

IMF STAFF DISCUSSION NOTE

Rising Corporate Market Power: Emerging Policy Issues

Ufuk Akcigit, Wenjie Chen, Federico J. Díez, Romain Duval, Philipp Engler, Jiayue Fan, Chiara Maggi, Marina M. Tavares, Daniel Schwarz, Ippei Shibata, and Carolina Villegas-Sánchez

With contributions from Sophia Chen, Deniz Igan, Maria Soledad Martinez Peria, Nicola Pierri, Andrea Presbitero, and Yu Shi

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EXECUTIVE SUMMARY

Corporate market power has risen in recent decades, and new estimates in this note suggest that the likely wave of small and medium-sized enterprise bankruptcies from the ongoing pandemic will further strengthen market concentration. This note provides new evidence on the policy relevance of rising market power and highlights possible implications for the design of competition policy frameworks and macroeconomic policies.

Market power has increased significantly among publicly listed firms in advanced economies since the early 1980s. While broad-based across countries and industries, this rise has been particularly sharp in the technology and pharmaceutical industries. In contrast, in the banking industry, there has been no clear rise in market power.

This increase is concentrated among a small group of firms whose market power is increasingly entrenched, and it has been accompanied by a broad-based decline in business dynamism—including a falling share of economic activity accounted for by young firms and lower disparities between different firms' growth rates. While not the main driver, the rise in mergers and acquisitions (M&As) by dominant firms has contributed to rising market power and declining business dynamism. Rising market power has also weakened the effectiveness of monetary and fiscal policies.

While the (negative) effects of increased market power have been moderate so far, these findings suggest that competition authorities should be increasingly vigilant when enforcing merger control to ensure that these effects do not become more harmful in the future. They should also have jurisdiction over all relevant cases—including acquisitions by dominant firms of currently small, but potentially large, future competitors—and analyze past M&A control decisions more extensively to adjust future enforcement as needed. Looking beyond M&As, greater use of market investigations with appropriate remedies, together with active enforcement of prohibitions against abuse of dominant positions, could curb growing risks caused by incumbent market leaders. Authorities should assess firms' power in labor markets, in light of the note's finding that large firms can suppress wages.

Coping with the surge of the fast-paced digital economy, and ensuring it remains dynamic and competitive, also requires that competition authorities respond faster, including through greater use of interim measures—conservatory measures imposed on firms before the competition authority reaches a final decision regarding their conduct—and develop specific expertise; for example, by building digital economy units. In addition, the cross-country nature of some M&A deals and digital businesses calls for stronger international cooperation among competition authorities, including through enhanced information sharing and expansion of international best-practice guidelines.

Some competition authorities may need additional resources to implement such changes, which may require significant adjustments to existing competition policy frameworks (although not an overhaul of the consumer welfare criterion).

INTRODUCTION¹

1. Corporate market power has risen in recent decades and will likely increase further as a result of the wave of bankruptcies triggered by the pandemic, but the causes and policy implications of this rise, if any, have yet to be fully understood. Market power has increased in advanced economies, with negative, albeit so far rather moderate, adverse effects on economic growth, investment, innovation, and the labor income share (IMF 2019; Díez, Leigh, and Tambunlertchai 2018). At the same time, whether and how to address this issue is hotly debated. This partly reflects the need for further evidence regarding whether rising market power reflects growing rewards for successful entrepreneurship or a harmful decline in competition—two non-mutually exclusive explanations. Further, there are differing views regarding whether pro-competition policies, including competition policy frameworks, should be tightened—and, if so, to what extent and on what fronts (Carlton 2007; Hovenkamp and Scott Morton, forthcoming; Philippon 2019; Shapiro 2019; van Reenen 2018).

2. Against this background, this note provides new evidence on the rise of market power and its relevance for public policies and highlights possible implications, including for competition policy frameworks and macroeconomic policies. In particular, the note (i) provides fresh evidence regarding the rise in market power, including by zooming in on key industries to highlight differences in the magnitude, nature, and drivers of their rising market power; (ii) explores the role of market power in declining business dynamism and the role played by mergers and acquisitions (M&As); (iii) explores the connection between dominant firms' rising power in product and labor markets; (iv) on this basis identifies current challenges for competition policies and possible ways to address them; and (v) draws implications for the effectiveness and conduct of macroeconomic policies.

3. Some of the key questions considered in this note are the following:

- Has market power become increasingly concentrated in the hands of the same firms over time? Are there differences in market power trends and underlying drivers across industries? Are firms that have power in product markets also able to suppress wages? Has increased market power also made macroeconomic policies less effective?
- Has rising market power been associated with lower business dynamism, such as a lower share of young dynamic firms in the economy? If so, have M&As by dominant firms played a role?

¹ This note has benefited from discussions with several competition policy experts: Pinar Akman, John Asker, Dennis Carlton, Frédéric Jenny, Louis Kaplow, Ioannis Lianos, Philip Marsden, Massimo Motta, Nancy Rose, Fiona Scott Morton, Katja Seim, Carl Shapiro, John van Reenen, and Xavier Vives. The views expressed in this note are those of the authors and do not necessarily represent those of the experts. Contributions from Wolfgang Bergthaler to the competition policy recommendations and contributions from Guzmán González-Torres and Davide Malacrino to the labor market power analysis are also gratefully acknowledged. The authors thank Mu Yang Shin, Dayla Elmall, and Santiago Franco for their excellent research assistance and Ariana Tayebi for editorial support.

- Should merger control and other features of competition policy frameworks be tightened? If so, what should be done? How can the new challenges raised by the digital economy be addressed by authorities? Should international cooperation between national competition authorities be improved to address issues that are global in nature?

4. The results presented in the note suggest that rising market power is relevant for, and can be partly addressed by, pro-competition regulation and adjustments to competition policy frameworks. The main findings can be summarized as follows:

- Corporate market power has increased significantly among publicly listed firms in advanced economies since the early 1980s.² Market concentration has risen, firms' price markups over (marginal) costs have increased by about one-third, and profitability has doubled.
- While broad-based across countries and industries, this rise has been sharper in the technology and pharmaceutical industries. The overall increase in the tech sector reflects mostly the growing market share of high-markup (and usually more productive) firms, while in pharmaceuticals it is driven primarily by rising market power within incumbent firms—which can benefit the economy when rewarding major breakthroughs, such as in the case of recent Covid-19 vaccines (whose development also benefitted from government subsidies), but is likely to be harmful to the economy when rewarding excessively incremental innovations. In contrast, market power does not appear to have increased significantly in the banking industry.
- The rise in market power is concentrated among a small group of firms whose high price markups are increasingly persistent. This lack of churn among powerful firms has been concomitant with a broad-based decline in business dynamism—including a falling share of economic activity accounted for by young firms and a decline in the dispersion of growth rates across firms. While rising market power is not the dominant force behind declining business dynamism, it has been a contributing factor.
- Partly underlying the connection between rising market power and declining business dynamism is the rise in M&As, especially by dominant firms. M&As provide an exit strategy to young dynamic entrepreneurs, and they can yield economies of scale and scope that benefit consumers. However, they can also strengthen merging firms' ability to charge higher prices, weaken their incentives to keep innovating, and discourage their competitors from doing so. Industry- and firm-level analyses find supportive evidence for such adverse effects. M&As by dominant firms are associated with lower business dynamism at the industry level, with acquiring firms increasing their market power following the transaction and competitors' growth and research and development taking a hit.
- Rising market power, while making economies more stable, has also made monetary and fiscal policies less effective. Macroeconomic policies have a smaller impact on high-markup than on

² Publicly listed firms generally include the largest firms in a country and, therefore, are the most relevant from both macroeconomic and competition policy perspectives.

low-markup firms because the former have fewer incentives to adjust their output when the cost of inputs changes, and they are also more immune to shifts in external financing conditions.

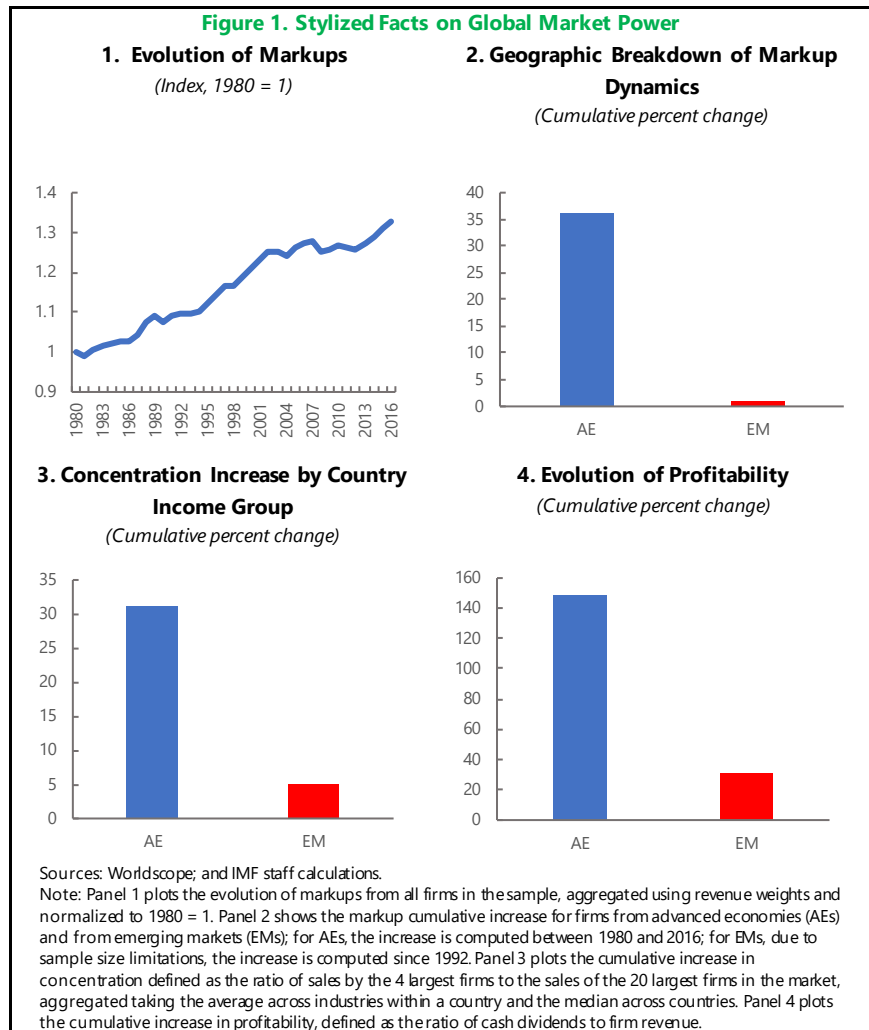
- These findings suggest that competition authorities should be increasingly vigilant when enforcing merger control. The thresholds used to determine whether a deal may be examined might be reconsidered to ensure authorities also have jurisdiction over all relevant cases. Ex post analysis of past M&A control decisions can also help adjust enforcement as needed. Given the growing persistence of market power among a small group of firms, risks of abuse of dominant position have likely risen. To identify and address risks to competition, authorities could rely more on market investigations, which should also be used to impose remedies.
- Competition authorities should also assess firms' power in input markets, including the labor market. This note finds some evidence that large firms suppress wages, possibly because increased employer concentration restricts workers' alternatives. Therefore, firms' labor market power can be a potentially relevant issue for authorities in some cases, including M&As. Authorities should also vigorously enforce prohibitions against "no-poaching" agreements—agreements between businesses not to hire each other's employees, which can harm the choice and bargaining power of workers.
- Coping with the surge of the fast-paced digital economy also requires that competition authorities be more responsive—for example, through greater use of interim measures; that is, conservatory measures imposed on firms before the competition authority reaches a final decision regarding potential anticompetitive conduct. Authorities also need to develop specific expertise—for example, by building digital economy units. In contrast, regulating some digital firms like public utilities—such as in electricity or telecommunications, in which there are some natural monopolies—would be difficult given the fast-evolving nature of digital businesses and the challenges involved in price regulation in a digital context.
- The cross-country nature of some M&A deals and digital businesses makes it necessary to strengthen international cooperation among competition authorities, including through enhanced information exchange and expansion of international best-practice guidelines. Without stronger cooperation, firms' costs and uncertainty of doing business would rise, and major existing authorities' decisions on cross-border cases would spill over globally.

DECLINING COMPETITION? THE MULTIFACETED NATURE OF RISING MARKET POWER

A. Rising market power and declining business dynamism

5. Corporate market power has increased significantly since 1980, especially among publicly listed firms in advanced economies.

The primary measure of a firm's market power is its markup—the ratio of price to (marginal) production cost. Firm-level analysis using data from 82 countries finds that “global” markups have increased more than 30 percent, on average, since 1980 (Figure 1, panel 1).³ This increase is concentrated among advanced economies, where markups have increased more than 35 percent (Figure 1, panel 2). Further, alternative measures also indicate a significant increase in market power among advanced economies. Industry concentration has increased more than 30 percent since 1980 (Figure 1, panel 3). Likewise, profitability, measured as the ratio of cash dividends to sales, increased more than 140 percent, with the ratio rising from 1.5 percent to over 3 percent, on average (Figure 1, panel 4).⁴ In contrast, among emerging market economies all market power measures have remained mostly constant.



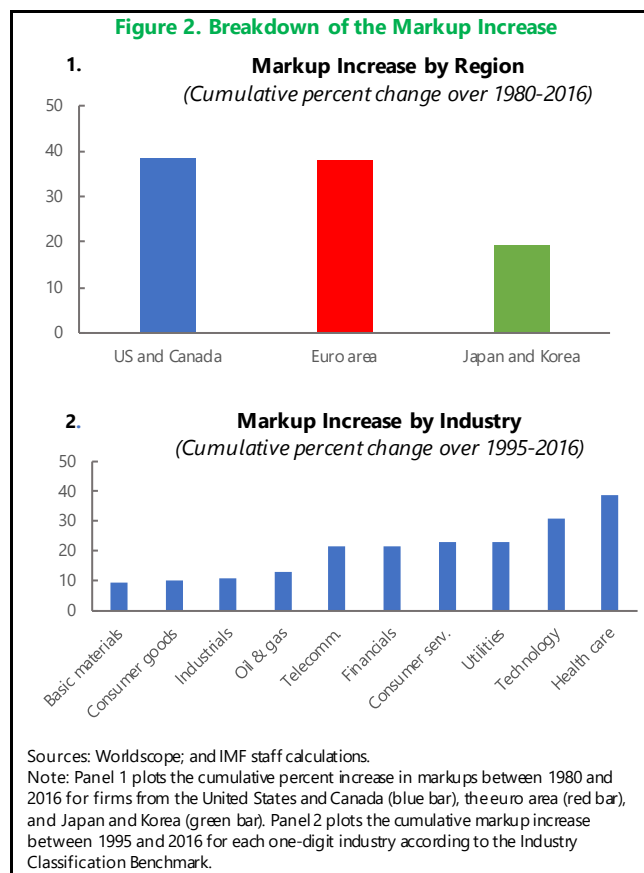
³ This section uses data from Worldscope on publicly listed firms. Although the data set covers a broad set of countries (Online Annex I), the coverage for emerging markets is much more limited than for advanced economies given the much smaller number of listed firms in the former group.

⁴ This profitability measure follows De Loecker, Eeckhout, and Unger (2020). As they argue, while dividends may vary for reasons unrelated to profit flows, in the long run and given the large number of firms employed in the analysis, averaged dividends should be a good indicator of profits. Profitability is also found to increase if earnings before interest and taxes (EBIT) is used instead, although the resulting measure is more volatile.

6. The increase in market power is broad-based across regions and industries; however, there also are substantial differences (Figure 2). The increase in markups among North American (US and Canadian) firms is about the same as that of euro area firms (almost 40 percent) but two times larger than the increase among Asian (Japanese and Korean) firms.⁵ At the same time, while markups have increased among all broad industries, there is substantial cross-industry heterogeneity. For instance, the increase among firms in the health care and technology industries is more than three times larger than among firms in the industrials and consumer goods industries.⁶

7. The drivers and macroeconomic implications of rising market power are likely to differ across industries. Three industries have been frequently mentioned in public debates and are analyzed next: technology, pharmaceuticals, and banking.

While all three industries have been under the spotlight, each carries a different perception. Market power in high tech is usually linked to winner-takes-all dynamics driven by powerful network effects—network use by one user benefits other users, directly or indirectly. Market power in pharmaceuticals is instead associated with strong intellectual property rights—most prominently, drug patents. Market power in banking, in turn, relates to concentration—including by policy design due to financial stability considerations.



⁵ It should be noted that when considering the broader economy (including private firms, which account for a larger share of economic activity in Europe than in the United States), the increase in Europe is smaller than in the United States (IMF 2019). Further, profitability in the United States has also increased more than in Europe.

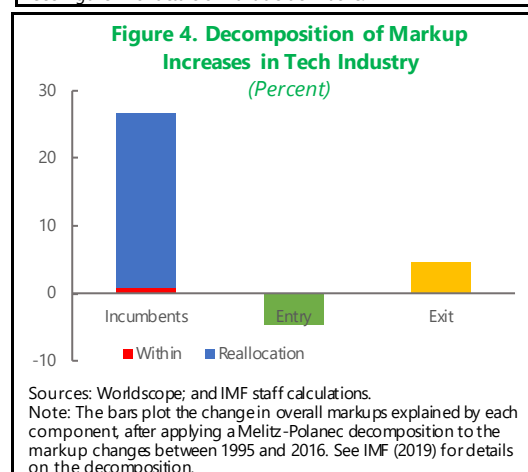
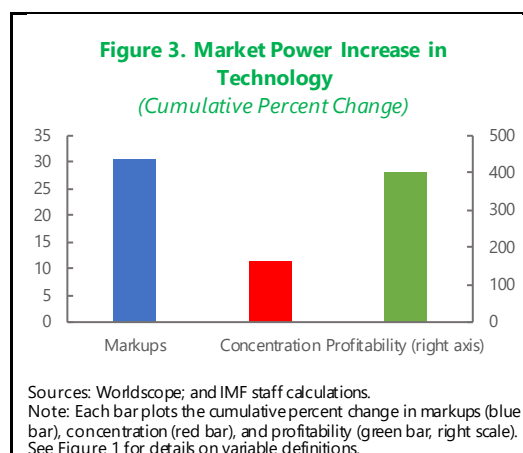
⁶ The analysis by industry uses the Industry Classification Benchmark (ICB) and starts in 1995 due to the small sample size for some industries in previous years. One of the main components of the health care industry is pharmaceuticals—which is explored in depth in the next section. It should also be noted that the financial industry includes bank and nonbank institutions; as discussed below, traditional market power measures such as markups may not be appropriate for banks, especially in the context of very low policy interest rates.

B. Market Power in Technology: Rising through Market Share Reallocation

8. **Different measures indicate a sizable increase in market power in the technology industry (Figure 3).**⁷ Markups increased more than 30 percent between 1995 and 2016. Similarly, concentration increased more than 10 percent globally, with sales by the top 4 firms accounting for about two-thirds of total sales by the top 20 firms in 2016. Finally, the increase in profitability was even stronger; average cash dividends, as a share of sales, increased from 0.7 to 3.5 percent.

9. **This rise is almost entirely explained by the growing market share of firms with strong market power (Figure 4).** An economy's aggregate markup can increase because (i) existing (incumbent) firms increase their markups ("within" effect); (ii) high-markup firms gain market share without increasing their markups ("reallocation" effect); (iii) new high-markup firms enter the market ("entry" effect); or (iv) low-markup firms exit ("exit" effect). Figure 3 suggests that the reallocation effect is, by far, the main driver of the observed markup increase, accounting for about 95 percent of the total change. Since the start of this decade, however, incumbent firms have increased their markups more substantially, driving 15 percent of the overall increase.

10. **These findings are consistent with the surge of dominant firms.** As high-markup firms become larger, they cement their position as industry leaders, and market concentration rises. The effects on growth are ambiguous a priori. On the one hand, since these firms tend to be more productive than their competitors, their market share gains could be growth-enhancing in the short run. On the other hand, if these dominant firms become hard to compete with; for example, because they further entrench their market positions by acquiring other firms, they could become less innovative over time and also discourage their (current and potential) competitors from innovating too. This could reduce business dynamism and slow overall economic growth (Aghion and others 2019; Akcigit and Ates 2019a, b). These issues are explored further below.

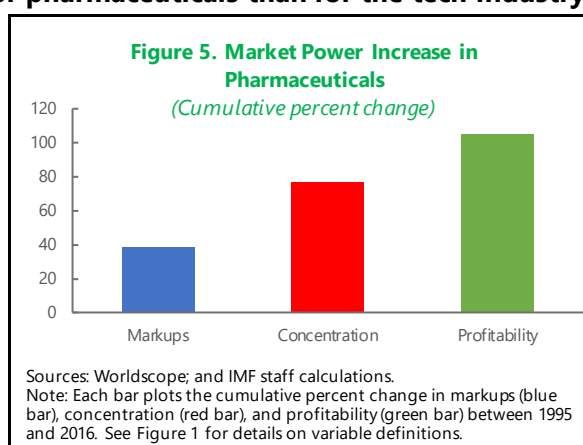


⁷ The technology industry is defined as industry ICB = 9 ("Technology") and its subsector ICB = 953 ("Software & Computer Services").

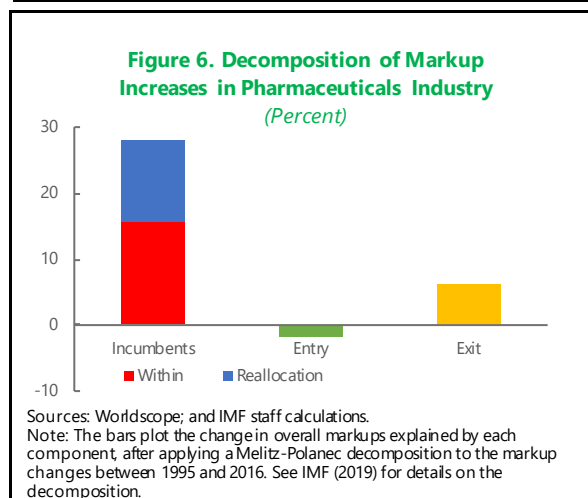
C. Market Power in Pharmaceuticals: Rising within Incumbent Firms

11. Pharmaceuticals is a special industry in which rewards from innovation in the form of intellectual property rights give rise to market power. Patents (and the corresponding monopoly and market power they create) are needed to incentivize new research and cover the development expenses of bringing new products to the market; a case in point is the successful recent race to Covid-19 vaccines—which also benefitted from government subsidies. At the same time, excessive innovation rewards (and associated market power) due to extensive patent protection from minor improvements to existing drugs can hurt consumers and stifle innovation. Policies must aim to strike the right balance between incentivizing major breakthroughs and making pharmaceuticals available and affordable. Therefore, there is a case for moderate market power—neither too low nor too high.

12. Market power has increased even more for pharmaceuticals than for the tech industry (Figure 5).^{8,9} Since 1995, markups have increased almost 40 percent, concentration has risen almost 80 percent—with the ratio of sales by the top 4 firms to the top 20 firms climbing from roughly 50 to 90 percent—and profitability has doubled, with cash dividends accounting for more than 7.7 percent of sales by 2016. Both concentration and profitability are significantly larger than in the tech industry.



13. In addition, unlike in the tech industry, the rise of market power in pharmaceuticals reflects primarily increased markups charged by incumbent firms (Figure 6). Their higher markups account for more than half of the global increase in markups in the industry, while market share reallocation toward high markups accounts for only about a third. As in the tech industry, the role of net entry of firms is comparatively minor.



14. The magnitude and nature of the market power increase in the pharmaceutical industry warrant further analysis of intellectual property rights systems. While the industry's business model requires relatively large operating profits as rewards to major innovations, there are concerns about some features of current intellectual property rights systems, such as excessive

⁸ The analysis is conducted using data for industry ICB = 457 ("Pharmaceuticals & Biotechnology").

⁹ The large markup increases documented for the technology and pharmaceuticals industries persist even after controlling for intangible assets and overhead costs.

rewards to minor incremental innovations, so-called “patent thickets”, and “killer acquisitions”. Patent thickets refer to overly complicated legal setups under which, in order to use a given technology, a firm must seek agreements with many different parties (Shapiro 2001). Killer acquisitions are cases in which a firm acquires a patent (or an entire firm holding an existing or prospective patent) and decides not to commercialize it because it would compete with another patent owned by the acquiring firm. More work is needed about whether, and if so what, government intervention might be needed in these areas, with the answer likely to vary across jurisdictions given the wide cross-country variation among advanced economies in the strength of intellectual property rights in general and the relevance of these issues in particular.

D. Market Power in Banking: Mixed Signals

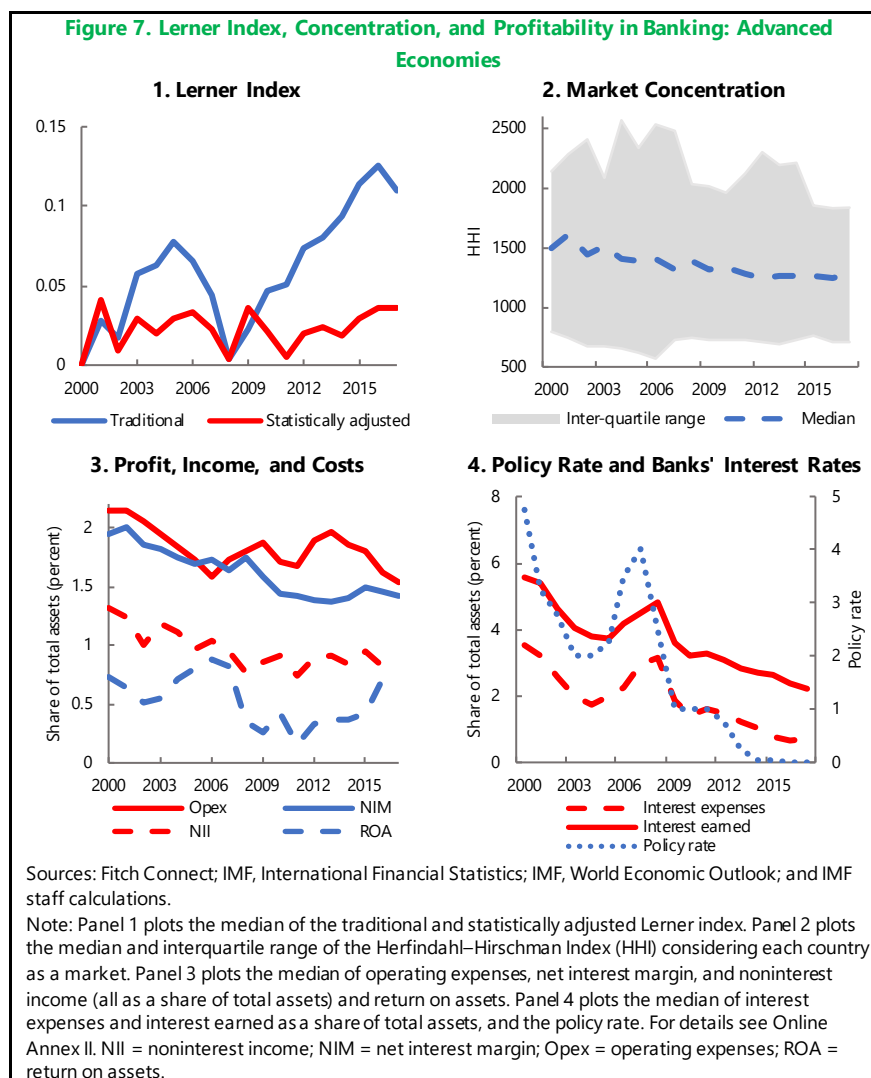
15. The case for unrestricted competition in banking is not clear. On the one hand, as in other sectors, competition can be beneficial because it lowers the cost of services for consumers and firms and improves credit allocation. On the other hand, strong competition might pose risks to financial stability and limit access to finance, with implications for the rest of the economy given banks’ critical intermediation functions. In particular, competition can erode banks’ franchise value, increase their risk-taking incentives, and threaten financial stability. Competition can also weaken banks’ incentive to invest in relationship lending (because there is less room to exploit information advantages and extract rents from firms) and reduce access to finance for firms that depend on such lending (such as small and medium-sized enterprises). The trade-off between strong competition and financial stability can become particularly acute during financial crises.

16. The path of market power in the banking sector following the global financial crisis is a priori unclear and warrants some quantitative investigation. In some countries, the crisis led to bank consolidation as stronger banks took over those that were failing—often encouraged or facilitated by resolution authorities, which could have contributed to a decline in competition. Enhanced bank regulation and supervision may also have fostered incumbents’ market power; for instance, by increasing the fixed component of compliance costs and, hence, deterring entrants. But possible offsetting effects include greater participation of (less regulated) nonbank financial institutions in intermediation, as well as structural changes such as the rise of fintech providers as new competitors to banks.

17. Looking across different indicators, it does not appear that market power in banking has increased in advanced economies.¹⁰ An indicator of market power that is often used in banking is the Lerner index, which is closely related to the markups considered above since it is

¹⁰ The analysis focuses on the change in measures of market power, not on their levels. Therefore, the findings need not imply that the level of competition in banking is appropriate.

defined as the difference between price and marginal cost, expressed as a share of the price. A simple Lerner index would seem to point to a marked increase in market power in advanced economies, especially after the global financial crisis (Figure 7, panel 1).^{11,12} However, this upward trend is the mechanical result of falling policy rates.^{13,14} Since the global financial crisis, bank interest expenses have declined along with the drop in policy rates (Figure 7, panel 4). Interest income on loans has also declined, explaining why net interest margins (NIMs) have remained fairly flat. A cross-country regression analysis is conducted to explore the impact of policy rates on the Lerner index, taking also into account cyclical factors proxied by GDP growth (see Online Annex II for details). The analysis shows that lower policy rates are significantly correlated with a higher Lerner index, particularly after the crisis.



¹¹ The price is captured by the share of income to assets, while the marginal cost is estimated from a trans-log cost function that includes deposits, wages, and other expenses as inputs. The analysis using the Lerner index is conducted using data on 67 countries (27 advanced and 40 emerging market and developing economies) between 2000 and 2017. Trends similar to those discussed here are evident using alternative measures, such as the Boone index. Online Annex II provides further details.

¹² The increase in market power in advanced economies, as captured by a simple Lerner index, is common among different types of institutions (commercial versus investment banks, large versus small banks, banks with initial high versus low Lerner indices), as well as across countries (United States versus Europe, and countries with many mergers and acquisitions versus others). See Online Annex II.

¹³ Expansionary monetary policy exerts downward pressure on both the interest rate earned by banks on their assets and on the interest paid on their liabilities. The Lerner index depends on the ratio between the two, and it increases when this ratio decreases. Importantly, when interest rates are close to or below zero, the Lerner index becomes less informative as an indicator of market power because the ratio between interest paid and interest earned mechanically moves toward 0 and pushes the index toward 1, its maximum value. See Online Annex II.

¹⁴ It has been argued that lower long-term interest rates might also increase market concentration in other industries, by increasing the market value—and thereby reducing the cost of equity—of leading firms more than that of lagging firms (Liu, Mian, and Sufi 2019).

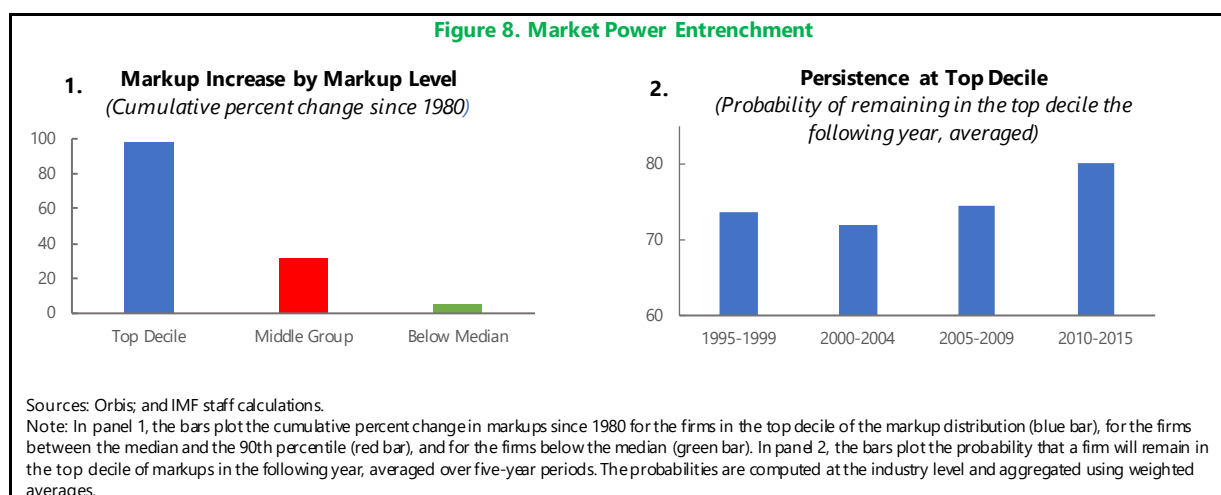
Once the Lerner index is corrected for these factors, it no longer shows an increase (Figure 7, panel 1); as with the unadjusted Lerner index, this holds true for both the United States and European countries (Online Annex II). Consistent with this finding, other indicators of market power, such as concentration and profitability (Figure 7, panels 2 and 3), do not display an upward trend either. Among emerging market and developing economies, the Lerner index has oscillated around a similar level since the mid-2000s, while market concentration has dropped, and profits and income have remained relatively flat (see Online Annex II).

18. Policymakers need to continue to pay attention to evolving competition in banking.

The policy response to the global financial crisis does not seem to have resulted in a structural increase in market power—which is reassuring. Further, at least so far, there is little indication that banks' profitability has been hit by the low-interest-rate environment. Whether the (adjusted) Lerner index remains stable will likely depend on how long rates stay at the effective lower bound and how banks respond. The longer rates remain low, the greater the pressure on bank profits will be, but at the same time, the drop in profitability could trigger greater consolidation and, all else equal, result in less competition among banks. Future markups will also depend on the extent to which banks can overcome structural challenges, such as the rise of fintech, that could weaken their market power.

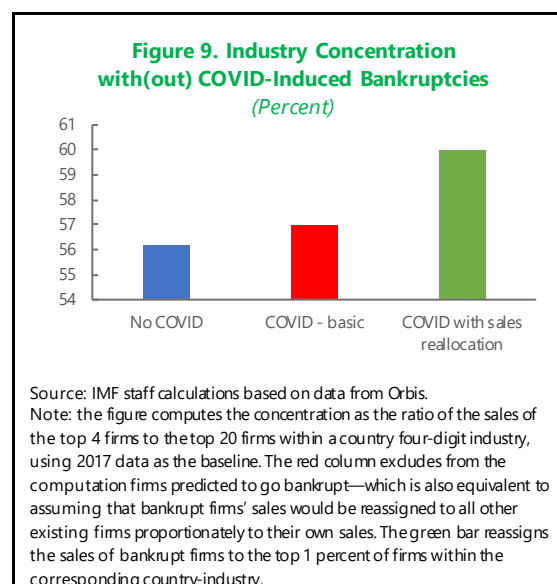
COMPETITION CONCERNS: ENTRENCHMENT, DECLINING BUSINESS DYNAMISM, AND M&AS

19. **A small group of high-markup firms have increasingly entrenched market power.** Firms at the top decile of the markup distribution more than doubled their markups, while firms at the bottom half of the distribution increased theirs by just 5 percent (Figure 8, panel 1). Furthermore, the likelihood of persistently remaining a high-markup firm has increased since 2000. If a firm has one of the top 10 percent highest markups, there is now almost an 85 percent chance this will still be the case the following year—up almost 10 percentage points since the second half of the 1990s



(Figure 8, panel 2). This declining firm turnover among the group of high-markup firms hints at a growing lack of competitors for dominant firms.¹⁵

20. COVID-19 will strengthen this trend. The ongoing crisis will result in a wave of bankruptcies that will hit small and medium-sized enterprises harder than larger firms, particularly in the most affected industries (Díez and others, forthcoming). The latter group of firms—particularly the largest ones—are generally more profitable, more likely to have access to sizable credit lines, and also more likely to be bailed out by governments should they be on the brink of bankruptcy. Firm-level analysis using Orbis data, which includes listed and private firms, suggests that the pandemic-driven wave of bankruptcies will lead to increases in industry concentration and market power. As an illustration, in a no-COVID-19 scenario, the median



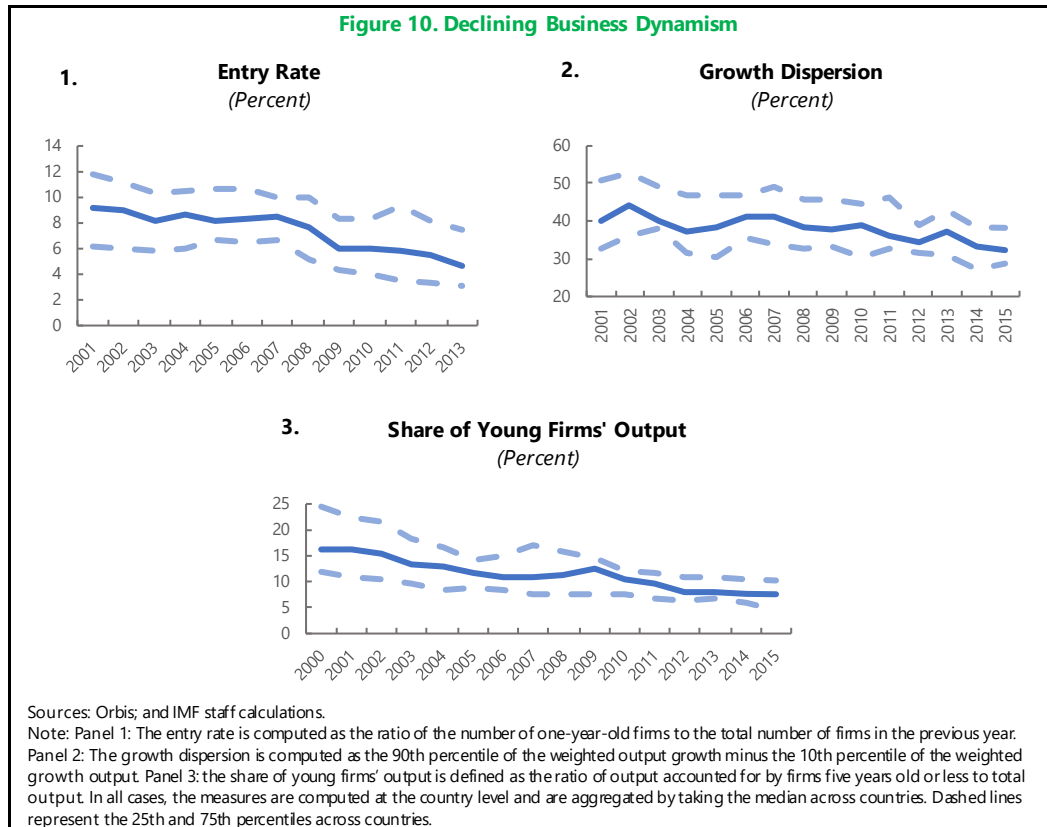
concentration ratio (the share of the top 4 firms in the total sales of the top 20 firms within a narrowly defined [4-digit] sector) across the 21 countries included in the analysis would be about 56 percent, while it could rise by 4 percentage points, to 60 percent, as a result of the pandemic if the sales of bankrupt firms were to be reassigned to leading firms within their sector (Figure 9). The pandemic-driven shift to online activities is also benefiting the large technology companies, which could further strengthen market concentration in their industries.

21. Rising market power has been associated with declining business dynamism.¹⁶ To assess business dynamism across the whole economy, a data set (Orbis) that includes both publicly listed and privately held firms is used. The analysis, which covers 28 economies since 2000, shows declines in (i) the rate of entry of new firms, implying that incumbent firms face an increasingly small number of new competitors (Figure 10, panel 1); (ii) the dispersion of growth rates across firms, suggesting that there are fewer firms with very fast growth, and less market experimentation more broadly (Akcigit and Ates 2019a, b) (Figure 10, panel 2); and (iii) the contribution of young firms (five years old or younger) to aggregate output (Figure 10, panel 3). Detailed empirical analysis finds a strong association between such signs of falling business dynamism and rising market concentration at the country-industry level. For instance, focusing on countries and industries with the 25 percent

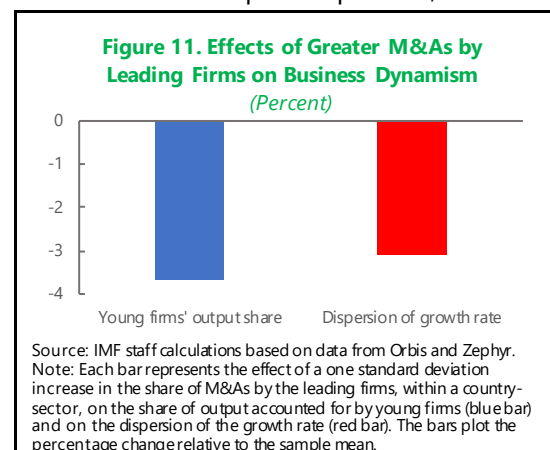
¹⁵ This pattern echoes the productivity divergence between high- and low-productivity firms, as well as the growing entrenchment at the productivity frontier in advanced economies (Andrews, Criscuolo, and Gal 2016).

¹⁶ Business dynamism measures how well an economy's *creative destruction* process is working—an up-or-out process by which unproductive incumbent firms are pushed out of the market by new entrants or other more productive incumbents or both. A growing body of literature has investigated the underlying causes behind this trend: Akcigit and Ates (2019a, b) highlight a decline in knowledge diffusion and Hopenhayn, Neira, and Singhania (2019) underscore population growth, while Cooper, Haltiwanger, and Willis (2018) emphasize changes in adjustment costs. This note argues that M&As are another important force in understanding business dynamism.

largest increases in concentration, these estimates might explain about 10 percent of the overall decline in the share of output by young firms (roughly 0.9 percentage points).



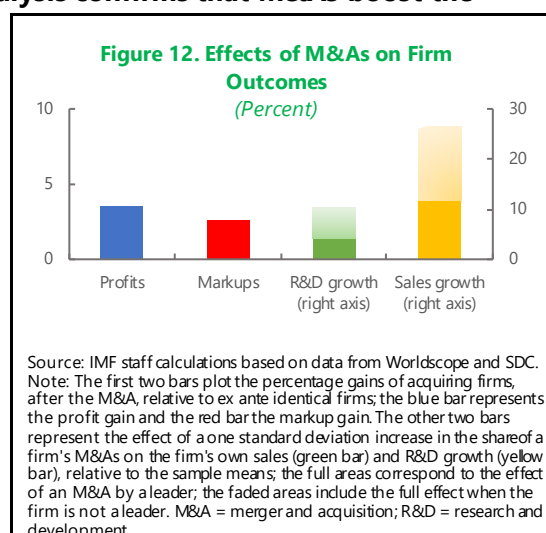
22. The connection between rising market power and declining business dynamism partly reflects the role of M&As, especially by dominant firms. While M&As can generate efficiency gains and incentivize entrepreneurial activity by offering an exit strategy to young dynamic entrepreneurs, they can also reduce competition. In theory, intense competition, especially between close competitors, induces more innovation-enhancing investment to “escape competition,” and thereby greater business dynamism (Akcigit and Ates 2019a). In such an environment, when market leaders strengthen their lead over followers through M&As, the latter can become discouraged from competing and invest less in R&D. Likewise, potential entrants may get discouraged, and new firm entry may fall. As the competitive pressure on market leaders diminishes, they may in turn lower their own innovation effort, further amplifying the decline in business dynamism. Analysis conducted at the country-industry level, using Orbis merged with Zephyr M&A data, finds support for the theoretical prediction that business dynamism declines when leading firms conduct relatively more M&A deals (Figure 11). For instance, a one standard deviation increase in the share of M&As conducted by



leading firms is associated with slightly less than half a percentage point decline in the share of output accounted for by young firms—corresponding to a 3.5 percent fall relative to the average share of output accounted for by young firms. Taken at face value, and focusing on countries and industries with the 25 percent largest increases in acquisitions by leading firms, these estimates may explain about 3 percent of the overall decline in the share of output by young firms and about 9 percent of the decline in growth rate dispersion. These findings point to a chilling, albeit moderate, effect of some M&As conducted by dominant firms on overall business dynamism—over and above the effect of other factors, such as demographics or the stringency of intellectual property rights—and hint at the need for competition policies to take a broad, dynamic perspective when reviewing deals.

23. In line with this overall finding, empirical analysis confirms that M&As boost the growth of acquiring firms less when these happen to be market leaders (Figure 12).

Two types of firm-level analyses are conducted to assess the effects of M&As on acquiring firms' behavior, based on a data set obtained by merging the Worldscope firm-level data on the financial variables used above with an additional data set (SDC) on M&A deals for the set of 28 countries. First, a simple descriptive analysis is carried out that compares the performance of acquiring firms after their M&A deal with that of firms with similar (pre-M&A deal) characteristics. Second, panel regressions are run to assess the effect of a firm's M&As (as a share of the total number of M&A deals in the country-industry considered) on the



growth rate of its sales, employment, and R&D, taking into account other firm characteristics and factors specific to the country-industry considered (through a country-industry-year fixed effect). Both approaches yield consistent findings: following an M&A, the acquiring firm increases its profitability, markups, R&D, and sales growth. For instance, right after the acquisition, the typical acquiring firm obtains 2.6 percent higher profitability and 3.6 percent higher markups (Figure 12). Similarly, a one standard deviation increase in a firm's share of M&As is associated with about a 25 percent increase in sales and employment growth and a 10 percent rise in R&D growth relative to the respective average growth rates. However, these pro-growth effects of M&As are greatly reduced if the acquiring firms happen to be market leaders (in terms of sales within a given country-industry), possibly reflecting weaker incentives for such firms to grow further when they become even more dominant.

24. Competitors are more hurt from M&As by market leaders, possibly further explaining why these deals are associated with weaker business dynamism (Figure 13). Similar analysis to that just described indicates that a firm's growth of sales and R&D spending are reduced when its main competitor (defined as the firm with closest sales values within the same country and industry)

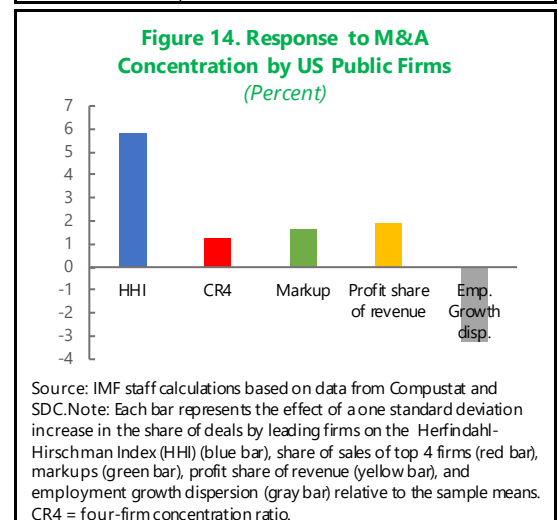
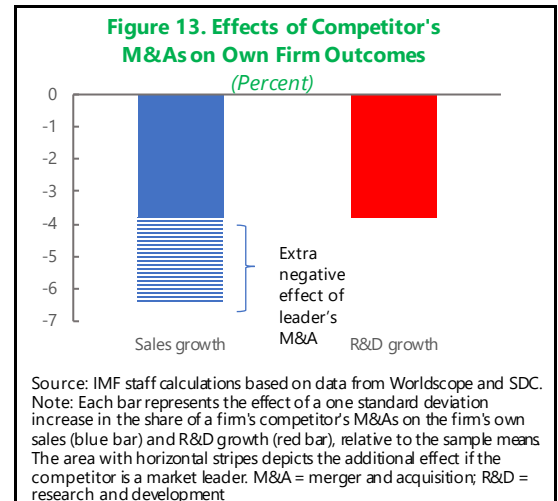
conducts relatively more M&As (Figure 13). For instance, a one standard deviation increase in the share of deals by a firm's competitor reduces its sales and R&D growth by about 4 percent, relative to the average sales and R&D growth rates. Further, the analysis indicates that the firm's growth is more adversely affected when the competitor happens to be a market leader. This evidence suggests that M&As can act as a drag on growth, especially when they involve dominant firms.

25. Further analysis focused on US firms delivers results consistent with the cross-country analysis (Figure 14). A similar exercise is conducted using Compustat, a database of US listed firms. The analysis finds that a shift in M&A activities toward the largest firms in a sector is associated with lower business dynamism. In particular, the Herfindahl-Hirschman Index (a widespread measure of industry concentration), the share of the largest four firms, the profit share of revenue, and markups all increase—and the dispersion of firms' growth rates decreases—when the M&A activities by the largest firms in the sector considered intensify.

MARKET POWER IN LABOR MARKETS

26. Competition law and policy frameworks generally cover not only the market power of sellers, but also that of buyers. In the United States, for example, the Sherman Act addresses risks of excessive corporate market power in input markets—so-called monopsony power. One input market that has become the subject of renewed attention in recent years is the labor market. A firm may exercise power in the labor market if it has a strong ability to set the working conditions, notably the wages, of some or all of its workers—possibly because they have few immediate alternatives. Recent literature finds some evidence of significant and rising power of large employers in local labor markets (Azar and others 2018; Benmelech, Bergman, and Kim 2018).

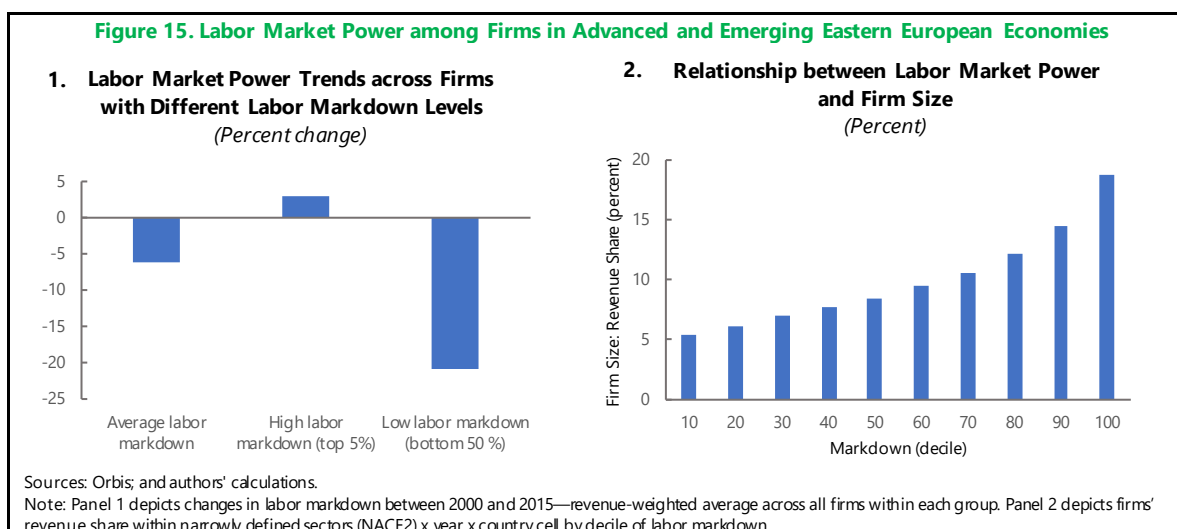
27. A firm's power in labor markets can be measured in several ways, including by gauging its ability to set lower wages while still retaining its workers. Most recent studies focus on employer concentration in local labor markets, with the advantages and limitations—notably the difficulty of defining the relevant labor market given workers' mobility across geographic regions and professions—of concentration indices. Another approach focuses on particular institutions or regulations (such as unions, collective bargaining, and job protection legislation) that may affect the bargaining powers of employers and workers. For example, recent IMF work finds evidence that



labor market deregulation contributed to a small fraction of the trend decline in labor income shares in advanced economies during the past three decades (Ciminelli, Duval, and Furceri 2021). A third approach followed here is to measure labor market power through the (lack of) sensitivity of workers' labor supply to the wage offered by their firm. In this setup, the less workers respond to a wage cut by taking a job at another firm, the wider the gap between their (marginal) productivity and their wage. The wider this gap—the so-called labor markdown—the greater the power of employers over their workers. This (firm-specific) labor supply elasticity is derived by extending the approach of De Loecker and Warzynski (2012) to labor market power, using the same Orbis database as above (see Online Annex III).

28. Cross-country firm-level analysis points to some connection between firms' power in product and labor markets. Bearing in mind the limitations of the analysis, the following findings stand out (Figure 15):

- While firms' labor markdown does not seem to have risen across the board, a small fraction of already powerful firms slightly increased their labor market power between 2000 and 2015 (Figure 15, panel 1). Labor market power trends have also been highly heterogenous across industries, with some evidence of an increase in manufacturing but a decline in finance and insurance. Using a similar approach, Hershbein, Macaluso, and Yeh (2019) show a larger increase for the United States than found here for other advanced economies.¹⁷
- Larger firms, which generally have a larger footprint in local labor markets, tend to have greater labor market power (Figure 15, panel 2). This means that even though these firms may be paying higher wages than other firms, they may pay less than others with respect to workers' (marginal)



productivity—which tends to be higher in larger, more productive firms. There is also evidence that a fraction of powerful firms in product markets are also able to suppress wages. Finally,

¹⁷ The analysis excludes the United States due to lack of coverage of labor cost or employment data in Orbis.

empirical analysis also finds that powerful firms in product markets have gained more labor market power than other firms since the early 2000s.

COMPETITION POLICY IMPLICATIONS

29. Adjustments to competition policy frameworks appear to be needed, tailored to national circumstances, both in general and to address the specific challenges raised by the surge of the digital economy. This is because corporate market power has been rising, with adverse consequences for market dynamism and growth, as shown in the previous sections and in IMF (2019). In addition, rising market power has weakened the effectiveness of monetary and fiscal policies (Boxes 1 and 2).

30. Most countries have competition laws that prohibit businesses from engaging in anticompetitive behavior—with significant differences across jurisdictions. These laws prevent M&As where they may harm competition and include prohibitions against anticompetitive agreements such as cartels and other forms of collusion. Competition laws also impose restrictions on the conduct of firms with a leading market position to prevent them from engaging in improper conduct to maintain or abuse their position. Although more than 130 countries have adopted competition laws, there are some differences in the functioning of competition policy between jurisdictions due to variations in legislation, court interpretations, regulatory culture, and the economic and political context.¹⁸ For instance, competition authorities in the European Union and Japan are able to make a first instance decision to prohibit an M&A or impose a fine on conduct, which can subsequently be appealed to a court or tribunal. In contrast, in the United States and Canada, the competition authorities will investigate but must get a court or tribunal to prohibit an M&A or anticompetitive conduct.¹⁹

31. Strengthening competition policies does not require a radically different approach to the fundamentals of competition policy—such as moving away from a consumer welfare criterion—but, rather, significant adjustments to existing policy frameworks. There has been some debate recently about whether this criterion, which lies at the core of most competition policy frameworks, might be too narrow to address all the economic issues raised by corporate market power in the digital age (Khan 2017). The rest of this section discusses the competition policy implications of the analysis presented above and highlights further specific challenges associated with the rise of the digital economy. A broad interpretation of the existing welfare criterion—paying

¹⁸ This section focuses mostly on advanced economies, where the rise in market power has been concentrated and new competition policy issues have emerged, as shown above. Many emerging market and developing economies have different market structures and regulatory priorities.

¹⁹ There are also variations in the substantive laws that are applied. For example, in the United States firms are prevented from engaging in “monopolization”—the creation or maintenance of a monopoly position using inappropriate conduct. However, the equivalent prohibition in the European Union relates to the abuse of a dominant position. Some of these prohibitions will preclude conduct in the European Union that is not captured under monopolization in the United States, such as excessive pricing. There has generally been less divergence between jurisdictions on prohibition against cartels, and to some extent on M&A control, than on abuse of dominance.

due attention to maintaining high innovation incentives and strong industry dynamism, for example—can give competition authorities an appropriate benchmark for maintaining strong competition in digital and other markets. Regulatory interventions can usefully complement competition policy actions, as was the case in the context of telecommunications deregulation in the past, for example. However, decision-making processes should be designed to ensure that regulators’ actions do not inadvertently end up strengthening, rather than weakening, the market power of established firms.

32. Authorities must, at the same time, remain flexible in allowing appropriate exemptions to competition law and policy in the presence of extraordinary events, such as the COVID-19 pandemic. Such measures may involve exceptions to rules that usually restrict the support governments can offer to businesses that would otherwise go bankrupt, such as easing state-aid restrictions in the European Union. Relevant recent examples of such policies involve tax exemptions for affected businesses—widely used in response to natural disasters—direct government grants, state guarantees for loans, safeguards for banks that channel aid to the real economy, and short-term credit for exporting firms. Other examples include guidance to firms on legitimate coordination between firms to allocate scarce critical supplies to consumers, such as in the grocery sector in the United Kingdom. While these measures would weaken competition in normal times, they can become appropriate under these extraordinary circumstances, provided they are exceptional (temporary). Indeed, such measures have been effective in steering resource allocation massively and rapidly in the past, particularly during wartime. It is important that they be designed to maintain some degree of competition, however. Competition authorities can also help mitigate the potential anticompetitive effects of such measures by closely monitoring the pricing of benefiting firms, by working with consumer protection agencies to ensure that firms do not take advantage of the crisis by abusing their dominant position more broadly, and by providing specific guidance to firms on legitimate coordination.

A. Addressing Rising Market Power across the Economy

M&A Enforcement

33. Competition authorities need to be increasingly vigilant due to the growing risks of underenforcement in merger control. Rising market power has already had some adverse macroeconomic consequences, and these could grow bigger if competition were to weaken further (IMF 2019). As shown in the section above, M&As—especially those involving leading firms—can harm competitors and weaken business dynamism, with associated risks for innovation and growth over the long term. Such effects are difficult to factor into competition authorities’ analysis and decisions. So are the potential effects of M&As on product quality—and nonprice parameters more broadly—and incentives for tacit collusion among remaining firms (Miller and Weinberg 2017). In addition, while competition authorities should not block deals that do not harm competition, they may need to bring test cases that clarify the application of the legislation.

34. Competition authorities need to have jurisdiction to review all M&As that may have an impact on future competition, including some seemingly smaller deals. Legislation typically empowers competition authorities to review M&As where certain jurisdictional thresholds are met, typically, one or a combination of revenue, value of the acquisition, or market share. In general, if revenue thresholds are too high, relevant M&As can be missed by competition authorities (Wollman 2019). Where there is evidence that existing jurisdictional thresholds do not enable the competition authority to review all M&As that may have a significant impact on competition, these thresholds should be reconsidered and legislation amended. For example, revenue-based thresholds could be insufficient to review deals involving businesses of high value but low current revenue, such as early-stage pharmaceutical firms with substantial intellectual property or digital businesses that have not yet monetized consumer engagement or data.²⁰ For this reason, Germany and Austria introduced new thresholds based on the deal price. Further, it should be examined whether competition authorities should also be notified of cases where a series of small acquisitions by the same acquirer that may have a significant cumulative impact.²¹ At the same time, because M&A filings involve costs to both businesses and regulators, thresholds should be proportional to the risk of harm.

35. Competition authorities would also benefit from evaluating previous M&A control decisions to identify ways to improve future enforcement. These ex post analyses can be used to evaluate competition authorities' predictions of the impact of M&As and whether different approaches should be taken in similar circumstances, whether in the same jurisdiction or internationally. These analyses can also be used to establish whether systematic errors are being made in any particular areas (Lear 2019; Neumann and Sanderson 2007). Shapiro (2018) argues that if competition policy is appropriately balanced, there will be some false positives ex post (blocking a few deals that might not have harmed competition) to avoid having too many false negatives (allowing deals that should have been blocked).

36. Authorities should also assess the impact of corporate power in input markets where relevant—notably in labor markets. As shown above, there is some tentative evidence that large firms hold power in labor markets, making this a potentially relevant issue for competition authorities in some cases, including M&As. Authorities should also vigorously enforce prohibitions against “no-poaching” agreements—agreements between businesses not to hire each other’s employees, which can harm the choice and bargaining power of workers.

²⁰ For example, in February 2020, the US Federal Trade Commission (FTC) issued special orders to several large technology firms requiring them to provide information about previous acquisitions over the past 10 years, not reported to the antitrust agencies under the Hart-Scott-Rodino Act, to see whether additional transactions should be subject to premerger notifications. Further, in December 2020, the FTC and a group of 48 Attorney Generals both filed lawsuits alleging Facebook engaged in anticompetitive practices, in part relating to its acquisitions of Instagram and WhatsApp.

²¹ For example, new legislation in Germany would allow the competition authority to request that specific large businesses notify it of much smaller acquisitions in certain sectors.

Abuse of Dominant Positions and Market Investigations

37. The effects of corporate market power can be partly mitigated by enforcing restrictions on the abuse of a dominant position more actively. This can prevent dominant firms from using their market power to harm competition to the detriment of consumers. Enforcement in these areas should help ensure that market power does not become entrenched and that firms compete on their merits, based on price, quality, and innovation.²²

38. Market investigations and sector inquiries can be used to a greater extent, including by imposing remedies when evidence of anticompetitive behavior is found. Market investigations are helpful to analyze how markets are functioning and to identify anticompetitive behavior. They should also be used to impose remedies on market participants or recommend changes to legislation to improve competition. For example, in the United Kingdom the Competition and Markets Authority has the power to conduct in-depth market investigations, which can lead to changes in the conduct of firms or requirements to sell parts of their business to improve competition. These could be initiated particularly for markets that are being transformed by technology and critical infrastructure such as transport, energy, and telecommunications and markets that do not appear to be operating efficiently. However, while market investigations can be an effective tool to improve competition, they can also be resource-intensive.

39. Additional resources may well be needed for some competition authorities to conduct more market and M&A investigations and to do so in greater depth, develop new sectoral expertise, evaluate previous activity, and strengthen cooperation with regulators within the same jurisdiction and with competition authorities from other jurisdictions (see below). Yet there is evidence that the budgets of some competition authorities have not kept up with the increase in the size of the economy or the number of M&As. For example, during 1980–2018, the combined budget of the Federal Trade Commission and the Department of Justice Antitrust Division was roughly halved as a share of US GDP, and it fell even more (in real terms) compared with the sharply higher total number of deals reported to the authorities under the Hart-Scott-Rodino Antitrust Improvements Act.²³

B. Responding to the Rise of the Digital Economy

40. The rise of the digital economy puts new pressure on regulators—requiring quicker decisions in an environment that is more complex and fast-moving. These challenges result from the combination of multiple-sided markets (such as digital platforms), zero-monetary-price services (such as free consumer access to certain services), the buildup of new ecosystems, and the role of data. Further challenges include network effects (network participation by some users

²² Policies toward state-owned enterprises—in particular, ensuring that private firms are on a level playing field with them—can also have a substantial impact on the extent of competition in markets.

²³ There is also an ongoing debate about whether there has been a weakening of merger control in the United States. For example, Kwoka (2018) argues that there was a sharp decline in the likelihood of a challenge from the US Federal Trade Commission to mergers resulting in more than four remaining competitors.

benefits other users) and economies of scale and scope; while these are not specific to the digital economy, they are particularly strong in digital markets and tend to create winner-takes-all dynamics. Data collection, together with algorithms and artificial intelligence, further strengthens such dynamics and presents new risks of hard-to-detect anticompetitive collusion. Regulators also face the challenge of assessing the impact of firms' activity in innovative and fast-moving markets, where the future is often difficult to predict. Several recent reports discuss how competition policy could be improved in this regard—Furman and others (2019); Cremer, de Montjoye, and Schweitzer (2019); U.S. House Judiciary Antitrust Subcommittee (2020); World Economic Forum (2019); Japan Fair Trade Commission (2019); and Australian Competition and Consumer Commission (2019).

41. Large online platforms epitomize these challenges. They operate in multiple-sided markets where a distinct set of users on one side of the market interacts with another set of users on the other sides. When there are strong network effects and economies of scale, these markets often converge toward a small number of platforms with large market shares. There is therefore a risk that platforms with substantial market power can abuse their dominant position, harming users on one or both sides of the market as well as potential innovative entrants. Regulators need to ensure that participants are able to use more than one platform at the same time (“multihoming”) and switch between platforms. However, a case-by-case approach is needed as the competitive dynamics can vary significantly between platforms.

42. Addressing the challenges of the digital economy will likely involve using a mixture of competition enforcement and regulatory intervention. This could draw on experiences from other industries, such as utilities or telecommunications, where regulatory intervention has historically played a major role in fostering competition, working alongside competition policy. Whereas in telecommunications, regulations often require incumbent telecommunications operators to make their local network available to other companies, in the digital economy, interoperability could be introduced to allow entrants to access networks run as platforms. Regulatory measures were also taken to enable consumers to retain their mobile phone number when switching between service providers, and in the digital economy, steps could be taken to allow consumers to retain their data when switching between platforms, as discussed below. However, regulation will need to take account of the highly dynamic nature of digital markets. Progress could be achieved through flexible forms of regulation, such as codes of conduct or targeted regulation designed to rebalance the relationship between platforms and participants.²⁴

43. The idea of regulating big tech firms like public utilities or even “breaking them up” has gained increasing attention but would raise major challenges. In utilities or telecommunications, regulators often went beyond the measures discussed above and split historical monopolists vertically, separating network ownership—the natural monopoly part of activity that needs to be regulated as such—from network use, where competition can be viable.

²⁴ The Australian Competition and Consumer Commission's Digital Platforms Inquiry and the *Furman Review* both recommended codes of conduct for certain platforms. The European Union recently introduced a regulation on platform-to-business relations that includes new rules aimed at a fair and transparent process for traders using digital platforms.

Some of the digital economy, such as digital platforms, shares with utilities or telecommunications a high fixed cost of building the network (the platform) and a low marginal cost of using it. In part because of this, the idea of breaking up big tech firms has gained prominence in policy debates. For example, divestments of businesses have been considered recently in Australia and the United Kingdom (Australian Competition and Consumer Commission 2019; Competition and Markets Authority 2019). Although there can be benefits to changing the market structure to improve competition, pursuing such options should be done with great care given the potential costs and complexities involved. Digital businesses often involve complex and rapidly evolving services, making it more challenging to regulate them like public utilities than was the case with electricity or railways—where regulation, for example regarding network access pricing, already proved to be challenging.

44. The regulatory framework also must take into account the overlapping issues raised by the digital economy. Regulators responsible for competition, privacy, and consumer protection must work together closely, as there may be trade-offs between these objectives, and conduct by market participants may affect all of them simultaneously (Carriere-Swallow and Haksar 2019). This can be achieved through a framework for collaboration between regulators or having a single regulator with multiple responsibilities, such as those of the US Federal Trade Commission.

45. Access to data is a specific source of corporate market power that regulators need to address. This has been facilitated by a dramatic rise in processing power, enabling algorithms to use data more effectively. Laws that preclude abuse of dominance should be actively enforced to ensure that market power in the form of access to certain kinds of data is not used in ways that eventually harm users. Enabling consumers to transfer their data from one supplier to another (data portability) could improve competition by facilitating switching, with limited risks to privacy; a helpful precedent in this regard might be Open Banking, which makes it possible for consumers to provide their bank account data to third parties, allowing for more transparency, switching, and new innovative applications.²⁵ Enabling software, devices, or systems to exchange data and integrate services (data interoperability) may also be needed to allow for new entrants and encourage innovation in certain digital markets. The government might play a coordinating role to establish open standards in some cases. However, any progress on data sharing and data interoperability should protect both privacy and firms' incentives to collect data and innovate. It is also important that the data protection obligations of firms be kept as simple as possible; excessive compliance costs may disproportionately harm smaller firms and act as a barrier to entry in data-intensive markets.

46. For competition authorities to move faster in rapidly evolving markets, it is also important that they have extensive knowledge of the digital economy—including data science, key technologies, and market dynamics—and can avert irreversible damage to

²⁵ See the Competition and Markets Authority's 2016 *Retail Banking Market Investigation* report for the United Kingdom or the 2015 Payment Services Directive and the 2016 General Data Protection Regulation (GDPR) for the European Union. The GDPR goes further, making this a general right for all personal data. Australia has introduced a consumer data right to enable consumers to transfer their data to trusted parties in banking and will extend this to other sectors.

competition. One option is to set up dedicated digital market units.²⁶ In cases where there are substantial network effects and high returns to scale, foreclosure of new entrants by dominant incumbents can be difficult to remedy without timely intervention. To address this risk, tools such as interim measures—conservatory measures imposed on firms before the competition authority reaches a final decision regarding any specific conduct—may be needed to rapidly address potential harm.²⁷ Finally, authorities must consider the impact on future competition and innovation of acquisitions of businesses with the potential to become competitors of the acquirer, even if they are not strong competitors at present—for example because they have not yet monetized their customer base or data. As discussed in a broader context above, reconsidering revenue-based thresholds can help.²⁸

C. Strengthening International Cooperation

47. As global markets become increasingly interconnected, competition authorities need to work together to avoid international fragmentation. In the absence of a global competition authority able to review multijurisdictional conduct to maximize global consumer welfare, cooperation between national or regional competition authorities is needed for cross-border issues. Without such international cooperation, firms would face 130 different competition authorities with potentially divergent approaches and interests, raising firm costs and uncertainty. When two multinational firms merge, a decision by a major authority to block the M&A in its jurisdiction (or impose conditions to allow it) will typically spill over to markets and regulators in other jurisdictions. Thus, competition authorities should coordinate more, including by sharing more information with one another, on cross-border cases. Additional issues, such as data access, which have implications for trade policy, competition policy, and data protection, will require even greater cooperation.

48. International best-practice guidelines could provide a way to encourage competition authorities to address issues in a homogeneous and consistent fashion. The role of international institutions, such as the Organisation for Economic Co-operation and Development, the United Nations Conference on Trade and Development, and the International Competition Network, for cross-border cooperation on competition policy could be strengthened to facilitate the development and expansion of best practices. Other efforts to improve international dialogue should be supported; for example, Canada has announced that it will host an annual Digital Enforcement Summit.

²⁶ Several countries (such as the United States, the United Kingdom, and France) have already taken steps to develop the required expertise. In addition, the United Kingdom will launch a Digital Markets Unit, as called for in the *Furman Review*.

²⁷ For example, in October 2019, the European Commission imposed interim measures on Broadcom for TV and modem chipsets. This prohibited Broadcom from applying provisions the Commission *prima facie* considers infringement of EU competition rules until the Commission concludes its assessment on the substance of the case.

²⁸ Further proposals, whose relevance will vary across jurisdictions, have included amending the standard of proof in M&A cases (Furman and others 2019) or shifting the burden of proof to dominant technology firms when certain criteria are met (Cremer, de Montjoye, and Schweitzer 2019).

49. International coordination and convergence to best practices will also alleviate the risk of domestic competition policies being used to favor domestic producers over foreign competitors. Domestic consumers would suffer in the form of higher prices, lower quality, and less choice of products—especially if such an approach were also taken by other major jurisdictions. In any event, a national industrial policy will be more likely to succeed if accompanied by strong competition policy to maintain dynamic and efficient markets. More broadly, competition policy should not be used strategically to achieve industrial policy objectives (such as protecting large domestic firms) for which it is poorly suited; having strong domestic competition authorities with comparable objectives will be helpful in this regard.

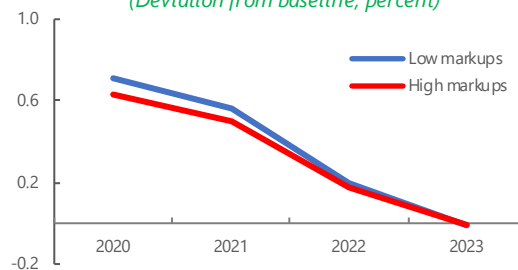
Box 1. The Role of Market Power for Monetary Policy Transmission¹

This box provides model-based and cross-country firm-level evidence that market power dampens monetary policy transmission. In theory, when a firm has strong market power, its customers' demand does not vary much when it changes its (relative) price. As a result, that firm's output also responds only little when monetary policy decisions (or other macroeconomic shocks) change the cost of its inputs (Syverson 2018). Further, because the profits of a high-markup firm consist to a large extent of economic rents, they are less sensitive to changes in the cost of inputs; this reduces the firm's incentives to adjust its inputs when their cost changes, weakening the overall economy's response of investment to monetary stimulus. The profits of a high-markup firm also help shelter it from shifts in external funding conditions, enabling it to keep on financing certain forms of investment when the cost of credit rises (Aghion, Farhi, and Kharroubi 2019; Ahn, Duval and Sever 2020).

In line with the empirical analysis, model-based analysis also suggests that rising market power during the past two decades has weakened the transmission of monetary policy in advanced economies, notably in the United States. Figure 1.1 shows the simulated responses of US employment to a 100-basis point decline in the nominal policy rate in the IMF's Global Integrated Monetary and Fiscal (GIMF) model—which incorporates some of the channels discussed above—under two scenarios. In the first, average markups are set at the comparatively low levels that prevailed in the early 1980s. In the second scenario, they are set at the higher levels observed today. As the weakened response of employment reveals, higher markups render monetary policy less effective at stabilizing US business cycles. This holds true also for discretionary fiscal policy and other shocks that may affect aggregate demand (see also Kopp and others 2019). The higher share of monopolistic rents mitigates firms' investment and labor demand response to such shocks, causing wages and aggregate consumption to rise by less when the central bank cuts its policy rate.

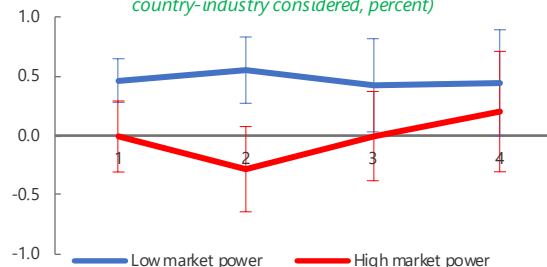
Cross-country firm-level analysis confirms that high-markup firms are less responsive to monetary policy actions, even within narrowly defined industries in a particular country. The response of different firms is estimated by applying the local projection method (Jordà 2005) to the cross-country firm-level (Orbis) data set used above. For each country, monetary policy shocks are computed as the forecast errors of policy rates that cannot be explained by forecast errors for growth and inflation (for details, see Online Annex IV). To address risks that estimates might unduly capture the impact of confounding factors (so-called omitted variable bias), the analysis controls for a rich set of (country-sector-time, and

Figure 1.1. Response of US GDP to a 100 Basis Point Monetary Policy Stimulus
(Deviation from baseline, percent)



Source: IMF staff calculations.
Note: The figure is based on the IMF Global Integrated Monetary and Fiscal (GIMF) model (Anderson and others 2013) with a high and a low markup of a representative firm.

Figure 1.2. Response to a 100 Basis Point Monetary Policy Stimulus: High- versus Low-Market Power Firms
(Deviation from output response of average firm in the country-industry considered, percent)



Source: IMF staff calculations.
Note: x-axis in years; t = 0 is the year of the shock. The shock is a cut in the monetary policy rate that cannot be explained by forecast errors for growth and inflation. The lines denote the differential impact, in percent, between an average firm and firms whose markups are either in the top 25 percent ("high market power") or the bottom 25 percent ("low market power") of the markup distribution.

firm) fixed effects as well as for a wide range of firm-level characteristics other than markups. The key finding is that, compared with the response of the average firm in their country and industry, low-markup firms' output responds more, and high-markup firms' output responds less, to changes in central banks' policy rates (Figure 1.2). Further analysis confirms that high-markup firms have financial buffers that mitigate the impact of monetary policy actions. Dividing the sample between old and young firms and interacting age with market power indicators, the analysis indicates that young low-markup firms respond more to monetary policy actions than (young and old) high-markup firms. Younger firms are typically more credit-constrained than older firms—indeed they are more responsive to monetary policy shocks (Cloyne and others 2018)—except when they can charge high markups and thereby make high profits that can be used to self-finance working capital and investment regardless of shifts in credit conditions.

¹ Prepared by Philipp Engler, Chiara Maggi, and Marina Mendes Tavares. The analysis relies in part on Duval and others (forthcoming).

Box 2. The Role of Market Power for Fiscal Policy Transmission¹

This box provides new empirical evidence that lower market competition weakens the transmission of targeted fiscal stimulus. It shows that following a stimulus, sectoral output in the targeted sector responds more in more competitive product markets. The key driver of this result is the endogenous response of firm markups and prices to the stimulus.

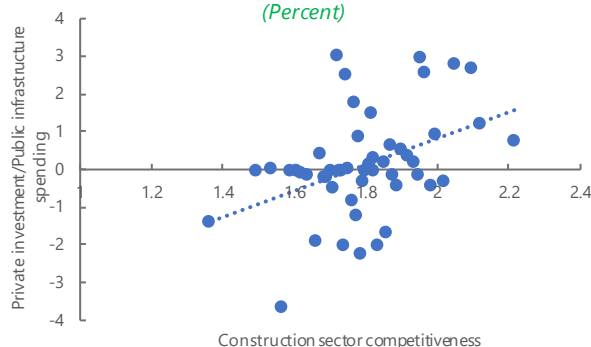
Take the commonly used infrastructure stimulus as an example. When fiscal stimulus is targeted (on infrastructure), stimulus increases the demand for output of this sector but not others, leading to an overall less elastic sectoral demand. When the targeted sector is perfectly competitive (and assuming constant marginal cost), markups or prices will not respond to the demand shock, and output will increase substantially. With imperfect market competition, markups and prices increase in response to higher demand, and output response will be limited. Therefore, the transmission of stimulus crucially depends on the level of market competitiveness.

The mechanism illustrated in this example applies to general settings and is supported by evidence from a recent fiscal stimulus in China. In 2009–10, the Chinese government provided an RMB 4 trillion (more than 10 percent of 2008 GDP) fiscal stimulus, most of which was carried out by local governments and targeted to infrastructure and housing projects. At the aggregate level, in cities with a more competitive construction sector (proxied by the number of firms per 10,000 people), private investment in the construction sector responded more to local government stimulus spending (Figure 2.1).

To establish a causal link, an instrumental variable approach is used exploiting local entry barriers in the construction sector that are arguably independent of short-term macroeconomic conditions, including local geography and regulations. Analysis with firm- and land-transaction data reveals the following key findings. In response to the stimulus, private investment in the construction sector increases more, whereas land prices increase less in cities with greater market competitiveness.

These results are important for several reasons. By bridging market structure and fiscal stimulus, they provide a macroeconomic rationale for promoting competitiveness and help policymakers better design fiscal stimulus policies. Considering market competitiveness as a source of supply-side heterogeneity also helps the economics profession in reconciling the wide range of estimates in the literature.

Figure 2.1. Market Competition and Response to Stimulus (Percent)



Sources: National Economic Census; WIND; and authors' calculations.
Note: This figure shows the correlation between construction sector competitiveness and the response of private real estate investment to public infrastructure spending of 334 Chinese municipalities, grouped into 50 bins and controlling for province fixed effects. Construction sector competitiveness is measured as the log of the total number of construction and real estate firms per 1,000 people in each city. Private real estate investment is constructed using the total investment of all private real estate and construction firms from 2008 to 2013. Public infrastructure spending is the total investment of local government financing vehicles between 2008 and 2013.

¹ Prepared by Sophia Chen and Yu Shi. The analysis is based on Chen and Shi (forthcoming).

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