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IMPACT OF INTEREST RATE CHANGES ON THE DEMAND AND SUPPLY FOR THE PRODUCTS OF BUSINESS ENTITIES



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Abstract: *This study investigates the impact of interest rate changes on the demand, supply, investment behavior, and financial sustainability of business entities, using The Coca-Cola Company and PepsiCo Inc. as case studies. The analysis covers the period from 2022 to 2024 and relies on firm-level financial data obtained from official annual reports, while interest rates are represented by central bank policy rates. Demand is proxied by revenue, supply by cost of goods sold, and investment by capital expenditures, while financial pressure is assessed through interest burden and interest coverage ratios. The empirical results indicate that rising interest rates weaken demand growth over time, constrain supply expansion, and significantly increase debt-servicing pressure on firms. While demand for consumer staples remains relatively resilient, sustained high interest rates reduce investment activity and deteriorate financial flexibility, particularly for firms with higher exposure to debt financing. These findings demonstrate that interest rate changes have a measurable and economically significant effect on firm-level performance and investment decisions, highlighting the importance of monetary policy transmission at the microeconomic level.*

Key words: *Supply, demand, interest burden, investment.*

Annotatsiya: *Ushbu tadqiqot Coca-Cola Company va PepsiCo Inc. kompaniyalarini amaliy tadqiqotlar sifatida qo'llagan holda, foiz stavkalari o'zgarishining biznes sub'ektlarining talabi, taklifi, investitsiya hatti-harakatlari va moliyaviy barqarorligiga ta'sirini o'rganadi. Tahlil 2022 yildan 2024 yilgacha bo'lgan davrni qamrab oladi va rasmiy yillik hisobotlardan olingan firma darajasidagi moliyaviy ma'lumotlarga tayanadi, foiz stavkalari esa markaziy bank siyosat stavkalari bilan ifodalanadi. Talab daromad bilan, taklif sotilgan tovarlar tannarxi bilan va investitsiya kapital xarajatlar bilan ifodalanadi, moliyaviy bosim esa foiz yuki va foizlarni qoplash koeffitsientlari orqali baholanadi. Empirik natijalar shuni ko'rsatadiki, foiz stavkalarining o'sishi vaqt o'tishi bilan talabning o'sishini susaytiradi, taklifning kengayishini cheklaydi va firmalarga qarzlarni to'lash bosimini sezilarli darajada oshiradi. Iste'mol tovarlariga talab nisbatan barqaror bo'lib qolsa-da, barqaror yuqori foiz stavkalari investitsiya faolligini pasaytiradi va moliyaviy moslashuvchanlikni yomonlashtiradi, ayniqsa qarzni moliyalashtirishga ko'proq moyil bo'lgan firmalar uchun. Ushbu topilmalar foiz stavkalari o'zgarishi firma darajasidagi ish faoliyati va investitsiya qarorlariga o'lchanadigan va iqtisodiy jihatdan sezilarli ta'sir ko'rsatishini ko'rsatadi, bu esa mikroiqtsodiy darajada pul-kredit siyosati uzatishning muhimligini ta'kidlaydi.*

Kalit so'zlar: *taklif, talab, foiz yuki, investitsiya.*

Аннотация: В данном исследовании изучается влияние изменений процентных ставок на спрос, предложение, инвестиционное поведение и финансовую устойчивость предприятий на примере компаний Coca-Cola и PepsiCo Inc. Анализ охватывает период с 2022 по 2024 год и основан на финансовых данных компаний, полученных из официальных годовых отчетов, в то время как процентные ставки представлены ставками центрального банка. Спрос аппроксимируется выручкой, предложение — себестоимостью реализованной продукции, а инвестиции — капитальными затратами, а финансовое давление оценивается с помощью процентной нагрузки и коэффициентов покрытия процентных платежей. Эмпирические результаты показывают, что рост процентных ставок ослабляет рост спроса с течением времени, ограничивает расширение предложения и значительно увеличивает давление на обслуживание долга для компаний. Хотя спрос на товары первой необходимости остается относительно устойчивым, устойчиво высокие процентные ставки снижают инвестиционную активность и ухудшают финансовую гибкость, особенно для компаний с большей долей заемного финансирования. Эти результаты демонстрируют, что изменения процентных ставок оказывают измеримое и экономически значимое влияние на показатели деятельности компаний и инвестиционные решения, подчеркивая важность механизма передачи монетарной политики на микроэкономическом уровне.

Ключевые слова: Предложение, спрос, процентная нагрузка, инвестиции.

Introduction

Interest rates are one of the most powerful tools which are used to regulate modern economies, as they determine the cost of borrowing, influence savings behavior, and guide investment and production decisions. Changes in interest rates have a direct and significant impact on the demand and supply of products produced by business entities, making this topic highly relevant and timely. When interest rates increase, borrowing costs for firms and consumers rise, often leading to reduced consumer spending and lower demand for goods and services, while businesses may cut back on production and investment due to higher financing expenses. In contrast, lower interest rates stimulate demand by encouraging consumption and credit use and support supply growth by reducing production and capital costs. The importance of this issue has become even more pronounced in recent years, as global interest rates experienced sharp fluctuations in response to inflationary pressures and economic instability. For instance, between 2022 and 2024, major central banks raised policy interest rates to levels not seen in more than 10–15 years, with some economies witnessing benchmark rates exceeding 5%, which contributed to a slowdown in global investment and a decline in consumer purchasing power. According to international economic reports, higher interest rates can reduce business investment growth by 2–4% annually and significantly affect demand in interest-sensitive sectors such as manufacturing, construction, and durable goods. In an increasingly interconnected global economy, interest rate decisions made by major economies such as the United States, the European Union, and China transmit across borders through trade, capital flows, and financial markets, influencing business entities worldwide. Therefore, understanding the impact of interest rate changes on demand and supply is essential for businesses, policymakers, and economists seeking to ensure economic stability, improve strategic decision-making, and sustain long-term growth.

Literature review

According to the research of Greenwood, Hanson and Vayanos (2024), interest rates are conceptualized as the outcome of supply and demand forces in financial markets. Their framework gives explanation about how borrowing conditions, liquidity and capital allocation are affected by the changes in interest rates. Lower interest rates which stimulate investment and consumption are crucial for easing financial constraints for firms and households, while higher interest rates make credit conditions more difficult. Their investigation is essential for understanding the impact of interest rate movements on the changes in demand and supply of products.

The study published in economics MDPI by Alessie, Mastrobuoni and Weber (2015) suggests that decreases in interest rates lead to higher consumer spending, especially for durable and credit dependent goods. On the contrary, rising interest rates lead to a decline in consumption by reducing disposable income and encouraging savings. This indicates that interest rate fluctuations directly affect to the demand for products which are offered by business entities.

From the supply side perspective, research done by Efendi Rahmadani and Septriza (2018) examines the responses of firms to interest rate changes. They found out that firms' financial decisions and production planning are strongly influenced by interest rates. Lower interest rates encourage firms to undertake expansionary investment, increase production capacity and after that they supply more goods to the market. By contrast, higher interest rates discourage investment and constrain output. This investigation highlights the importance of interest rates in shaping the supply of goods in business markets.

Looking to the paper by Chen, Huang and Li (2015) international journal of production economics, researchers determined the impact of interest rates on the inventory and supply chain decisions of firms. Because of higher interest rates, financing costs increase which leads to reducing inventory and limiting production. However, due to the lower interest rates firms maintain higher inventory levels and ensure a more stable supply of goods.

The paper written by Berger and Udell (1994) shows the significance of interest rates for the firms to access to external finance. Authors determined that, higher interest rates reduce the demand for loan and harden borrowing conditions. According to researchers reduced access to credit weakens solvency of firms and limits their ability to finance production. As a consequence, both output and product supply will be declined.

From the perspective of Bernanke and Blinder (1992) which provides the foundational analysis of the monetary transmission mechanism, interest rate changes are crucial for investment and real economic activity. They investigated that investment spending of firms is reduced by higher interest rates which leads to lower output and supply.

Based on the investigations of Angeloni, Kashyap, Mojon and Terlizzese (2003) both households and firms are affected by interest rate changes. They suggest that increases in interest rates decrease consumer spending and investment activities of firms. As a result, both aggregate demand and production level decline, due to this dual effect. This study

highlights the influence of interest rate changes on the demand and supply at the same time.

Looking at the research by Cloyne, Ferreira and Surico (2020) who analyze how interest rate changes affect consumption in economies with high debt. Researchers find out that indebted households reduce their consumption sharply as a result of increases in interest rates. This decline in demand is the reason for firms to adjust production downward. It shows the indirect affect of interest rates on supply through demand

Begenau and Salamao examined financing behaviour of firms over the cycle. They indicated the importance of interest rate fluctuations on access to external finance and investment decisions of firms. This analysis shows that higher rates restricts borrowing. Consequently, firms cut back on investment and production. This study strengthens the firm-level supply side analysis of interest rate transmission.

Drechsler, Savov, Schnabl (2017) investigate deposit chanel of monetary policy by examining impact of policy rate changes on banks funding structures and as a result firms' access to credit. Using data from banks and firms, authors fin that rising interest rate reduce credit supply to firms weaken liquidity and solvency of firms. These financial barriers limit firms ability to finance working capital and invest productive assets. As a consequence high rates nderictly reduce product supply through banking system

Methodology

This study adopts a quantitative research approach to examine the impact of interest rate changes on the demand and supply for the products of business entities, by using The Coca-Cola Company and PepsiCo Inc. as case studies. The analysis focuses on the period from 2022 to 2024, a time characterized by significant interest rate fluctuations, making it suitable for assessing the effects of monetary tightening on firm behavior. All the date were obtained from official annual reports (Form 10-K) published by websites of Coca Cola and PepsiCo. Also information from central bank publications is used

Since physical production data for individual firms is proprietary and not available to the public, this research adopts financial proxies, which are standard in economic papers

According to economic theory, demand for a firm's products is determined by factors such as interest rates, consumer income, and product prices. The theoretical demand function is expressed as:

$$D_{it}=f(IR_t, Y_t, P_{it})$$

Where D_{it} represents the demand for products of firm i (Coca-Cola or Pepsi) in year t , IR_t denotes the prevailing market interest rate, Y_t represents overall economic activity or consumer income, and P_{it} denotes the average price of products of firm i . In this study demand is proxied by by revenue, which reflect the market demand. Demand = revenue

Theoretically the supply function is expressed as:

$$S_{it}=f(IR_t, C_{it}, T_{it})$$

Where S_{it} denotes supply of products by firm i , C_{it} represents production and operating costs, and T_{it} captures productivity or technological efficiency. In this paper cost of goods sold (COGS) was used as a supply proxy. Supply=COGS.

Interest burden is measured as:

$$Interest\ burden = EBT/EBIT$$

Where EBT is earnings before tax and EBIT is earnings before interest and tax.

To assess the financial sustainability of the firms, the interest coverage ratio is calculated as:

$$EBIT / Interest\ Expense$$

Analysis and interpretation

This section presents a statistical analysis and interpretation of the impact of interest rate changes on demand, supply, investment, and financial performance of Coca-Cola and PepsiCo during the period 2022–2024. Demand is proxied by revenue, while supply is proxied by cost of goods sold (COGS).

The period between 2022 and 2024 represents a textbook example of how monetary policy decisions influence firm-level economic outcomes. In early 2022, the U.S. Federal Reserve maintained an expansionary monetary stance, with interest rates close to zero, to support economic recovery. This environment reduced the cost of capital, encouraged consumption, and enabled firms to operate with minimal financial constraints. However, escalating inflation forced the Federal Reserve to adopt an aggressive tightening policy in 2023, raising interest rates to approximately 5.5%. These high rates persisted throughout 2024, creating sustained pressure on both consumers and producers. The effects of this shift are clearly reflected in both demand and supply.

Table 1

Analysis of demand and supply actions of Coca Cola and Pepsi Companies¹

Formula	2022		2023		2024	
	Coca Cola	PepsiCo	Coca Cola	PepsiCo	Coca Cola	PepsiCo
Demand proxy	43.004	86.392	45.754	91.471	47.061	91.854
Supply proxy	18.000	40.576	18.520	41.881	18.324	41.744
Interest burden	0.92	0.92	0.86	0.93	0.83	0.93
Investment function	1.484	5.210	1.852	5.520	2.064	5.320
Interest coverage ratio	12.37	12.26	7.41	14.64	6.04	14.03

¹ Source: <https://www.coca-colacompany.com/> and <https://www.pepsico.com/> official websites

From a demand perspective, Coca Cola experienced an increase from 43.004 million dollars in 2022 to 45.754 million dollars in 2023, which corresponds to a growth rate of approximately 6.4%. This increase occurred because beverage products are considered essential consumer goods. Therefore, demand remained relatively stable despite rising interest rates and more expensive consumer credit. However, the growth rate slowed significantly in 2024, with demand increasing by only 2.9% to 47.061 million dollars. The overall demand growth of demand was 9.4% over the three years. This suggests that while demand is resilient, sustained high interest rates gradually weaken consumers' real purchasing power by increasing household debt servicing costs.

PepsiCo showed a similar trend in first two years. Demand rose by approximately 5.9% from 86.3 92 million dollars in 2022 to 91.471 million dollars in 2023. But In 2024, demand almost sopped growing with increasing by just 0.4% to 91.854 million dollars. Over the entire period demand increased about by 6.4%. This situation in 2024 indicates that continuous high interest rates eventually can limit even inelastic demand by compressing household budgets.

Under the condition of changing interest rates Supply proxy reflects output decisions of firms. Coca Cola increased its supply by 2.9% in 2023 because of rising demand. But in 2024 supply decreased by 1.1%. resulting in a net increase of only 1.8% from 2022 to 2024. This approach is a result of the higher cost of inventory financing, transportation, and capital utilization under high interest rates. In these kind of times firms avoided aggressive expansion to minimize financial exposure.

Similarly, PepsiCo increased supply by 3.2% in 2023 but reduced it slightly by 0.3% in 2024, which is resulting in an overall increase of approximately 2.9%. This aligns with economic theory, which suggests that higher interest rates discourage production expansion by increasing opportunity costs and financial risk.

The interest burden directly shows the impact of interest rate fluctuations on corporate finances. Coca Cola's interest burden declined by 6.5% in 2023 and by an additional 3.5% in 2024, amounting to a total decline of nearly 10% over the period. This indicates that increasing share of earnings went to interest expences and net profitability is declining. This effect is particularly pronounced in firms with higher sensitivity to refinancing and variable-rate debt.

PepsiCo's interest burden increased marginally by about 1.1% over the same period, reflecting a stable debt structure and strong operating income. This contrast highlights how firm-specific financial strategies can mitigate macroeconomic shocks.

The investment function reveals a nuanced response to rising interest rates. Coca Cola's investment increased sharply by nearly 25% in 2023 and by an additional 11.5% in 2024, resulting in a total increase of approximately 39%. This suggests that Coca Cola prioritized long-term competitiveness and brand strength, even at higher financing costs. However, the declining growth rate indicates rising caution as interest rates remained elevated.

PepsiCo's investment increased by 6% in 2023 but declined by 3.6% in 2024, leading to a modest net increase of 2.1%. This shift suggests that PepsiCo began postponing or

scaling back marginal investment projects as the cost of capital remained high, consistent with neoclassical investment theory.

The interest coverage ratio provides the most critical insight into financial sustainability. Coca Cola's ratio declined by 40.1% in 2023 from 12.37 to 7.41 and by a further 18.5% to 6.04 in 2024, representing a cumulative decline of over 51%. This sharp decline indicates a substantial reduction in the firm's ability to service debt from operating earnings, increasing financial risk and limiting future borrowing capacity.

In contrast, PepsiCo's interest coverage ratio increased by 19.4% from 12.26 to 14.64 in 2023 and declined slightly by 4.2% to 14.06 in 2024, resulting in an overall improvement of 14.4%. This demonstrates strong earnings performance and effective interest cost management, allowing PepsiCo to remain financially robust despite higher interest rates. But both companies have very good conditions with ratio more than 5. It shows that they can easily cover their interest expenses

Conclusion

The results show that rising interest rates exert a gradual but persistent influence on demand, supply, investment decisions, and financial stability. Even in the consumer sector, where demand is relatively inelastic, prolonged monetary tightening slowed revenue growth as higher borrowing costs and increased debt-servicing burdens reduced consumers' real purchasing power.

On the supply side, elevated interest rates constrained firms' production decisions by increasing financing, inventory, and operating costs. Both companies adopted more cautious output strategies in the later stages of the tightening cycle, reflecting heightened financial risk and uncertainty. Investment behavior further confirms the sensitivity of firms to interest rate changes. While Coca-Cola continued to invest in long-term competitiveness, the pace of investment growth declined, signaling increasing caution. PepsiCo's reduction in investment in 2024 highlights how sustained high interest rates discourage marginal and short-term projects, reinforcing the role of interest rates as a key determinant of capital allocation.

Financial performance indicators reveal that higher interest rates significantly intensified debt-servicing pressure, particularly for firms with greater exposure to debt financing. The deterioration in interest coverage ratios underscores the importance of prudent financial management and strong operating earnings in maintaining resilience during periods of monetary tightening. Overall, the findings confirm that interest rate changes affect demand and supply simultaneously, with cumulative effects that become more pronounced over time.

Looking ahead, future developments in interest rates will remain a critical factor for business performance. If global inflation continues to moderate and central banks gradually ease monetary policy, lower interest rates are likely to support a recovery in consumer demand, encourage investment, and allow firms to expand supply more confidently. Conversely, if high interest rates persist or re-emerge due to renewed inflationary pressures, businesses may face continued constraints on growth, reduced investment activity, and heightened financial risk. Therefore, firms are expected to increasingly focus on optimizing capital structures, improving operational efficiency, and adopting flexible investment strategies to navigate uncertain monetary conditions. At the

policy level, careful calibration of interest rates will be essential to balance inflation control with sustainable business growth and long-term economic stability.

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