DIGEST: THE RELATIONSHIP BETWEEN MARKUPS, MARGINS, AND INFLATION[1]

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Key takeaways

- Theory and empirical evidence suggest that the relationship between profit margins and inflation is not straightforward. Profit margins can change for a variety of reasons, with correspondingly different implications for inflation. As a result, it is important to first understand the underlying drivers of changes in margins before assessing their implications for inflation.
- This digest reviews the empirical and theoretical literature on the relationship between 'markups' and 'margins', and inflation. Margins can rise or fall for a variety of fundamental reasons, including changes in demand, costs or competitive conditions.
- The relationship between margins and inflation depends on the underlying driver for the change in margins; in some circumstances margins can rise alongside inflation, while in other situations margins can fall when inflation is rising.

In this digest, we review empirical and theoretical literature on the relationship between 'markups' and 'margins', and inflation. There are two broad messages. First, markups and margins are endogenous, meaning their variation is driven by a variety of other exogenous factors ('shocks'). As such, their behaviour, including the persistence of their movements, will depend on the nature of the underlying shock. Second, theory and empirical evidence suggest that markups can rise due to inflationary or disinflationary shocks. So inferring what has happened, or will happen, to inflation based on observed markups or margins is difficult without knowing the nature of the underlying shocks.

Markups and margins – definitions

Markups and margins are both measures of profitability. The ***markup*** is defined as the ratio of the price level to the *marginal* cost. The (profit) **margin** relates to the ratio of price to *average* cost. Theory suggests markups are the relevant object for the firm's price-setting decision, though margins are more closely aligned with empirical observables. However, in many cases, the two should move closely together.

The relationship between the markups, the business cycle and inflation

Theoretical drivers of markups

Markups and margins are endogenous. Understanding their dynamics therefore requires us to identify which underlying exogenous factors ('shocks') are driving them. Theory suggests there are several such factors.

The first factor is the firm's market power (i.e. the elasticity of demand), ε. Absent price frictions, an optimising firm sets their price as a markup over marginal costs, where the markup is determined by the demand elasticity:

$$P = \frac{\varepsilon}{\varepsilon - 1} \cdot MC$$

1 We would like to thank Tommy Iao for his extensive feedback, as well as Kevin Lane, and Callum Ryan for their useful comments on this note.

Changes to ε could reflect temporary exogenous changes (e.g. a temporary change in consumer preferences), or permanent ones (e.g. a structural change in competitive structures, like the entry of a new supermarket). Changes in ε could also be endogenous to the state of the economy, which we consider in the Extensions section.

When there are pricing frictions, markups will change in response to any shock that affects marginal costs. This reflects two related channels that mean that the current price no longer solely relates to current marginal costs. First, because of the frictions, firms may not update their prices every time marginal cost changes. Second, when firms do update their prices, they will set prices based not only on current marginal costs but also future expected marginal costs. This is because they know they might not be able to change their price tomorrow. Specifically, the price firms choose when they do reset prices takes the form (Gali, 2015):

$$P_t^* = \frac{\varepsilon}{\varepsilon - 1}(1 - \beta\theta)\, E_t \sum_{k=0}^{\infty} (\beta\theta)^k\, MC_{t+k}$$

The fact that markups are endogenous also has implications for how long a change in markups will persist. The persistence will reflect a combination of the persistence of the underlying shock(s) driving markups, and the nature of price rigidities. Hence, how long it takes for markups to 'return to normal' will depend heavily on the nature of the shock.

Theoretical relationship between markups/margins and inflation/activity

Table 1 outlines how standard models predict markups would change in response to various shocks. A key takeaway is that both inflationary and deflationary shocks can increase markups. So, as markups return to normal, this may be associated with either a deflationary or inflationary impulse. Moreover, this implies that the overall correlation between markups and inflation or the business cycle will be ambiguous. In more detail:

- First, consider *negative supply-side shocks* (i.e. shocks which raise inflation but lower output). A direct shock to markups/market power ε will increase inflation and lower output while *raising* markups. In contrast, a shock that directly raises costs, such as an increase in oil prices, will increase inflation and lower output while *lowering* markups. [2] A negative productivity shock will be similar. Many macro-economic models make no explicit differentiation between markup and cost shocks.
- The effects of a *demand* shock (e.g. a monetary policy shock) will be dependent on the relative stickiness of prices and marginal costs. If prices are stickier than marginal costs, a positive demand shock will *compress* margins while increasing prices and activity (Macallan et al. 2008). This is because as output expands, costs will increase before prices 'have the chance to catch up'. On the other hand, if costs like wages are 'sufficiently' sticky relative to prices, a positive demand shock could *expand* margins while increasing prices and activity. This is because prices will increase before costs 'have the chance to catch up', with firms anticipating the future higher costs and raising prices now.[3]

2 This is because these shocks affect the marginal cost immediately (as only wages are sticky), but prices remain rigid. For reference, in a New Keynesian model the marginal cost of domestic production is generally a function of productivity A_t, wages W_t, and return on capital R_t. For example, $MC_t = \frac{1}{A_t}\left(\frac{W_t}{1-\alpha}\right)^{1-\alpha}\left(\frac{R_t}{\alpha}\right)^{\alpha}$

3 Glover, Mustre-del-Rio and von Ende-Becker (2023) argue that these types of dynamics can account for the rise in US markups and profits coming out of COVID.

Table 1: The relationship between selected shocks, the markup, and inflation[a]

Shock	Effect on markup	Effect on inflation	Effect on activity
Shock directly raising costs (negative productivity, positive intermediate or other cost shock)	Decrease	Increase	Decrease
Declining competition	Increase	Increase	Decrease
Positive demand (e.g. monetary policy, government spending)	Increase if MC stickier than P Decrease if P stickier than MC	Increase	Increase

[a] The results in this table can be reached intuitively based on knowledge of the marginal cost specification, but are also consistent with Nekarda and Ramey (2020) and Macallan et al. (2008).

Empirical evidence

A large empirical literature explores the *reduced-form* correlation between markups and margins, and the business cycle or inflation. Consistent with theory, the findings are inconclusive, with mixed evidence on whether margins are procyclical or counter-cyclical. Nekarda and Ramey (2020) and Rotemberg and Woodford (1999) offer systematic reviews of the academic literature, though Norman and Richards (2010) find some evidence of procyclicality in a regression framework for Australia.

The literature estimating the *structural relationship* between markups and different economic shocks is somewhat more conclusive. Nekarda and Ramey (2020) and Bilbiie and Kanzig (2024) find evidence in line with Table 1, with markups increasing in response to positive demand shocks or deflationary cost or productivity shocks. Cantore et al. (2021) have similar findings for demand shocks, including for Australia.

Interestingly, many standard New Keynesian (NK) models imply markups fall in response to positive demand shocks. Whilst some authors imply this may result from a lack of emphasis on wage rigidity (e.g. Nekarda and Ramey 2020), more recent work suggests that in many models wages can never be sufficiently rigid to generate procyclical markup responses (Bilbiie and Kanzig 2024, Cantore et al. 2021).

Extensions

So far we have focused on the standard 'textbook' case where demand elasticities are exogenous, price rigidity is constant, and there is monopolistic competition. In this section, we consider the implications of relaxing some of these assumptions. This does not affect the key message: the relationship between margins/markups, and inflation and activity will depend on the source of the shocks. But the exact dynamics can change.

Endogenous demand elasticities

Standard models assume that the demand elasticity and 'desired' markup are exogenous, and so do not change because of other shocks or economic conditions more generally. However, there are several strands of the literature that allow the elasticity to change.

One strand considers cases where households become more price sensitive when their (real) income or wealth falls, such as during a downturn, consistent with messages from liaison. Both Mongey and Waugh (2025) and Nord (2023) do so using non-homothetic preferences. They show that this mechanism amplifies the positive relationship between inflation and markups following demand shocks: positive demand shocks raise income/wealth, making demand less price sensitive and so pushing markups up more.[4, 5]

4 Becker (2024) outlines a similar model, but focuses on the implication for prices and markups on basic versus luxury goods and inequality.

5 Another example is 'customer capital' models, where consumers form habits (and lower their future demand elasticity) when consuming different goods (Ravn et al., 2005; Gilchrist, 2017), though these models generally lead to countercyclical markup variations.

Relatedly, some papers argue that households may become more price sensitive when inflation is high. This is the case in models where consumers 'search' for the best prices, as high and dispersed prices incentivise consumers to put more effort into searching (e.g. Benabou 1992). Unlike the previous case, this will dampen the positive relationship between inflation and markups when there is a demand (or markup shock), but it will amplify the negative relationship between markups and inflation for cost shocks.

Finally, some papers consider how aggregate shocks could influence demand elasticity by changing the competitive structures. Some shocks may disproportionately hurt smaller firms, allowing larger firms to gain market power and increase markups. Franzoni, Giannetti and Tubaldi (2024) argue that this was the case for supply chain disruptions coming out of COVID, and that this contributed to higher inflation (and margins).

Capacity or financial constraints

Capacity constraints could also lead to a more positive relationship between margins and inflation. When a firm faces some form of capacity constraint, such as an inability to access some key input, it becomes very costly or even impossible for them to produce more. In such cases they may start 'rationing' by setting high prices. So profit margins will increase, even if supply shocks are a key driver (Comin, Johnson and Jones 2024). This is a case where markups and margins will tell a different story: markups may not rise as the marginal cost of producing becomes high (or infinite), but margins and profits will rise as prices increase without realised (average) costs rising as much. Gilchrist et al (2017) argue that financial constraints could similarly cause firms to raise margins in response to a negative shock, in order to protect their liquidity.

Changing price rigidities

As noted above, price rigidity is a key cause of variation in markups. If prices become more flexible, prices will move more closely with costs and margins will become less variable. The recent literature suggests that prices become more flexible when inflation is high, so markups should become less variable at these times, dampening any relationship between inflation and margins (see Georgiakakis, Hambur and Ryan 2026 for a discussion). Empirically, there is some tentative evidence of this in Australia, with passthrough of costs to prices becoming closer to one-to-one in Australia in the post-COVID inflationary period (Fink, Hambur and Majeed 2023).

Differing competitive structures

There is a large literature exploring how competitive structures shape the passthrough of different types of shocks to prices, and therefore margins. The key insight is that passthrough of costs to prices is dampened when competition is weaker or there are more strategic complementarities (Wang and Werning 2022; Ueda 2023; Fujiwara and Matsuyama 2022; Champion, Edmond and Hambur 2023; Giarda, Lu and Martner 2025). As such:

- There will be larger falls in markups/margins following an inflationary cost shock when there is less competition, as less of the price increase is passed on.[6]
- Markups become more likely to fall in response to inflationary demand shocks, as prices increase by less.[7]

6 Champion, Edmond and Hambur (2023) show this in a theoretical model calibrated to Australian data, and empirically. Giarda, Lu and Martner (2025) find something similar for Chile, though Brauning, Fillat and Jaoquim (2023) empirically find evidence of the opposite for the US. These models all assume the nature of the competitive structure remains unchanged.

7 In contrast, Menezes and Quiggin (2022) argue that firms will more unambiguously increase markups/margins in response to a demand shock when there are more strategic complementarities.

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