

## **UNITED STATES INFLATION, CORPORATE PROFITS, AND MARKET POWER: A POST-PANDEMIC ECONOMIC ANALYSIS**

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DOI: 10.46609/IJSSER.2024.v09i02.018 URL: <https://doi.org/10.46609/IJSSER.2024.v09i02.018>

Received: 20 Feb. 2024 / Accepted: 3 March 2024 / Published: 8 March 2024

### **ABSTRACT**

One resulting post-pandemic macroeconomic phenomenon in the United States is record elevated inflation, with some economists, policy makers, financial journalists, and other commentators arguing that a rise in firm market power and concentration has led to a rise in corporate profits which is the cause of the observed increase in inflation. This research paper evaluates and suggests methods to measure inflation, corporate profits, and market power, particularly in conjunction with establishing causality, as well as analyses the successes and shortcomings in establishing causality between these variables. We also engage in conducting a meta-analysis of literature pertaining to the contribution of corporate profits to inflation during the post-pandemic economic recovery, as well as suggestions for future research required for the topic and the specific areas of this topic that Prompt further exploration.

**Keywords:** Inflation; Macroeconomics; Corporate Profits; Market Power; Firm Concentration; Economic Recovery; United States

### **1. INTRODUCTION**

In the United States, inflation has remained elevated over the last few years following the COVID-19 pandemic recovery, with the American economy experiencing record inflation. Consumer Price Index (CPI) data from the Bureau of Labor Statistics (BLS) shows that the rate of price increases peaked at 9.1% year-over-year in June 2022 compared to June 2021, the largest annual increase since 1981 (Bureau of Labor Statistics). Inflation was 4.7% in 2021 and 8% in 2022, as measured by the BLS's CPI, well above the target set by the Federal Reserve Bank, the American central bank in charge of managing inflation, of 2% (Federal Reserve Bank of Minneapolis) (Nakata&Schmidt). At the same time of record-high inflation, corporate profits have also been at a record high: data from the United States Department of Commerce shows that in 2022, corporate profit margins were the largest they'd been in 70 years (Contreras et al.).

This data has led some economists, policymakers, journalists, and financial analysts to speculate that corporate profits directly caused the rise in inflation and that the primary motive for price increases was increased profits. These commentators argue that the rise in corporate profits has been a result of a broad fundamental shift in corporate concentration post-pandemic in the form of increased market power (Warren) (Reid).

The relationship between the current nature of corporate profits, inflation, and market power in the United States post-pandemic macroeconomic environment is complex and multifaceted. This research paper proceeds as follows: The 'Inflation' section explains and explores the different methods of measuring inflation, evaluating these inflation metrics contextually based on the topic of this research paper, as well as judging the metric choices made by other literature. The 'Corporate Profits' section explains and explores the different methods of measuring corporate profits, evaluating these metrics in the context of the topic of this research paper, and judging the corporate profits metric choices made by other literature. The 'Causality' section then explores establishing causality between inflation and corporate profits, and the factors influencing any relationship between the two variables both in regards to general economic analysis and economic analysis regarding the United States post-pandemic macroeconomic environment. Market power is then introduced as a relevant factor in these discussions. This leads to the 'Market Power' section, which explores measures of market power, how researchers should measure market power to compare and contrast with inflation and corporate profits, and how previous literature has grappled with this concept. Lastly, the 'Analysis' section analyses all of the relevant information and findings from the previous sections, connecting them together while making suggestions for future academic research on this topic.

## **2. INFLATION**

Inflation is the general increase in prices of goods and services in an economy over time, leading to a decrease in the purchasing power of a currency. In other words, when inflation occurs, each unit of currency buys fewer goods and services than it did before. Central banks, such as the Federal Reserve Bank in the United States, often target a specific inflation rate (i.e., a specific increase in prices over a period of time ) as part of their monetary policy. In the United States, that rate is 2% year-over-year. A moderate level of inflation is considered beneficial for economic growth, as it provides an incentive for spending and investment. However, excessively high inflation can have detrimental effects on an economy, such as eroding savings, salaries, and purchasing power, distorting economic decision-making, and causing uncertainty. Economists use various measures to track inflation, which we briefly describe and explain in the following paragraphs.

The Consumer Price Index (CPI) is a measure that examines the average change in prices paid by

consumers for goods and services over time. CPI is calculated by taking a basket of goods and services that are representative of what a typical urban consumer might purchase. The tracking of the prices of these items happens over time. The percentage change in the CPI from one period to another reflects the average inflation rate.

The Producer Price Index (PPI) measures the average change over time in the selling prices received by domestic producers for their goods and services. Calculating PPI is done by collecting price data from a sample of producers at various stages of production. This includes raw goods, intermediate goods, and finished goods. The PPI provides insights into inflationary pressures at the producer level before they reach the consumer.

The Personal Consumption Expenditures (PCE) is a measure of the goods and services purchased by individuals and households. PCE is calculated by taking into account changes in the quantity and prices of goods and services consumed. It includes a broader range of expenditures, such as healthcare services and housing costs, and adjusts for changes in consumer behaviour over time.

The Gross Domestic Product (GDP) deflator is a measure of the price of all goods and services included in GDP. It reflects the average change in prices for the entire economy's output. Dividing nominal GDP by real GDP (which has been adjusted for inflation using a base year's prices) calculates the GDP deflator. The resulting ratio is then multiplied by 100 to express the deflator as an index. Changes in the GDP deflator over time indicate the overall inflation or deflation in the economy.

Existing literature uses a variety of inflation measurements to explore the relationship between inflation and corporate profits. The majority of economists use the CPI to represent inflation in the context of corporate profits, such as Politano, Perkins, and Stiglitz & Regmi (Politano) (Perkins) (Stiglitz & Regmi). CPI is also the mainstream measurement used when journalists and the media generally discuss inflation. Glover, Mustre-del-Río, & Ende-Becker use the PCE to represent inflation, as does Konczal & Lusiani (Glover et al.) (Konczal & Lusiani). The PCE measure is also what the Federal Reserve pays attention to when discussing inflation. Andler & Kovner use the PPI, while Weber & Wasner and Ferguson & Storm use the GDP deflator (Andler & Kovner) (Weber & Wasner) (Ferguson & Storm).

Each inflation measure has its advantages and disadvantages, and the choice of which to use in this context is critical as it can impact the interpretation of the relationship between corporate profits and inflation.

The advantage of the CPI is that it is a commonly used measure by mainstream financial media and journalists, providing a snapshot of the average change in prices paid by consumers. It

reflects the inflation experienced by the general population and is easily understandable. Since it includes a basket of goods and services consumed by urban consumers, it aligns closely with urban individuals' daily experiences. However, CPI may only partially capture the inflation experienced by corporations, as it emphasises consumer goods and services. In the context of record corporate profits, relying solely on CPI might overlook specific cost pressures businesses face. CPI also focuses on urban consumers and places less emphasis on the costs for people living or purchasing in rural areas.

The PPI offers insights into inflationary pressures at the producer level, revealing changes in selling prices received by domestic producers. It can be an early indicator of potential shifts in consumer prices, making it relevant for understanding the impact on corporate profits, meaning that it allows observers then to notice changes at the starting points of supply chains. However, the PPI may not fully represent the inflation experienced by consumers, as it focuses on producer prices. Using PPI alone may not capture the complete picture of inflation as it affects the overall economy.

PCE considers a broader range of expenditures, including healthcare services and housing costs. This makes it a comprehensive measure that reflects changes in consumer behaviour over time, providing a more holistic view of inflation's impact on individuals and households, especially as it looks at what both urban and rural consumers face. The PCE can be considered a more complex version of the CPI measurement. However, similar to CPI, PCE may only partially represent the inflation that corporations face, particularly those with substantial business-to-business transactions. Its emphasis on consumer spending might align differently with the cost structures of all businesses, and if we are focusing on corporate profits specifically to compare inflation with, then it might be a disadvantage to be looking at the end of the supply chain.

The GDP deflator reflects the overall price changes in the entire economy's output. It considers all goods and services included in GDP, providing a broad perspective on inflation's impact on economic output. Its disadvantage in this scenario is that it is not as precise as capturing consumer or producer experiences as the other measures; however, it is suitable if we are discussing the overall macro economy.

The choice of inflation measure depends on the specific focus of the analysis. If the goal is to understand how inflation affects consumer purchasing power and its implications for corporate profits, CPI or PCE may be more relevant. PCE would be more relevant than CPI if the objective is to consider both rural as well as urban areas. The PPI could be valuable for insights into potential business cost pressures. The GDP deflator is more suitable for analyses considering inflation's overall economic impact on corporate profits.

### **3. CORPORATE PROFITS**

Corporate profits refer to the financial gains a company generates from its business operations after deducting all costs, taxes, and other expenses. A company uses the money it gains in revenue to pay for its expenses, and all money left after paying its expenses is considered to be the corporation's profit (Kenton). As a result, corporate profits can also reflect the residual income that remains for shareholders or reinvestment after the company covers its operational expenses.

There are various methods to quantify and calculate what we refer to as 'corporate profits' and the change in corporate profits over time. These different methods are used in different contexts and calculated either by economists tracking corporate profits as a part of overall national macroeconomic data or by accountants and businesses at the firm level for the companies' own finances.

Markups in the context of measuring corporate profits refer to the difference between the cost of production (including labor, materials, and overhead) and the final selling price of a product or service.

The net income of a corporation refers to the final profitability figure obtained after deducting all expenses, including operational costs, interest, taxes, and any other non-operating expenses, from the gross revenue.

The National Income and Product Accounts (NIPA) corporate profits metric represents the portion of the total income earned from current production that is accounted for by U.S. corporations. As such, it is unaffected by changes in tax laws, and it is adjusted for non-reported and misreported income. It excludes dividend income, capital gains and losses, and other financial flows and adjustments, such as deduction for "bad debt." It can be defined as profit per unit of real gross value added of non-financial corporate business and is corporate profits after tax adjusted for capital consumption and inventory valuation.

Operating profit, also known as earnings before interest and taxes (EBIT), excludes interest and taxes from the calculation of corporate profits. Net profit, or earnings after tax (EAT), deducts all costs, including interest and taxes, from a company's total revenue.

The gross operating surplus measure represents the income earned by corporations after accounting for the COGS (cost of goods sold) and operational expenses but before deducting taxes, interest, and non-operating expenses. It encompasses the surplus generated from production activities, including profits accruing to capital and entrepreneurship. Gross profit margin, on the other hand, calculates the percentage of revenue remaining after deducting the

COGS It is the difference between net sales and the direct COGS normalized by net sales.

Return on Assets (ROA) measures corporate profitability in relation to its assets. This allows analysts to look at a company's profitability relative to its investments and see its effectiveness in generating profits when adjusted for its assets.

Existing literature uses various corporate profit measurements in exploring the relationship between inflation and corporate profits. Glover, Mustre-del-Río, & Ende-Becker measure corporate profits by the growth rate in corporate markup over time. Konczal & Lusiani define corporate profits by the following equation:

Profits = sales - COGS - operating expenses - interest expenses - taxes

Politano, Ferguson & Storm, and Glover, Mustre-del-Río & Nichols use the National Income and Product Accounts (NIPAs) from the Bureau of Economic Analysis (BEA) corporate profits measure, which is the amount of total income earned from current production accounted to American companies. Weber & Wasner measure corporate profits using the gross operating surplus measure, Andler & Kovner use the gross profit margin, and Stiglitz & Regmi use net income.

Markups can be a useful measure of corporate profits because they are not distorted by non-operating items or the cost of capital. However, markups can be challenging to calculate, especially for companies that produce a wide range of products or services, as it is difficult to determine a company's marginal cost. For many companies, marginal cost is not constant but somewhat varies depending on the level of output for different goods and services. Another challenge in calculating markups is that obtaining data on sale prices and marginal costs can be difficult. However, markups are particularly useful for comparing the profitability of different companies in the same industry. It is worth noting that markups can be affected by inflation. When inflation is high, companies may be able to raise their prices without losing market share, leading to higher markups, as well as other factors such as competition, supply shocks, and demand. Higher markups indicate that a company can command a higher price for its goods or services compared to the costs incurred in producing them, resulting in increased profits. Analysing markups helps observers determine businesses' pricing strategies, cost efficiencies, and overall competitiveness in their market, directly impacting their bottom line and overall financial health.

Corporate net income represents the ultimate financial result for a corporation, indicating the overall profitability and performance after considering all costs and financial obligations. Net income serves as a vital indicator of a company's financial health and its ability to generate profits after accounting for all expenses, providing insights into its efficiency, competitiveness,

and potential for growth or investment. In times of elevated inflation, revenues might rise due to increased prices, but this could be offset by higher costs for raw materials, wages, or other operational expenses; therefore, a sustained period of elevated inflation could potentially erode the purchasing power of profits despite an apparent increase in net income. One limitation of corporate net income is that non-operating items, such as gains or losses from the sale of assets, can distort it. While these items can significantly affect net income, they are not necessarily indicative of a company's core profitability. Another limitation of net income is that it does not take into account the cost of capital, which is the rate of return that a company must pay to its investors in order to finance its operations. A company's cost of capital varies depending on a number of factors, such as its debt-to-equity ratio and its credit rating. Because net income does not take into account the cost of capital, it can be misleading to compare the net income of two companies that have different capital structures. For example, a company with a high debt-to-equity ratio will have a higher cost of capital than a company with a low debt-to-equity ratio, so the company with the higher debt-to-equity ratio will have a lower net income, even if it is more profitable on an operating basis. Despite these limitations, net income is a widely used measure of corporate profits as it is relatively easy to calculate and understand and is readily available for a wide range of companies.

The NIPA corporate profits metric is a measure of corporate profits that is not distorted by non-operating items or the cost of capital. It is also relatively easy to calculate and understand. One advantage of the NIPA corporate profits metric is that it is a data series that has been available for an extended period of time, allowing researchers to track changes in corporate profitability comprehensively over time, and it can be easily compared with other NIPA data to spot any inconsistencies and irregularities or for comparison and analysis purposes. It is also a widespread measure of the proportion of aggregate income received from the current production of all companies in the U.S., both financial and non-financial corporations. One limitation of this metric, though, is that it is not available for individual companies; it is only available on aggregate for U.S. corporations as a whole.

Operating profits isolate and solely focus on core business activities, taking away factors that are not related to a company's operations, such as taxes and interest. Analysing operating profits can be done at the firm level and aggregated at the industry level, allowing for firm-to-firm comparisons within the same sectors as well as industry comparisons. The change in operating profits can be analysed over an extended period of time and is relatively straight forward to calculate and interpret using a company's income statement. However, since it does not consider expenses and cash flow that are non-operational, it can still impact a corporation's overall profitability. Specific companies, as well as industries as a whole, also have different depreciation accounting methods and rules, which might make it more challenging to make

accurate operating profit comparisons.

Gross operating surplus is also another measure of a company's core profitability, as it is calculated by taking a corporation's revenue and removing both operating expenses and the costs of goods sold. It is a measure that is computed firm-by-firm and so can be compared between firms as well as between industries on aggregate. As it is a standard accounting measure, essentially all publicly traded companies report this figure, and there is no variation between companies or changes in accounting rules that would affect the measure. However, it is worth noting that gross operating surplus does not factor in the cost of capital, so comparing corporations or industries with different capital structures might be problematic. External factors such as government policies, e.g., taxes, can also impact gross operating surplus, which could vary by company and industry. Thus, making a comparison with corporations' gross operating surplus measures could be potentially problematic.

ROA is particularly useful for measuring a company's efficiency in generating profits from its assets and can be compared over time. However, it does not take into consideration various factors, making it unsuitable in the situation of comparing it with inflation. While ROA is suitable for comparative analysis, in the case that inflation is eroding the purchasing power of earnings generated from assets, ROA might appear to be high due to nominal increases in net income, even though the actual value of profits is declining. The primary issue with using ROA, however, is that it is not a measure of the direct probability of a firm but rather its profitability relative to the value of its assets, i.e., when comparing ROA values between firms, researchers are essentially just comparing how much each firm can generate if they had the exact same value of assets. ROA also does not account for income generated by non-asset-based sources, such as intellectual property or intangible assets.

Similar to inflation, the choice of corporate profits measure depends on the specific focus of the analysis, how standardised and aggregate it is, and what factors researchers would want to be considered or discounted in their research. In essence, each metric serves a specific purpose: net income for a quick overall view, operating profits for operational efficiency comparisons, ROA for asset utilisation insights, gross operating surplus for aggregated industry-level assessments, NIPA corporate profits for long-term industry tracking, and markups for understanding pricing strategies. Choosing the best metric for comparison with inflation involves aligning the analysis goals with the strengths and limitations of each measure as well as the nature of the comparison.

#### **4. CAUSALITY**

The analysis of the relationship between elevated inflation and record corporate profits post-COVID-19 faces inherent challenges in establishing causality and isolating their pure effects.



While there might be a correlation between these two variables, establishing a causal link requires careful consideration of various factors that could impact the relationship, and there are several key issues that can be highlighted regarding the causality problem in this context. It is hard to develop a model or form of analysis for these two variables that take out all other variables that might potentially impact the results. Thus, we are unable to state that because corporate profits have risen as inflation has at the same time, the first variable is causing the second. Below are potential variables and conditions that could have impacted this relationship or must be considered when conducting this analysis.

In the aftermath of the global pandemic, as the US economy strived to recover, it is essential to acknowledge that the interplay between supply and demand could have potentially influenced both inflation levels and corporate profitability differently. Disruptions in supply chains would have decreased supply, resulting in what is known as cost-push inflation, a situation where rising costs force businesses to increase prices, yet specific corporations that were able to adapt to these challenges more efficiently would have benefited by being able to increase supply or decrease supply by not as much as their peers and so increase profits (Gordon & Clark).

Changes in monetary policy orchestrated by central banks wield significant influence over economic conditions, and concurrently, fiscal stimulus measures employed by governments also exert a considerable impact on economic conditions. These measures, whether the adjustment of interest rates or the implementation of fiscal policies, could significantly impact both inflation and corporate profits. After all, monetary policies, characterised by their rigidity or looseness, play a pivotal role in steering economic trajectories with loose monetary policies, exemplified by strategies like quantitative easing, as seen by the Federal Reserve in response to COVID-19, which could have had a dual impact on corporate profits and inflation: while these strategies might have contributed to inflationary pressures within the economy by increasing demand, they concurrently benefit corporate expansion and growth by alleviating borrowing conditions and fostering a more favourable financial environment for businesses to raise capital (Hemming & Kochhar) (Milstein & Wessel).

The impact of international elements such as evolving trade patterns, fluctuating exchange rates, and geopolitical events could have on both inflation and corporate profits in the US is also worth noting. The pandemic substantially impacted the level of trade of goods and services between nations and even the noteworthiness of trade between nations depending on government policies and lockdown situations (OECD). The import-export balance plays a pivotal role in shaping the pricing dynamics of goods and services, thereby impacting inflation rates and, consequently, the bottom lines of domestic companies. Additionally, fluctuations in exchange rates could impact inflation and corporate profits depending on if there were significant changes to them. Oscillation in currency values directly affects the cost of international trade, influencing inflation

trends and directly impacting the profit margins of American corporations operating in global markets (Baggs et al.). Furthermore, geopolitical events across the world also impact inflation and corporate earnings within the US (Kim et al.).

A relationship between inflation and corporate profits might also have significant time lags with either a delayed or premature relationship: changes in inflationary pressures may take time to affect corporate profitability or vice versa, creating a temporal gap that complicates establishing a direct cause-and-effect relationship. It is also possible for these two variables to be correlated purely by chance due to an unaccounted-for third variable, creating a false impression of causation. Finally, corporations might have adapted to the inflationary environment by adjusting pricing strategies or operational efficiencies, leading to improved profits, which were not what necessarily caused inflation in the first place.

Keeping all these theoretically impactful third-party variables and factors in mind and how they may influence any analysis of whether or not the recent relationship between corporate profits and inflation is correlation or causation, we will now look into the methodology and analysis methods of pre-existing literature to see how they dealt with this causality problem and the models they used. As a result of different methods of establishing causality and different factors analysed, a range of results has been acquired throughout the literature.

Though the BEA's non-financial corporate business profit margins measure appears to be at a record high, when factoring out taxes, margins are actually within historical levels, albeit slightly elevated by modern standards (Politano). This data prompts the argument that corporate profits have not necessarily substantially increased post-pandemic, with the discrepancy being due to the effective American corporate tax rate consistently decreasing over the past several decades, thus impacting the after-tax profit margins measure (Internal Revenue Service). While pre-tax profit margins have increased following COVID-19, pre-tax profit margins have increased in the past during periods of standard inflation; between 2011 and 2012, pre-tax profits increased by 30% even though the CPI was 2.07% (Politano).

There are also several other methodological issues with the BEA measure beyond taxes that may impact causality discussions between profits and inflation, with the post-pandemic economy making it harder for the BEA to account for depreciation and corporation inventory valuation as a result of declining stock values, increasing final sale prices and increasing production costs. Furthermore, some industries with price shocks do not necessarily see profit shocks, such as American carmakers and oil producers, and record federal spending could explain any increase in corporate profits, as theoretically, it would lead to an increase in private sector surpluses (Politano). However, corporate profits, when measured through aggregated firm-level markups and profit margins and size-adjusted firm-level markups and profits, have abnormally increased

post-pandemic (Konczal & Lusiani). Size-adjusted markups can increase at the firm level by weighting a firm by their share of total sales in their industry since firms with a greater amount of sales will have a greater proportional impact on the prices consumers pay. Between 1960 and 1980, average markups were 26% greater than marginal cost, steadily increasing until they were, on average, 56% greater in the 2010s (Loecker, Eeckhout & Unger). In 2021, the average markup was 72% greater than a firm's marginal cost. These markup increases occurred across various types and sizes of companies; the markup increases between industries were uniform compared to historically, and, when adjusted for firm size, a company's markup increase pre-pandemic had a strong correlation with the magnitude they increased their markups by in 2021 (Konczal & Lusiani).

To determine the relationship between inflation and corporate profits, and so also determine causality between the two metrics, a time period comparison of the changes in these two variables can be conducted. In 2021, corporate profits, measured by markups, increased by 3.4% in the US, with the PCE index rising by 5.8% during that same period (Glover et al.). However, the nature of the increase in markups was firm anticipation of future price increases rather than firms taking advantage of high demand or any increase in monopoly power. This argument is demonstrated by markup growth being at its highest in the first half of 2021, specifically before declining in the second half even as inflation continued to rise. Similar economic environments historically have faced this same phenomenon of markup growth initially increasing. In contrast, inflation increases before markup growth either stays constant or decreases. Nevertheless, inflation still rises, demonstrating that the posited view of business being forward-looking when setting prices is a pattern observed in all economic recoveries since post-World War II. This relationship dynamic between markups and inflation can be measured as a ratio, with the ratio of corporate profits to the implicit GDP deflator sharply rising for the first few quarters following recessions post-World War II before the ratio follows even as the economic recovery continues. This indicates that, though there might be some causality between corporate profits and inflation, that causality is temporary and short-lived, and inflation is a result of other factors as inflation is persistent and rising even as corporate profits are not (Glover et al.).

The inflation the US has experienced in the post-COVID economic recovery has been argued to have been a result of primarily being a sellers' inflation with a microeconomic basis, i.e., firms' capability to hike prices as a result of market power has increased and is responsible (Weber & Wasner). A three-stage heuristic, which relies on economic theory, the nature of price setting by firms with market power, and firm-level data from quarterly earnings calls and earnings reports, notes that, firstly, market-dominant companies usually do not cut prices and only raise them when they anticipate other companies following suit. Secondly, a non-explicit agreement to coordinate price spikes may result from sector-wide cost increases. Thirdly, cost shocks and

supply chain bottlenecks that are made public can also help to legitimise price increases and win over customers to pay higher costs. However, this causality analysis does not attempt to quantify or prove changes in market power over time. If firms were to have abused market power to raise prices and increase their profits, that would mean they must have gained increased market power in order to have the capability to do this relative to pre-pandemic. Rather than establish direct causality between rising profits and the rise in inflation, the heuristic focuses on establishing causality between firms using market power and price hikes.

As this section outlines, there are various challenges with establishing causality on this topic of the relationship between inflation and corporate profits following the COVID-19 pandemic. Previous literature has attempted to solve these challenges in various ways by undertaking specific analysis methods or expanding the scope of comprehensiveness to adjust for various factors with potential influence. However, it seems clear based on the analysis that while elevated corporate profits could have had a causal relationship with elevated inflation for the first half of 2021 following the COVID-19 economic recovery, afterward, it is clear that inflation persistence and continued rise is not consistent with markup growth resulting in a breakdown of any merits for the causality argument. While sound in economic theory, the role of market power in facilitating these price hikes is not empirically justified, and further research is required to determine its role.

## **5. MARKET POWER**

An intriguing theory primarily purported by Weber & Wasner that requires further analysis is the role of market power in the higher prices following the COVID-19 pandemic economic recovery. Weber & Wasner provide a solid theoretical framing for their theory of sellers' inflation and the perceived ability of firms that are 'price makers' to hike prices, arguing that firms have been able to coordinately, whether this coordination be explicit or implicit, raise prices on consumers because of a change in market power structure following the pandemic. After all, if a firm has increased market power or an industry as a whole has seen increased corporate concentration, then they would have greater price-setting capabilities and so would be able to increase their margins more. It is a theory that other pieces of literature have briefly explored, with both support and opposition. Politano argues that many firms are experiencing additional input costs resulting in price rises for consumers and that firms are not abusing the pandemic situation as they are taking in some of these cost rises themselves. Glover, Mustre-del-Río, & Ende-Becker find that the largest markup growth occurred in 2020 and 2021 Q1, with markups declining in the second half of 2021. In contrast, inflation spiked in the second half of 2021, thus stating that a post-pandemic increase in market power can not explain the inflation. Ferguson & Storm, however, both argue that corporate profits contribution to unit price growth between 2020 Q1 and 2022 Q2 compared to between 1979 and 2019 has been substantially higher, indicating a

structural change, and that shareholder calls and CEO statements vindicate the corporations utilising inflation to raise their prices greater than the increase in their input costs which they would only be able to do if there was a change in market power. However, there is no precise, explicit analysis that has been attempted to prove or disprove if there have been widespread sector increases in corporate concentration over time following the COVID-19 pandemic in relation to inflation, nor an attempt to break down any links between sector-based price rises with sector-based market power changes.

Market power refers to the ability of a firm or industry to influence the prices at which it sells a good or service and controls the market supply of goods and services in order to increase its own profits (Kenton). When an industry becomes more concentrated or certain firms have more market power as a whole, they could increase their profits by raising prices thanks to the increased pricing power, which would lead to inflation, as is being posited for the current macroeconomic situation by several commentators and has been endorsed by certain political leaders in the United States, with President Joe Biden recently calling on corporations to "stop the price gouging" (Picciotto).

Calculating the market power of firms in an industry is challenging, as there are multiple methods of doing so, each with a different methodology. Industry-level data, specific corporations' market shares, production costs, goods and services prices, and other pieces of information are required depending on the method of analysis.

The concentration ratio measures the degree of concentration in an industry, which can indicate the level of market power held by a few firms. The concentration ratio is calculated by measuring the combined market share held by a certain number of firms in a particular industry as a percentage of industry sales. For instance, a four-firm concentration ratio would find the market shares of the four largest firms in the industry. If those four firms hold 60% of the market, the concentration ratio would be 60%.

The Herfindahl-Hirschman Index (HHI) is a measure of market concentration that takes into account the distribution of market shares among firms. The HHI is calculated by squaring the market share of each firm competing in the market and then summing the resulting numbers. HHI approaches zero when a market is occupied by a large number of firms of relatively equal size and reaches its maximum of 10,000 points when a single firm controls a market. The HHI increases both as the number of firms in the market decreases and as the disparity in size between those firms increases. A high HHI indicates a high level of market power. For example, if there are three firms in an industry with market shares of 25%, 35%, and 40%, the HHI would be calculated as follows:

$$(25)^2+(35)^2+(40)^2=625+1225+1600=3450$$

US federal government agencies generally consider industries where the HHI is between 1500 and 2500 points to be moderately concentrated and markets where the HHI is greater than 2,500 points to be highly concentrated. The HHI is considered to be a very detailed and nuanced measure and has wide spread recognition from academics and regulatory agencies.

The price-cost margin measures the difference between the price a firm charges and its cost of production. A high price-cost margin can indicate market power, as the firm can increase its prices above its costs and still maintain its market share. However, in this context particularly, it might not be effective if the firm(s) has a dynamic cost structure or complex pricing strategies, as well as industry heterogeneity.

Vertical integration is the degree to which a firm controls the upstream and downstream stages of the production process. If a firm has a high level of vertical integration, it can exert market power by controlling the supply of inputs and limiting access to raw materials. However, quantifying vertical integration power and levels is complex and not necessarily objective to justify the assumptions required for calculations, so thus, it is not a feasible concept for defining or calculating market power.

The Lerner Index is a measure used to assess a firm's market power or its ability to set prices above marginal cost. It is a commonly used indicator in industrial organization and economics to evaluate the degree of market competitiveness or monopoly power relative to the rest of the market. The formula for the Lerner Index is:

$$(P-MC)/P$$

Here,  $P$  represents the price set by the firm, and  $MC$  represents the marginal cost of production. The index ranges from 0 to 1, with a Lerner Index closer to 0 indicating that a firm is pricing closer to its marginal cost, suggesting higher levels of competition, and a Lerner Index closer to 1 signifying that a firm is pricing much higher above its marginal cost, indicating greater market power or monopoly-like behaviour. The Lerner Index helps to gauge the extent to which a firm can raise its price above marginal cost, reflecting its ability to influence market prices as, if a firm has more market power, it can set higher prices and achieve higher profits compared to firms operating in more competitive markets. However, an issue with the Lerner Index is that it is not a guarantee of determining the level of market power. It does not account for industry-specific factors that might affect it.

We now analyse and compare these potential methods of measuring market power for their practicality and suitability towards the context of seeing if there were changes in corporate

market power post-pandemic that resulted in greater pricing power for firms, which manifested in the form of higher markups and so thus elevated inflation.

The concentration ratio is a straightforward and simple method for both calculating and interpreting, making it easily accessible and understandable. It also provides a snapshot of an industry's market structure and the dominance of that industry's largest firms. However, since calculations for the concentration ratio are typically done using only a small number of the largest firms in that industry, it ignores the composition of the distribution of the remaining market share. Furthermore, calculating the concentration ratio for a domestic market share purpose might mean the metric does not truly reflect a firm's market power due to competition from foreign firms in the modern globalised economy.

The HHI is an arguably more comprehensive measurement because it takes into account the market shares of all firms in an industry, thus giving a more complete picture of the market structure of a specific industry. It is also quite helpful in tracking market dynamics, a point that is particularly relevant if it is required to compare changes in market power over time, as it would potentially be required first to see if market power changes had occurred and then if there was a relation between those industries and markup growth, as the HHI is sensitive to changes in the distribution of market shares for large firms and smaller firms. However, the HHI requires extensive and quite detailed market share data, which may not be readily available, especially in markets with less public information. It also would not account for competition from foreign firms if done on a domestic market share basis.

The price-cost margin is a flexible measure of market power because it can be computed at an industry level as well as at an individual firm level. It is also quite direct, measuring market power by comparing price and marginal cost as if firms have greater market power, then they have greater price-setting power, and this can be tracked over time to make it useful for historical comparisons as would be required. However, a key issue with the price-cost margin metric is that it can be distorted: factors such as taxes and subsidies, which are variable based on government policy and not directly related to a firm's operations or profits, are implicitly considered as part of the price-cost margin thus making it a less accurate measure of market power. The price-cost margin also requires quite detailed data values on a firm's prices and marginal costs for those goods and services, which are not necessarily constant across all the products that a firm may offer.

The Lerner Index is a quite specific market power metric because it measures a corporation's price markup over its marginal cost, allowing for firm-level analysis as well as industry-level analysis when aggregating firm-level data. The Lerner Index requires detailed firm-level data on prices and costs, which can be difficult to obtain because it is a firm-level computation that

would then be aggregated for a whole industry value. Though the Lerner Index can be compared over time, this aggregation could result in changes in market power going unnoticed in the data based on its breakdown.

Given the attention from commentators on this issue specifically pertaining to the potential role of firms gaining increased pricing power resulting in increased costs for consumers and so higher inflation, it is interesting that there is not any pre-existing literature quantitatively exploring changes in corporate concentration following the COVID-19 pandemic on a sector-wide scale, forget comparing changes in market power to changes in inflation rates for those same sectors. This is an area of the topic where further exploration and more extensive research is required, especially given its pertinence to discussion on the topic.

## **6. ANALYSIS**

Since inflation can be generally defined as the change in prices over a certain period of time, and corporate profits can be generally defined as the financial gains a company generates, it makes logical sense that there could be a connection between the two variables. After all, if corporations abnormally raised prices while their costs of production and expenses remained the same, then corporate profits would typically increase as a result. At the same time, inflation, by definition, would increase due to the increase in prices, which is what inflation is. A hypothetical increase in market power concentration does lead to an increase in corporate profits, which can lead to an increase in inflation. However, first, there must be proof that corporations did not experience an increase in costs or expect to experience an increase in costs, resulting in increased prices, or that corporations, on aggregate and across industries, had the market power to do this in order for this proposition to be true. Suppose corporations were to have experienced an increase in costs of production and expenses from factors such as, for example, supply chain disruptions as a result of the COVID-19 pandemic. In that case, it makes sense that they would increase prices. Similarly, if corporations had more market power as the composition of firm concentration within industries changed following the pandemic, it would make sense for firms to have the pricing power to be able to hike prices for consumers in a coordinated manner. There is no prior research directly exploring if there have been broad sectoral changes in firm market power post-pandemic in the United States, nor if any potential changes directly lead to an increase in corporate profits for the pertinent firm or industry and if increases in inflation can be attributed to those increases in corporate profits.

Since inflation, corporate profits, and market power are such broad variables with various influencing factors, deciding how they should be measured and the context they are analyzed in when attempting to establish correlation or causation between them is crucial for rigorous and accurate conclusions to be drawn.



As discussed in the 'Inflation' section, while CPI is the most widely discussed metric by the financial media, the PCE is more relevant for understanding the rising costs of products by firms that consumers have to deal with simply because it provides more comprehensive coverage of goods and services. Suppose researchers were to focus solely on corporations' input cost pressures. In that case, the PPI is most certainly a viable and valuable metric to determine if firms and industries are experiencing production costs and expense increases and if they are increasing their prices as a result. When discussing inflation overall, however, and its holistic impact on the economy, the GDP deflator is the most suitable measure as it encompasses businesses, consumers, and the government acting as both a producer and consumer. In contrast, the CPI and PCE are focused on consumers, and the PPI is focused on producers solely.

For measuring corporate profits, as discussed in the 'Corporate Profits' section, quite a few metrics are adequate in this context, depending on how they are used. ROA does not make sense as it can be influenced by differing asset utilisation efficiencies over time. While the NIPA corporate profits are a good measure for aggregated, long-term tracking of the overall American economy, it is not broken down by industry, nor can researchers look at changes in prices and costs from it over time as it is the sum value of firms' revenue and costs. Gross operating surplus, net income, and operating profits are good indicators at the firm level, which can be aggregated by industry and the economy as a whole. Markup analysis is especially useful if researchers need to understand the firm's pricing strategies, as markup analysis can be aggregated by industry and the overall United States economy, making it particularly suited in the context of potentially mapping with market power.

Market power as a concept is inherently difficult to quantify, as the 'Market Power' section demonstrates. However, the HHI seems to be the most comprehensive and suited for tracking changes over time, albeit one that requires detailed data to compute. Vertical integration capabilities are too difficult to quantify, define, and compute, the price-cost margin can be distorted by prevalent and changing fiscal policies such as taxes and subsidies, and the concentration ratio is not broad enough as it just focuses on a handful of the largest firms in an industry. While the Lerner Index can be suitable because of how it is computed and composed, changes in market power could occur within an industry, but the measure does not reflect any changes. It is worth noting that there is a causality between market power and corporate profits; the greater market power is concentrated, the greater corporate profits for the beneficiary firm and industry will be (Stiebale & Szuecs) (Philippon). However, corporate profits would only be able to generate or result in the bout of inflation we are discussing if there had been proven, tangible sectoral changes in market power, a notion for which there is no evidence or proof following the COVID-19 pandemic in the United States.

While there is pre-existing literature connecting inflation and corporate profits as two variables,

and there is pre-existing literature exploring and discussing the role of market power, a quantified comparison of market power with suitable inflation and corporate profits metrics is required to attempt to establish causality.

## **7. CONCLUSION**

We can conclude which methods are best suited for this research context by accounting for the unique purposes, advantages, and disadvantages of the large variety of methods to measure inflation, corporate profits, and market power. We determine that the Herfindahl-Hirschman Index is best for measuring market power.

Considering firm-level, industry-level, and aggregated macroeconomic comparisons, the most precise indicators for corporate profits are gross operating surplus, net income, and operating profits. However, markups are the most appropriate measure when mapping corporate profits onto market power.

The GDP deflator is the most suited inflation metric for an overall macroeconomic analysis of market power and corporate profits. However, the PCE index and PPI are the best indicators for consumer perspective analysis and producer sector analysis.

We agree with the conclusion that corporate profits and inflation have experienced a correlation in the post-pandemic United States macroeconomic environment but contend that without considering changes in firm and industry market power, there isn't a strong causality argument between the two variables. We note that the post-pandemic relationship between corporate profits and inflation has followed the same relationship as they have following other past economic recoveries. Finally, we conclude that further literature on the topic is required to quantitatively prove or disprove sectoral market power changes to resolve the causality argument.

## **REFERENCES**

Andler, Mathias, and Anna Kovner. "Do Corporate Profits Increase When Inflation Increases?" Liberty Street Economics, Federal Reserve Bank of New York, 13 July 2023, [libertystreeteconomics.newyorkfed.org/2022/07/do-corporate-profits-increase-when-inflation-increases/](https://libertystreeteconomics.newyorkfed.org/2022/07/do-corporate-profits-increase-when-inflation-increases/).

Baggs, Jen, et al. "Firm survival, performance, and the exchange rate". *Canadian Journal of Economics/Revue Canadienne D'Économique*, vol.42, no.2, 2009, p.393-421. <https://doi.org/10.1111/j.1540-5982.2009.01513.x>

Contreras, Gus, et al. "Economist explains record corporate profits despite rising inflation." All

Things Considered, 13 Feb. 2022, NPR. [www.npr.org/2022/02/13/1080494838/economist-explains-record-corporate-profits-despite-rising-inflation](http://www.npr.org/2022/02/13/1080494838/economist-explains-record-corporate-profits-despite-rising-inflation).

The Economics Daily. "Consumer prices up 9.1 percent over the year ended June 2022, largest increase in 40 years." Bureau of Labor Statistics, U.S. Department of Labor, 18 July 2022, [www.bls.gov/opub/ted/2022/consumer-prices-up-9-1-percent-over-the-year-ended-june-2022-largest-increase-in-40-years.htm](http://www.bls.gov/opub/ted/2022/consumer-prices-up-9-1-percent-over-the-year-ended-june-2022-largest-increase-in-40-years.htm).

Federal Reserve Bank of Minneapolis. "Consumer Price Index, 1913-." Federal Reserve Bank of Minneapolis, [www.minneapolisfed.org/about-us/monetary-policy/inflation-calculator/consumer-price-index-1913-](http://www.minneapolisfed.org/about-us/monetary-policy/inflation-calculator/consumer-price-index-1913-).

Ferguson, Thomas, and Servaas Storm. "Myth and Reality in the Great Inflation Debate: Supply Shocks and Wealth Effects in a Multipolar World Economy." *International Journal of Political Economy*, vol. 52, no. 1, 2023, pp. 1-44.

Glover, Andrew, et al. "How Much Have Record Corporate Profits Contributed to Recent Inflation?" Federal Reserve Bank of Kansas City, 12 Jan. 2023, [www.kansascityfed.org/documents/9329/EconomicReviewV108N1GloverMustredelRiovonEndeBecker.pdf](http://www.kansascityfed.org/documents/9329/EconomicReviewV108N1GloverMustredelRiovonEndeBecker.pdf).

---. "Corporate Profits Contributed a Lot to Inflation in 2021 but Little in 2022—A Pattern Seen in Past Economic Recoveries." Federal Reserve Bank of Kansas City, 12 May 2023, [www.kansascityfed.org/research/economic-bulletin/corporate-profits-contributed-a-lot-to-inflation-in-2021-but-little-in-2022/](http://www.kansascityfed.org/research/economic-bulletin/corporate-profits-contributed-a-lot-to-inflation-in-2021-but-little-in-2022/).

Gordon, Matthew V., and Todd E. Clark. "The Impacts of Supply Chain Disruptions on Inflation." Federal Reserve Bank of Cleveland, 10 May 2023, [www.clevelandfed.org/publications/economic-commentary/2023/ec-202308-impacts-supply-chain-disruptions-on-inflation](http://www.clevelandfed.org/publications/economic-commentary/2023/ec-202308-impacts-supply-chain-disruptions-on-inflation).

Hemming, Richard, and Kalpana Kochhar. "The Role of Fiscal and Monetary Policy in the Growth Process." *Strategies for Structural Adjustment*, International Monetary Fund, 1990.

Kenton, Will. "Corporate Profit: What It Means, How It Works." Investopedia, 2 Oct. 2021, [www.investopedia.com/terms/c/corporate-profits.asp](http://www.investopedia.com/terms/c/corporate-profits.asp).

---. "What Is Market Power (Pricing Power)? Definition and Examples." Investopedia, 16 Dec. 2020, [www.investopedia.com/terms/m/market-power.asp](http://www.investopedia.com/terms/m/market-power.asp).

Kim, Ken, et al. "Russia-Ukraine War Impact on Supply Chains and Inflation."

KPMG, 4 Aug. 2023, [kpmg.com/us/en/articles/2022/russia-ukraine-war-impact-supply-chains-inflation.html](https://www.kpmg.com/us/en/articles/2022/russia-ukraine-war-impact-supply-chains-inflation.html).

Konczal, Mike, and Niko Lusiani. "Prices, Profits, and Power: An Analysis of 2021 Firm-Level Markups." The Roosevelt Institute, June 2022, [rooseveltinstitute.org/wp-content/uploads/2022/06/RI\\_PricesProfitsPower\\_202206.pdf](https://rooseveltinstitute.org/wp-content/uploads/2022/06/RI_PricesProfitsPower_202206.pdf).

Milstein, Eric, and David Wessel. "What Did the Fed Do in Response to the COVID-19 Crisis?" The Brookings Institution, 2 Jan. 2024, [www.brookings.edu/articles/fed-response-to-covid19/](https://www.brookings.edu/articles/fed-response-to-covid19/).

Nakata, Taisuke, et al. "The risk-adjusted monetary policy rule". Finance and Economics Discussion Series, vol. 2016, no. 061, 2016, p. 1-21. <https://doi.org/10.17016/feds.2016.061>

OECD. "International trade during the COVID-19 pandemic: Big shifts and uncertainty." OECD, 10 Mar. 2022, [www.oecd.org/coronavirus/policy-responses/international-trade-during-the-covid-19-pandemic-big-shifts-and-uncertainty-d1131663/](https://www.oecd.org/coronavirus/policy-responses/international-trade-during-the-covid-19-pandemic-big-shifts-and-uncertainty-d1131663/).

Perkins, Tom. "Revealed: Top US Corporations Raising Prices on Americans Even As Profits Surge." The Guardian, 27 Apr. 2022, [www.theguardian.com/business/2022/apr/27/inflation-corporate-america-increased-prices-profits](https://www.theguardian.com/business/2022/apr/27/inflation-corporate-america-increased-prices-profits).

Philippon, Thomas. "The Economics and Politics of Market Concentration." NBER, 12 Jan. 2019, [www.nber.org/reporter/2019number4/economics-and-politics-market-concentration](https://www.nber.org/reporter/2019number4/economics-and-politics-market-concentration).

Picciotto, Rebecca. "‘Stop the Price Gouging’: Biden Hits Corporations over High Consumer Costs." CNBC, 27 Nov. 2023, [www.cnbc.com/2023/11/27/white-house-supply-chain-bidenomics-wins.html](https://www.cnbc.com/2023/11/27/white-house-supply-chain-bidenomics-wins.html).

Politano, Joseph. "Are Rising Corporate Profit Margins Causing Inflation?" Apricitas Economics, Substack, 1 Jan. 2022, [www.apricitas.io/p/are-rising-corporate-profit-margins](https://www.apricitas.io/p/are-rising-corporate-profit-margins).

Reid, Jenni. "'Excess Profits' at Big Energy and Consumer Companies Pushed Up Inflation, Report Claims." CNBC, 8 Dec. 2023, [www.cnbc.com/2023/12/08/excess-profits-of-big-firms-have-driven-up-inflation-report-claims.html](https://www.cnbc.com/2023/12/08/excess-profits-of-big-firms-have-driven-up-inflation-report-claims.html).

Stiebale, Joel, and Florian Szücs. "Mergers and market power: evidence from rivals' responses in European markets." The RAND Journal of Economics, vol. 53, no. 4, 2022, pp. 678-702.

Stiglitz, Joseph E., and Ira Regmi. "The Causes of and Responses to Today's Inflation." The Roosevelt Institute, Dec. 2022, [rooseveltinstitute.org/wp-content/uploads/](https://rooseveltinstitute.org/wp-content/uploads/)

2022/12/RI\_CausesofandResponsestoTodaysInflation\_Report\_202212.pdf.

Warren, Elizabeth. "At Hearing, Warren Calls Out Corporations for Abusing Their Market Power to Raise Consumer Prices and Boost Profits." U.S. Senator Elizabeth Warren of Massachusetts, 17 Feb. 2022, [www.warren.senate.gov/newsroom/press-releases/at-hearing-warren-calls-out-corporations-for-abusing-their-market-power-to-raise-consumer-prices-and-boost-profits](http://www.warren.senate.gov/newsroom/press-releases/at-hearing-warren-calls-out-corporations-for-abusing-their-market-power-to-raise-consumer-prices-and-boost-profits).

Weber, Isabella M., and Evan Wasner. "Sellers' inflation, profits and conflict: why can large firms hike prices in an emergency?" *Review of Keynesian Economics*, vol. 11, no. 2, 2023, pp. 183-213.