in commodity futures trading (76). Trading robot software mechanism in futures trading has created a legal vacuum for market participants and supervisory bodies.

Policy insights and recommendations from the critique of futures market issues

From the critical review on commodity futures trading, several policy measures can be suggested to mitigate the issues and helps to improve sustainable growth in commodity futures trading in India.

Policy measure to curb the challenges in hedging

To overcome the challenges and issues faced by hedging in India commodity derivative markets regulatory body should emphasise on the strategy that minimize spot price and rollover risk faced by hedging (77). The application of portfolio theory to hedging helps in measuring hedging effectiveness (78). Many models can be used to assess the challenges faced in hedging which cause price and quantity uncertainties (79). Models like mean-value, mean-variance, risk-utility functions, risk aversion model and system dynamic models can be used to tackle those challenges faced in hedging (80). The success of hedging in the Indian derivatives market can be observed through increased hedging effectiveness (19).

Policy measure to curb speculation

Position limits imposition on derivatives market helps to prevent speculation and market manipulation (4). Periodical increasing of margins in commodity futures. Trading helps to reduce excessive speculation in market and it can provide smooth functioning of markets in India. Regulatory body should impose some cooling periods for certain sensitive commodities to curb speculation (81). To overcome those challenges regulatory body should actively involve in minimizing the challenges and to provide efficient and effective functioning of derivative market.

Policy measure to strengthen regulatory environment

The Indian derivatives market has faced several issues such are price volatility, speculation, hedging, liquidity issues and regulatory concerns (82-84). These issues lead to market manipulation, market imperfection and speculation-induced price volatility intervention (82, 83). There is a need of robust regulatory framework to address the issues and challenges faced in commodity derivatives of India (85).

There is a need to enhance the effectiveness of surveillance and advancement of technology like artificial intelligence and big data analytics in a regulatory body like SEBI (81). This helps to reduce corrupt and detrimental activities, market manipulation and other fraudulent activities. SEBI should also focus on international trading and the enforcement of actions relevant to international trade

(86). There is a need for further improvement in legal process, function and rule of law within SEBI. The usage of digital documents and advanced language models helps to enrich the surveillance mechanisms and also enhance semantic processing (87).

To strengthen the market some policy measures like rates for transparency, cash settlement and warehousing receipts for securities can be used (88). To enhance market efficiency and reduction of risk can be achieved by introduction of exchange-traded option (ETOs) on commodity derivatives of India. However, such impact can be varying for different markets and different commodities. For example, the introduction of electronically traded index in future has been found to increase the volatility of the underlying asset (89). Computerized trading system has the potential to increase market efficiency and effectiveness.

Commodity futures trading in India has provided an opportunity for retail investors and traders which leads to the financialization of commodities (90). Introducing of emerging new commodities in commodity futures trading such as renewable energy, carbon credits and agricultural commodities helps to attract broader range of products, high frequency traders and other entrepreneurs (91). Growing in the involvement of non-commodity-sector players in futures market such as funding agencies and banking institutions, helps to figure out the impact of speculation in price formation. The implementation of these policy measures by regulatory bodies may help to address the challenges facing by derivatives market of India and contribute to their long-term sustainability, stability and resilience.

Future research directions

To address the challenges faced by commodity futures trading in India, it is useful to adopt the above measures suggested, further studies should concentrate on a few essential topics. Firstly, need to enhance market transparency, adoption of blockchain technology, improving of data standards and enhancement of public access to data. Secondly, the study should concentrate on strengthening of risk management frameworks, regulating of high frequency and algorithmic trading which helps create an effective and ethical trading system in the commodity futures trading. Finally, further studies should investigate a new effective and efficient policy measures to tackle the challenges and issues faced in the commodity futures trading.

Conclusion

Commodity futures trading plays a major role in financial markets. commodity futures trading in India faces more issues and challenges it includes price discovery price risk management, hedging, speculation, warehousing and infrastructure availability and regulatory environment. Due to frequent changes in regulatory interventions, trading rules and regulation, security systems and commodity futures trading landscape are changing. To preserve market integrity, encourage transparency, reduce risks and ensure fair competition, effective legislative measures are essential. The present analysis has elucidated the challenges faced by commodity futures trading and policy measures that can take to tackle those challenges in commodity derivatives.

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Authors' contributions

MCP wrote the initial draft of the manuscript. SKM finalized the formatting and conducted the overall review of the manuscript. KN, DK, VG and SKM reviewed and approved the final version of the manuscript for submission. All authors read and approved the final manuscript.

Compliance with ethical standards

Conflict of interest : Authors do not have any conflict of interests to declare.

Ethical issues : None

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