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Economists

Role of acquisitions in driving innovation in the economy

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Executive summary

1. The Australian Government recently set up the Competition Taskforce (the 'Taskforce') in the Treasury to review competition policy settings in Australia. The Taskforce has been asked, amongst other things, to consider proposals for merger reform. It published a consultation paper (the 'consultation paper') in November 2023, asking for submissions regarding changes to Australia's merger regime.

2. We review the economic literature regarding mergers and innovation in this report, concluding that:

   a. mergers and acquisitions drive innovation and in turn productivity in the economy. The extent and dispersal of innovation is therefore likely to be reduced if the proposed merger reforms lessen the incentive or ability for established firms to acquire others; and

   b. the idea that some firms acquire others to discontinue a product that may become a competitive constraint in the future applies to, at most, a narrow and specific set of circumstances. This consideration should therefore not affect an economy-wide regulation such as the merger regime.

3. Given the Treasurer's aim to boost Australia's productivity, the benefits that mergers and acquisitions bring to innovation across the economy, and the risk of eliminating those benefits, should be carefully weighed against the concerns raised in the Taskforce's consultation paper.

Mergers and acquisitions drive innovation and so productivity

4. The Treasurer stated recently that the Government considers that '…mergers should drive improvements in productivity, put downward pressure on prices and deliver more choice for Australians dealing with cost-of-living pressures.'[1]

5. This report finds that mergers and acquisitions do help to drive innovation and so productivity and economic growth. Our review of the literature in section 2 below concludes that:

   a. innovation is a major source of productivity and economic growth;

   b. acquisitions of nascent firms are an efficient route for established firms to innovate. Established firms have better access to capital and related infrastructure and therefore can be more efficient and effective at scaling and spreading innovations;

   c. acquisitions tend to increase innovation because they allow economies of scale to be achieved, they lead to organisational restructuring, and the sharing of technology between the firms being combined improves innovation processes;

   d. an efficient merger regime leads to more venture capital investment, which provides a stronger opportunity and investment for new firms to be built and grow through venture capital; and

   e. acquisitions of nascent firms typically lead to faster growth for the acquired firm and/or its products, increasing the dispersal of innovations and the competitive constraint from the nascent firm's products.

6. The Taskforce is concerned that the '…anti-competitive effects of acquisitions by large firms are not adequately captured by current competition laws.'[2] These concerns should not, however, be used to

[1] See: https://ministers.treasury.gov.au/ministers/jim-chalmers-2022/articles/opinion-piece-nations-productivity-demands-fairness-merger, accessed 5 February 2024.

[2] Competition Taskforce, *Merger reform - consultation paper*, November 2023, p 18.

introduce a package of merger reforms that prevent the many acquisitions by established firms that have beneficial effects, including those identified above, such as spreading innovation and increasing productivity.

Acquisitions of nascent competitors rarely harm innovation

7. The Taskforce's consultation paper refers to so-called 'killer acquisitions', a theory of harm whereby an incumbent acquires a nascent firm and terminates the development of the target firm's innovations to pre-empt future competition.[3] Concerns regarding 'killer acquisitions' were first identified in the pharmaceutical sector, which has particular characteristics such as:

    a. the pharmaceutical product development timeline is long and transparent, providing greater predictability of the purpose of potential competitors, allowing the assessment of those products that a nascent firm is likely to produce in the future; and

    b. new pharmaceutical products are very close substitutes for existing products in some cases, with few other likely uses of the new technology.

8. This theory is very unlikely to apply to mergers involving the technology sector, which is mentioned in the consultation paper, because:

    a. most products or services in the technology sector are not developed in an open manner with a long, clear timeline, and new innovations can develop quickly – this leads to:

        i. greater uncertainty regarding the products that a nascent firm will develop, and so the potential benefits of purchasing a rival in order to stop its products being supplied; and

        ii. a reduction in the benefit of eliminating a future rival product, because it may be superseded shortly afterwards;

    b. products or services in the technology sector are usually somewhat differentiated from the existing products or services, and they can have many uses. This reduces the incentive to acquire new innovations just to discontinue them; and

    c. the technology sector is less patent-heavy than the pharmaceutical sector, meaning that the ability to acquire and discontinue an innovation in the technology sector does not prevent competitors from creating similar innovations.

9. The empirical studies we reviewed largely fail to support the killer acquisition theory for technology companies. Instead, they find a lack of adverse effects on competition because the acquisitions commonly cited in the technology sector appear to have often been associated with competitive or benign outcomes.

10. We find that the killer acquisition theory of harm applies to specific fact circumstances, but it does not apply across all sectors of the economy. Good regulatory practice cautions against designing regulations for a specific circumstance and then applying those regulations generally. This imposes unnecessary regulatory costs and burdens and leads to poorer outcomes.

[3] Competition Taskforce, *Merger reform - consultation paper*, November 2023, p 18.

1. Introduction

11. The Australian Government recently set up the Competition Taskforce (the 'Taskforce') in the Treasury to review competition policy settings in Australia.[4] The Taskforce has been asked, amongst other things, to consider proposals for merger reform. As an initial step, it published a consultation paper (the 'consultation paper') in November 2023, asking for submissions regarding changes to Australia's merger regime.[5]

1.1 Mergers drive innovation and so productivity

12. The Treasurer stated recently that the Government considers that '…mergers should drive improvements in productivity, put downward pressure on prices and deliver more choice for Australians dealing with cost-of-living pressures.'[6]

13. The Government and Taskforce have set out some of the benefits from mergers and acquisitions. For example, the Treasurer has said that:[7]

> Of course, beneficial mergers can drive economic growth by re-tooling businesses, bringing in new technologies and achieving economies of scale. Mergers can support competition including by making businesses more sustainable and giving them the scale to enter new markets.

14. Similarly, the consultation paper said that mergers are '…an important way for firms to achieve economies of scale and scope, diversify risk and exit businesses. Mergers can enhance competition if these efficiencies are passed onto consumers via lower prices, improved product quality, range, or service.'[8]

15. However, the consultation paper does not engage with the evidence of the benefits of mergers to the economy. Rather, the consultation paper mentions in passing the benefits to the economy from innovation as a result of mergers.[9]

16. This report considers the evidence of how mergers drive innovation and so productivity in the economy. Without careful consideration of this issue, and calibrating any reform accordingly, the benefits mergers deliver through greater innovation could be lost to the economy.

1.2 Structure of this report

17. The remainder of this report is structured as follows:

    a. in section 2, we examine how mergers drive innovation and so productivity, based on a review of the economic literature; and

    b. in section 3, we set out the economic theory and empirical evidence in relation to whether acquisitions of nascent firms are taking place in order to shut down new products and innovations.

[4] See: https://ministers.treasury.gov.au/ministers/jim-chalmers-2022/media-releases/consultation-merger-reform, accessed 16 January 2024.

[5] Competition Taskforce, *Merger reform - consultation paper*, November 2023.

[6] See: https://ministers.treasury.gov.au/ministers/jim-chalmers-2022/articles/opinion-piece-nations-productivity-demands-fairness-merger, accessed 5 February 2024.

[7] See: https://ministers.treasury.gov.au/ministers/jim-chalmers-2022/articles/opinion-piece-nations-productivity-demands-fairness-merger, accessed 5 February 2024.

[8] Competition Taskforce, *Merger reform - consultation paper*, November 2023, p 4.

[9] Competition Taskforce, *Merger reform - consultation paper*, November 2023, pp 29-30.

2. Mergers and acquisitions drive innovation

18. In this section we explain that mergers and acquisitions help to drive innovation and so productivity in the economy.

19. The benefits of acquisitions to innovation have been well recorded and discussed in the theoretical and empirical economic literature. As acknowledged by Barnett (2023), there is a:[10]

> …rich body of evidence showing the critical function played by incumbent/startup acquisitions in supplying a monetization mechanism that induces venture-capital investment and promotes startup entry in technology markets.

20. In this section, we set out that:

    a. innovation is a major source of productivity and economic growth;

    b. acquisitions of nascent firms are an efficient route for established firms to innovate. Established firms have better access to capital and related infrastructure and therefore can be more efficient and effective at scaling and spreading innovations;

    c. acquisitions tend to increase innovation because they allow economies of scale to be achieved, they lead to organisational restructuring, and the sharing of technology between the firms being combined improves innovation processes;

    d. an efficient merger regime leads to more venture capital investment. It provides a stronger opportunity and investment for new firms to be built and grow through venture capital; and

    e. acquisitions of nascent firms typically lead to faster growth for the acquired firm and/or its products, increasing the dispersal of innovations and the competitive constraint from the nascent firm's products.

21. The Treasurer has said that the Government wants mergers to drive improvements in productivity.[11] In this section we show that mergers and acquisitions already play an important role in driving innovation, and therefore productivity in the economy. It follows that any consideration of merger reform options should take into account the potential for such reforms to affect innovation.

2.1 Innovation is a key driver of economic growth

22. It is well accepted that innovation is a major source of productivity and economic growth.

23. Rosenberg (2004) identifies innovation as the most important component of long-term economic growth within an economy,[12] whilst Gürkaynak (2023) recognises the crucial role that innovation plays in promoting economic growth:[13]

> Since innovation fosters consumer welfare and promotes economic efficiency by introducing and spreading technological developments throughout an economy, it would not be an overstatement to say that is the most crucial feature supporting economic growth.

[10] Barnett, J M, *'Killer acquisitions' reexamined: economic hyperbole in the age of populist antitrust*, University of Chicago Business. Law Review (forthcoming 2024), p 1.

[11] See paragraph 12.

[12] OECD, Rosenberg, N, *Innovation and economic growth*, 2004, p 1.

[13] Gurkaynak, G, *Innovation paradox in merger control*, Institute of Competition Law, New York, 2023, p 28.

24. The Productivity Commission recently agreed, saying that:[14]

> Advances in knowledge and technology have been the main driver of economic growth and transformation throughout history.

25. The effect of any changes to the merger regime on innovation should therefore be carefully considered.

2.2 Acquisitions are an efficient route for established firms to innovate

26. The benefits of innovation to the economy depend on the quality and quantity of innovation, and how quickly it is dispersed throughout the economy. It can be efficient for innovations to take place in nascent firms, before being acquired by other firms, because:

    a. in some circumstances, nascent firms are most likely to be innovative and/or most efficient at innovating; whilst

    b. established firms can be better placed to use an innovation efficiently, and spread it most quickly across the economy.

27. Consistent with this, the Nobel Prize winning economist Oliver Williamson proposed that:[15]

> An efficient procedure by which to introduce new products is for the initial development and market testing to be performed by independent inventors and small firms (perhaps new entrants) in an industry, the successful developments then to be acquired, possibly through licensing or merger, for subsequent marketing by a large multidivisional enterprise.

28. It follows that lessening the ability of established firms to acquire nascent firms is likely to reduce innovation, and the dispersal of those innovations more widely across the economy. In simple terms, making acquisitions harder will restrict the way firms can innovate, lessening productivity.

2.2.1 Nascent firms are often highly innovative

29. There is a large literature developed over decades showing that smaller firms make a substantial contribution to innovation in an economy.

30. Empirical research finding that nascent firms can be very innovative goes back around 100 years. A survey published in 1929 found that most of the major innovations studied since 1889 had not originated in large laboratories, whilst a study in 1963 found that major new innovations had historically come from outside of large corporations.[16]

31. More recent studies have found that nascent firms are more innovative than others in certain (but not all) industries.[17] The recent empirical evidence shows that:[18]

    a. research and development (R&D) intensity increases with firm size in some industries and decreases in others, as do R&D outcomes, such as patents;

    b. both smaller firms (above a threshold size) and very large firms engage in R&D more intensively than medium-sized firms. For example, Bound et al (1982) finds that very small firms were more

[14] Productivity Commission, *5-year productivity inquiry: innovation for the 98%*, Inquiry report - volume 5, 2023, p 1.

[15] Williamson, O E, *Markets and hierarchies: analysis and antitrust implications, a study in the economics of internal organization*, The Free Press, New York, 1975, pp 205-206.

[16] Williamson, O E, *Markets and hierarchies: analysis and antitrust implications, a study in the economics of internal organization*, The Free Press, New York, 1975, pp 185-186.

[17] Acs, Z J, *Innovation and small firms*, MIT Press, Cambridge, 1990, pp 12-13; and Acs, Z J and Audretsch, D B, *Analysing innovation output indicators: the US experience*, in Kleinknecht, A and Bain, D (eds), *New concepts in innovation measurement*, 1993, pp 20-24.

[18] Federal Reserve Bank of Kansas City, Edmiston, K, *The role of small and large businesses in economic development*, Economic Review, 2007, p 89.

R&D intensive than average, and small firms have a much larger output of patents per R&D dollar spent;[19] and

c. smaller businesses are more efficient at innovation, which means they produce more innovations for a given amount of R&D spending than other firms.

32. A number of reasons have been put forward to explain the result that nascent firms can sometimes be more innovative than established firms, ie:

a. it can be more difficult to provide very strong incentives to people innovating in a large established firm because it is hard to determine who caused the innovation when many people contribute to the effort;[20] and

b. the benefits to innovation in an established firm are likely to be somewhat absorbed by the management or central office, whereas they would be concentrated in the hands of a few people in a nascent firm;[21] and

c. less bureaucracy in smaller firms reduces the chain of command, leading to more efficient communication, flexibility and managerial coordination.[22]

33. Taking a simple example, the individuals in a firm of five people that develop a new technology are likely to receive a much greater payoff than the same people in a firm of 1,000 people. Those five people are therefore going to have a stronger incentive to innovate, and the best innovators are likely to choose to be in the firm of five people. It follows that the firm of five is likely to be more innovative, holding all else equal.

2.2.2 Established firms can be better at using and dispersing innovations

34. Spreading innovation across the economy is a key part of how productivity is increased by innovation – as set out by the Productivity Commission:[23]

> Fostering the adoption and use — that is, the diffusion — of new and established technologies and ideas across the majority of enterprises in the economy represents a significant opportunity to increase productivity.

35. If the objective is to ensure the Australian economy benefits from innovations, it is important for the regulatory regime to recognise that it is often most efficient for established firms to acquire an innovation developed by a nascent firm because:

a. there may be synergies such that the innovation can be developed and applied more easily and cheaply by the established firm – see section 2.3.2; and

b. an established firm can spread an innovation more quickly because they have greater access to capital, established infrastructure, and more customers, especially in industries where firm growth is relatively slow.[24]

[19] NBER, Bound, J, Cummins, C, Griliches, Z, Hall, B H and Jaffe, A, *Who does R&D and who patents?*, NBER working paper series, 1982.

[20] Williamson, O E, *The incentive limits of firms: a comparative institutional assessment of bureaucracy*, Weltwirtschaftliches Archiv, Bd. 120, H. 4, 1984, pp 744-745.

[21] Williamson, O E, *The incentive limits of firms: a comparative institutional assessment of bureaucracy*, Weltwirtschaftliches Archiv, Bd. 120, H. 4, 1984, p 745.

[22] Federal Reserve Bank of Kansas City, Edmiston, K, *The role of small and large businesses in economic development*, Economic Review, 2007, pp 87-88.

[23] Productivity Commission, *5-year productivity inquiry: innovation for the 98%*, Inquiry report - volume 5, 2023, p 2.

[24] See section 2.5 where we explain that the products of acquired firms can grow more quickly after being acquired.

36. The Competition and Markets Authority asked Lear to prepare a report undertaking an ex-post assessment of some mergers in the digital/technology sector. This report did not find conclusive evidence of harm from the mergers it investigated but it did find some benefits to consumers from those mergers, ie, Lear found that:

    a. Instagram's growth significantly benefited from the integration with Facebook, eg, there were synergies in bringing Instagram's innovations together with Facebook's 'guidance and expertise';[25] and

    b. there were multiple sources of complementarities in the services of Google Maps and Waze which may have contributed to developments of the merging parties since the merger.[26]

37. Reducing the incentive or ability for established firms to innovate by acquiring nascent firms will therefore lessen the efficiency of innovation and the extent to which new innovations are used and spread across the economy, at least in some industries, which would harm productivity growth in Australia's economy.

2.3 Acquisitions increase innovation

38. We describe below the positive relationship between acquisitions and innovation, including:

    a. the empirical evidence showing that acquisitions tend to increase innovation; and

    b. some of the reasons for this increased innovation.

2.3.1 Empirical evidence that innovation increases after mergers and acquisitions

39. The empirical evidence indicates that innovation by firms that are acquired increases after the acquisition:[27]

> There *is* evidence that innovation improves due to a merger. The presumption that mergers are detrimental to innovation seems to not be generally true. [emphasis in original]

40. For example, Entezarkheir and Moshiri (2017) finds a statistically significant positive relationship between mergers and innovation.[28] Bena and Li (2014) found the same positive relationship:[29]

> Finally, using a quasi-experiment involving withdrawn bids that failed for reasons exogenous to innovation, we show a positive treatment effect of a merger on post-merger innovation output when there is pre-merger technological overlap between merging firms.

41. Sevilir and Tian (2012) finds that the volume of mergers and acquisitions[30] conducted by a firm are positively related to the number of new patents, and the novelty of the patents that the firm obtains:[31]

> We find a strong positive relation between the volume of M&A transactions of a firm and the number of the new patents the firm obtains subsequent to its M&A activity.
>
> …

[25] Lear, *Ex-post assessment of merger control decisions in digital markets*, Final Report, 9 May 2019, para II.83.

[26] Lear, *Ex-post assessment of merger control decisions in digital markets*, Final Report, 9 May 2019, para II.142.

[27] Schulz, N, *Review of the literature on the impact of mergers on innovation*, ZEW Discussion Paper No. 07-061, March 2007, Non-technical summary.

[28] Entezarkheir, M and Moshiri, S, *Mergers and innovation: evidence from a panel of US firms*, 2017, p 17.

[29] Bena, J and Li, K, *Corporate innovations and mergers and acquisitions*, The Journal of Finance, 69 (5), October 2014, p 1,955.

[30] We note that the terms 'merger' and 'acquisition' are used somewhat interchangeably in the economic literature.

[31] Sevilir, M and Tian, X, *Acquiring innovation*, AFA 2012 Chicago Meetings Paper, May 2012, p 3.

> We also find a positive relation between the M&A volume of a firm and the novelty of the firm's patents obtained following its M&A activity where the novelty of the patents is measured by the number of future citations the patents generate.

42. Sevilir and Tian (2012) further says that it is the acquisitions that are *causing* the increases in innovation.[32]

43. Dezi et al (2018) observes that the consensus of the empirical evidence is that merger and acquisition transactions can positively influence the innovation of the acquired firm:[33]

> Generally, the current studies show that M&A can increase the level of innovation….
>
> …
>
> In particular, some scholars provide evidence that an acquisition has a positive effect on a firm's innovativeness.

44. Phillips and Zhdanov (2013) analyse whether this positive relationship between merger and acquisition (M&A) activity and innovation extends to industries overall, rather than just individual firms. They find that M&A activity within a sector has a positive effect on R&D expenditure by firms:[34]

> Our model and evidence also show that the R&D responsiveness of firms increases with demand, competition, **and industry merger and acquisition activity**. [emphasis added]

2.3.2 Many reasons for increased innovation post-acquisition

45. A range of reasons are provided by the economic literature to explain why there is a positive relationship between M&A transactions and innovation, eg:

    a. there are greater economies of scale post-acquisition, which improves the efficiency of R&D investment and innovation;

    b. an acquisition allows for organisational restructuring, causing the innovative processes to be redesigned and improved; and

    c. the technological overlaps between the merging firms become apparent after transactions, and the subsequent sharing of technology improves innovation processes.

Increased efficiency of R&D spending improves innovation

46. One possible reason for the positive relationship between acquisitions and innovation is that acquisitions increase the efficiency of R&D spending.

47. For example, Cohen (1989) says that one of the reasons put forward to explain the empirical evidence above is that large firms have advantages for some innovations and there are often scale economies in the technology sector of R&D:[35]

> One claim is that capital market imperfections confer an advantage on large firms in securing finance for risky R&D projects…
>
> …

[32] Sevilir, M and Tian, X, *Acquiring innovation*, AFA 2012 Chicago Meetings Paper, May 2012, p 19.

[33] Dezi, L Battisti, E, Ferraris, A and Papa A, *The link between mergers and acquisitions and innovation: a systematic literature review*, Management Research Review, 41 (6), 2018.

[34] Phillips, G M and Zhdanov, A, *R&D and the incentives from merger and acquisition activity*, Review of Financial Studies, 26 (1), 2013, p 34.

[35] Cohen, W M and Levin, R C, *Empirical studies of innovation and market structure*, Volume II, Elseview Science Publishers, Ansterdam, Netherlands, 1989, p 1,067.

> A second claim is that there are scale economies in the technology sector of R&D. Another is that the returns from R&D are higher where the innovator has a large volume of sales over which to spread the fixed costs of innovation. Finally, R&D is alleged to be more productive in large firms as a result of complementarities between R&D and other nonmanufacturing activities…

48. More recently, Gürkaynak (2023) states that mergers can lead to synergies in R&D spending:[36]

> It is widely accepted, both in the economics literature and by competition enforcement authorities, that a merger that can combine complementary R&D assets and knowledge will be able to increase the merged entity's ability to innovate.

Organisational restructuring after acquisitions improves innovation

49. The opportunity to restructure the organisation and management after an acquisition is a possible reason for the positive relationship between acquisitions and innovation.

50. Capron (1999) found that restructuring an acquired organisation helps to improve innovation efficiency:[37]

> Horizontal acquisitions can enhance innovation capability by using the superior innovation capability (proprietary technology, patents, know-how) of one of the merged firms to enhance product features (product innovation capability) or to improve organizational and marketing effectiveness.

51. Gu et al (2022) also finds that mergers and acquisitions are an important opportunity to reorganise organisational structure and development:[38]

> …because M&A is one of the most important means for corporate restructuring and strategic development.

Acquisitions create technological overlaps leading to more and better innovation

52. Mergers and acquisitions can create technological overlaps between the two companies involved, allowing for more and better innovation in future.

53. Hagedoorn and Duysters (2010) finds that mergers and acquisitions allow firms to share combined technological expertise to improve the innovative process and engage in larger, more innovative projects than would otherwise be achievable:[39]

> Compared to technologically unrelated M&As, the synergies and combined technological activities of related M&As are expected to enable companies to shorten the innovation lead time, share technological expertise and to engage in larger, combined projects than would be possible within the once separated companies.

54. Baumol (2002) found that this overlap allows the innovation to be taken one step further than would otherwise be achievable, improving the overall product output achieved because of mergers and acquisitions:[40]

> …the two have tended to specialize, and together, they have enhanced the process beyond what either type of innovator might have been able to achieve by itself.

[36] Gurkaynak, G, *Innovation paradox in merger control*, Institute of Competition Law, New York, 2023, pp 123-124.

[37] Capron, L, *The long term performance of horizontal acquisitions*, Strategic Management Journal, 20, 1999, p 990.

[38] Gu, Y, Ben, S and Lv, J, *Peer effect in merger and acquisition activities and its impact on corporate sustainable development: evidence from China*, Sustainability, 14 (7), 2022, p 1.

[39] Hagedoorn, J and Duysters, G, *The effect of mergers and acquisitions on the technological performance of companies in a high-tech environment*, Technology Analysis & Strategic Management, 14(1), 2010, p 71.

[40] Baumol, W J, *Entrepreneurship, innovation and growth: the David-Goliath symbiosis*, The Journal of Entrepreneurial Finance, 7 (2), December 2002, p 9.

55. Shapiro (2012) identifies that this technological overlap allows synergies between acquiring and acquired firms that allows further innovation:[41]

> Synergies: 'Combining complementary assets enhances innovation capabilities and thus spurs innovation'

2.4 Provision of an incentive for venture capital investment

56. We set out below the positive relationship between M&A activity and VC investment, including:

    a. the empirical evidence that M&A activity leads to more VC investment; and

    b. the reasons why greater VC investment increases innovation and entrepreneurship, ie:

        i. entrepreneurs view VC investment as a funding and knowledge avenue; and

        ii. VC investors see acquisition as a pathway for realisation of their investment.

57. Greater VC investment provides a stronger opportunity and investment for new firms to be built and grow. While M&A activity incentivises venture capitalism, venture capitalism likewise incentivises new business. For example, an empirical study by Mollica and Zingales (2007) found that an increase in VC investment raises the number of new businesses:[42]

> Similarly, a 10% in VC investment increases the total number of new businesses by 2.5%.

58. An efficient merger regime should encourage further VC investment, due to the important role of VC investment in nascent firm entry and growth.

2.4.1 M&A activity has a positive effect on VC investment

59. The empirical economic literature finds that M&A activity increases VC investment. For example, an empirical study by Phillips and Zhdanov (2017) finds a strong positive relationship between VC and M&A, as more M&A transactions attract further VC investment:[43]

> We show that there is a strong positive association between venture capital and lagged M&A activity around the world.

60. A European study by Félix, Pires and Gulamhussen (2013) similarly found that the size of the M&A market is positively related to the size of the VC market:[44]

> Our results give some support to the idea that, in Europe, the size of the M&A market is relevant in explaining venture capital investment. This is an increasing result as it suggests that the venture capital market may grow in countries with vibrant M&A markets even if their IPO market is not very developed.

61. Groh and Walmeroth (2016) found that the M&A investment volumes in part determine the VC investments in a country:[45]

[41] Shapiro, C, *Competition and innovation: did arrow hit the bull's eye*, in Lerner, J and Stern S (eds), *The rate and direction of inventive activity revisited*, University of Chicago Press, Chicago, 2012, p 365.

[42] Mollica, M and Zingales, L, *The impact of venture capital on innovation and the creation of new business*, October 2007, p 19.

[43] NBER, Phillips, G M and Zhdanov, A, *Venture capital investments and merger and acquisition activity around the World*, Working Paper 24082, November 2017, p 28.

[44] Felix, E G S, Pires, C P and Gulamhussen, M A, *The determinants of venture capital in Europe - evidence across countries*, Journal of Financial Services Research, 44 (3), December 2013, p 273.

[45] Groh, A P and Wallmeroth, J, *Determinants of venture capital investments in emerging markets*, Emerging Markets Review, 29, 2016, p 19.

> The results indicate that M&A investment volumes have a high significance at determining venture capital investments into a country.

62. Finally, a study by Prado and Bauer (2022), which examined 392 acquisitions found a statistically significant increase in VC activity as a result of tech acquisitions:[46]

> After controlling for other factors that may affect VC activity, such as IPOs and other M&As, we found a statistically significant increase in the VC activity in response to big tech start-up acquisitions in different geographical breakdowns.

2.4.2 Venture capital is an avenue for acquiring funding and knowledge

63. The role of VC to enable nascent firms to grow is essential. VC provides not only initial funding, but also intangible networks and assets:[47]

> VC firms offer not only financial investment, but also valuable intangible assets based on their experience and networks.

64. This role is especially important for nascent firms who cannot source funding from other traditional sources:[48]

> In the subsequent 40 years, venture capital has come to be established as the dominant source of financing for high-potential startups commercializing risky new ideas and technologies.

65. VC investment fills the role of funding nascent firms that other sources will not, due to the inherent risks:[49]

> At such early stages, firms do not have other institutions to turn to in order to raise money, and VC fills this void. The inherent risks of a start-up in that stage will not be accepted by banks, so that early-stage companies cannot obtain loans to fund their operations.

66. Landier (2003) found that banks have been found to be willing to provide funding to start ups in low risk situations, while VC investment is more likely to occur when there is more risk involved in the investment, filling the investment gap that traditional sources will not:[50]

> Venture capital prevails in the high-risk equilibrium and bank debt in the low-risk equilibrium.

67. VC investment grants benefits beyond funding, including networking and expertise, involvement in personnel recruitment, and strategic management:[51]

> From the entrepreneur's perspective, in addition to capital, a primary investor may provide a wide array of benefits, such as networking and operating expertise, involvement in operations, management and personnel recruitment, or financial and strategic management.

[46] Prado, T S and Bauer, J M, *Big tech platform acquisitions of start-ups and venture capital funding for innovation*, 25 March 2022, p 47.

[47] Jeong, J, Kim, J, Son, H and Nam, D, *The role of venture capital investment in startups' sustainable growth and performance: focusing on absorptive capacity and venture capitalists' reputation*, Sustainability, 12 (8), 2020, p 1.

[48] Lerner, J and Nanda, R, *Venture capital's role in financing innovation: what we know and how much we still need to learn*, Journal of Economic Perspectives, 34 (3), 2020, p 239.

[49] Block, J and Sandner, P, *What is the effect of the financial crisis on venture capital financing? Empirical evidence from the US internet start-ups*, Venture Capital: An International Journal of Entrepreneurial Finance, 4, 2009, p 296.

[50] The University of Chicago Graduate School of Business, Landier, A, *Start-up financing: from banks to venture capital*, 14 September 2003, p 1.

[51] Ehrlich, S B and De Noble, A F, *After the cash arrives: a comparative study of venture capital and private investors involvement in entrepreneurial firms*, Journal of Business Venturing, 9 (1), 1994, p 69.

68. Hellmann and Puri (2000) also finds that VC investment significantly reduces the amount of time required for an innovator's product to be made available on the market for consumers, highlighting the importance of the role of VC.[52]

2.4.3 M&A is a vital exit opportunity

69. VC investment provides an exit opportunity for the start-up founders of nascent firms. An exit through acquisition is regarded by many start-up founders as a success.[53]

70. M&A activity provides an exit opportunity not only for the nascent firm's founders, but also for the VC investors:[54]

> Venture capital funds generally receive little or nothing on their investments until some cognizable liquidation event – bankruptcy, merger, IPO or the like…

71. The Furman review found this concept of an exit opportunity to be key to VC start-up investment, which enables entry for new firms:[55]

> Being acquired is also an important exit strategy for technology start-ups, providing significant incentive for investors to provide funding to risky projects and support market entry.

72. M&A activity has a positive relationship with VC investment because investors seek increased opportunities to realise their investments. For example, Philips and Zhanov (2017) explain that a growth in M&A deals attracts more VC investment because it increases the opportunities for exit by venture capitalists.[56]

2.5 Nascent products can grow more quickly post-acquisition

73. In this section we discuss the positive relationship between acquisitions and the growth rate of the acquired nascent firm and its products, including:

    a. the empirical evidence showing that the acquisition of a nascent firm typically leads to faster growth for the acquired firms/products; and

    b. the reasons provided by the economic literature for this improved growth rate, ie, acquisitions can lead to:

        i. greater economies of scale that allow the acquired firm to grow at a faster rate;

        ii. improved economies of scope that allows further growth of the acquired firm; and

        iii. synergies between the acquired and acquiring firm's products.

2.5.1 Growth rate of the acquired firm increases post-acquisition

74. The empirical evidence indicates that a firm that is acquired will tend to grow at a faster rate than those who were not acquired. This allows more consumers to benefit from the new product, and the acquired firm and its products to apply more competitive pressure on rivals.

[52] Hellman, T and Puri, M, *The interaction between product market and financing strategy: the role of venture capital*, The Review of Financial Studies, 13 (4), 2000.

[53] Cotei, C and Farhat, J, *The M&A exit outcomes of new, young firms*, Small Business Economics, 59, 2017, p 546.

[54] Mann, J R and Sager, T W, *Patents, venture capital, and software start-ups*, Research Policy, 36 (2), 2007, p 195.

[55] Digital Competition Expert Panel, *Unlocking digital competition*, March 2019, p 101.

[56] NBER, Phillips, G M and Zhdanov, A, *Venture capital investments and merger and acquisition activity around the World*, Working Paper 24082, November 2017, p 28.

75. For example, Granstrand and Sjölander (1990) found that acquired firms grow at a statistically significant faster rate than those not acquired, measured by number of employees, annual and total sales.[57] The study controlled for those firms who received but did not accept an offer to be acquired, ensuring that any selection bias was mitigated.

76. Lindholm (1996) found a similar positive relationship between acquisition and growth rate:[58]

> This conclusion supports the hypothesis that acquired firms outperform independent businesses.
>
> …
>
> …it was concluded that the growth rate of the firm increased after acquisition, and that the acquisition of the firm per se is an important factor contributing to growth.

77. Lindholm (1996) further identified that the process of being acquired is a causal factor in contributing to growth.

78. Burger et al (2023) also observes that, for high-tech firms, once an acquired firm is given adequate time to adjust to the change in circumstance, they exhibit an increased growth rate:[59]

> Overall, our results show that acquisitions have a positive growth of high-tech scaleups, once firms have time to adjust to this significant event.

2.5.2 Economies of scale increase the growth rate of nascent firms

79. Lemley and McCreary (2019) provide three reasons for this empirical evidence of a positive relationship between acquisitions and the growth rate of the acquired firms, ie:[60]

> First, some technologies might work well only at scale.
>
> ….
>
> Second, the incumbent might get the innovation into the hands of more people, simply because it has more customers.
>
> …
>
> Third, the market leaders may be best positioned to put complementary technologies to work.

80. There are two ways in which acquisitions lead to increased growth of the acquired firm through the use of economies of scale, ie:

    a. new ownership and management structures improve productivity and scalability; and

    b. access to the networks, assets, and capability of the acquiring firm increase the ability of the acquired firm to grow.

[57] Granstrand, O and Sjölander, S, *The acquisition of technology and small firms by large firms*. Journal of Economic Behaviour & Organization, 13 (3), 1990, pp 367–386.

[58] ESRC Centre for Business Research, University of Cambridge, Lindholm, Å, *Acquisition and growth of technology-based firms*, Working Paper No. 47, December 1996, p 27.

[59] Burger, A, Hogan, T, Kotnik, P, Rao, S and Sakinc, M E, *Does acquisition lead to the growth of high-tech scale ups? Evidence from Europe*, Research in International Business and Finance, 64, 2023, p 12.

[60] Stanford Law and Economics Olin, Lemley, M A and McCreary, A, *Exit strategy*, Working paper #542, 19 December 2019, pp 66-67.

New ownership and management structures can increase growth

81. One reason why the growth of nascent firms may be limited is the ownership and management structures they have in place:[61]

> One explanation is that the growth of NTBFs may be restricted by their ownership and management structures (Bonardo et al. 2010). If this argument holds, ownership changes, such as mergers and acquisitions (M&As) may be a solution to release the growth constraint faced by NTBFs.

82. An acquisition provides an opportunity for the acquiring firm to place new ownership and management structures in place that allow the acquired firm to grow at a faster rate than prior to acquisition:[62]

> However, there are good theoretical arguments for the opposite view; namely, replacing executives may be an equally important source of value creation in other acquisitions.

83. An empirical study of 131 science-based entrepreneurial firms proposed that mergers and acquisitions are a key avenue to restructuring the ownership and management structures:[63]

> Thus, the M&A market might establish new ownership and management structures in SBEFs that improve their productivity and maximize the financial returns of the human and technological capital embodied by them (matching the theory of ownership change).

Access to assets, networks and capabilities improves nascent firms' growth rates

84. An acquired firm receives access to the support of complementary assets, capability and networks, that are at the disposal of the acquiring firm, providing a catalyst for growth.[64] These allow for better scalability of the product than would otherwise have been achieved through:

    a. competitive manufacturing;

    b. established marketing; and

    c. after sales support.

85. The brand of the acquiring firms is also a complementary asset. The acquired firm will reach more customers simply due to the acquirer having a more well-known brand name and larger customer base.[65]

86. Acquisitions grant the acquired firm access to superior established processes that are a key catalyst for growth. Examples of these established processes that allow economies of scale, and drive economic growth, include:[66]

    a. manufacturing processes;

    b. research and development; and

[61] Xiao, J, *The effects of acquisition on the growth of new-technology based firms: do different types of acquirers matter?*, Small Business Economics, 45, 2015, p 487.

[62] Krug, J A, Wright, P and Kroll, M J, *Top management turnover following mergers and acquisitions: solid research to date but still much to be learned,* The Academy of Management Perspectives, 28 (2), 2014, para 147.

[63] Bonardo, D, Paleari, S and Vismara S, *The M&A dynamics of European science-based entrepreneurial* firms, The Journal of Technology Transfer, 35, 2010, p 146.

[64] Teece, D J, *Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy*, Research Policy, 15 (6), December 1986, p 288.

[65] See: NBER, Gans, J S, Hsu, D H and Stern, S, *When does start-up innovation spur the gale of creative destruction*, Working Paper 7851, August 2000, p 4.

[66] Singh, H and Montgomery, C A, *Corporate acquisition strategies and economic performance*, Strategic Management Journal, 8 (4), 1987, p 379.

c. distribution and sales processes.

87. The nascent firm will likely otherwise not have access to these processes and resources:[67]

> From the startup's perspective, acquisition by a large incumbent may offer access to complementary and otherwise unavailable resource that are needed to expand its business.

2.5.3 Economies of scope can increase the growth of the nascent firm

88. Acquired firms can benefit from greater economies of scope due to the expansion of the products/services the firm offers, where economies of scope are analogous to economies of scale but imply efficiency gains resulting from expansion of scope (number of different output types), rather than from an increase in the volume of total output.[68]

89. The reduced costs from economies of scope increase efficiency in the economy, and will lead to benefits for consumers in the form of lower prices.

90. The increased growth rate of firms as a result of economies of scope is attributed to costs being distributed over an increased range of output of different products:[69]

> Equally, economies of scope can arise if the new value chain activities also make use of the existing administrative functions, thereby spreading the fixed costs of these functions over a broader base.

91. Economies of scope after M&A transactions allow firms to decrease unit costs. Ritter et al (2013) highlights the hypothesis that economies of scope, among other things, means that the acquired firm will be worth more, and will grow faster, than if it remained independent:[70]

> Third, the 'economies of scope' hypothesis states that due to an ongoing change in the economy, small firms are worth more as a part of a larger organization that can realize economies of scope and scale.

92. Ritter et al (2013) finds evidence in support of this economies of scope hypothesis.[71] Gao et al (2013) similarly finds empirical evidence that the benefits of economies of scope after acquisition outweigh the benefits of operating as an independent firm that utilises an initial public offering (IPO).[72] Gao et al (2013) explain that at least in part, the growth rate of the acquired firm improves due to improved economies of scope.[73]

2.5.4 Product synergies increase the growth of the nascent firm

93. Synergies between an acquired firm's product and an acquiring firm's existing products can lead to increased growth. This largely exists when the acquired product is integrated within the firm, rather than being kept external.

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[67] Brueller, N N and Capron, L, *Acquisitions of startups by incumbents: the 3 Cs of co-specialization from startup inception to post-merger integration*, California Management Review, 63 (3), 2021, p 1.

[68] Given, R S, *Economies of scale and scope as an explanation of merger and output diversification activities in the health maintenance organization industry*, Journal of Health Economies, 15, 1996, p 689.

[69] Schwenker, B and Botzel, S, *Overcoming the limits to growth - exploiting economies of scale and scope.*, Springer, Berlin, 2007, p 41.

[70] Ritter, J R, Signori, A and Vismara, S, *Economies of scope and IPO activity in Europe*, in Levis, M and Vismara S (eds), *Handbook of Research on IPOs*, Edward Elgar Publishing, Cheltenham, 2013, p 2.

[71] Ritter, J R, Signori, A and Vismara, S, *Economies of scope and IPO activity in Europe*, in Levis, M and Vismara S (eds), *Handbook of Research on IPOs*, Edward Elgar Publishing, Cheltenham, 2013, p 3.

[72] Gao, X, Ritter, J R and Zhu, Z, *Where have all the IPOs gone?*, The Journal of Financial and Quantitative Analysis, 48 (6), 2013, p 1,663.

[73] Gao, X, Ritter, J R and Zhu, Z, *Where have all the IPOs gone?*, The Journal of Financial and Quantitative Analysis, 48 (6), 2013, p 1,666.

94. There are many examples of successful integration by an acquiring firm within the economic literature. One example is Cisco, which first identified product needs from a demand sided approach, and subsequently purchased start-ups that developed innovations that met those product needs. Finally, Cisco integrated the technology into their existing products.[74]

95. The integration of acquired firms by Google into the G Suite is another example of growth as a result of product synergy, including:[75]

    a. the acquisition of DocVerse in 2010, which when integrated into the G Suite, allowed multiple user edits at the same time; and

    b. the acquisition of Quickoffice, which allowed users access to Google Docs, Sheets, and Slides from their phone.

96. These acquisitions would not have succeeded to the same extent, without the acquisition and integration by Google:[76]

> Google not only likely accelerated the development of each acquired application through its extensive technical and financial resources but embedded those applications within a rich product environment that none of the acquired companies could have feasibly replicated.

97. Without these acquisitions, Barnett (2023) notes that the high failure rate of innovation may have hindered Google's entry into these markets.[77]

98. Opportunities for complementary synergies is a key driver for the success of merger transactions, and the growth rate of the acquired firm.[78]

> Despite the dominant logic that strategic similarity fosters value creation, there are fundamental arguments that complementary differences are more crucial for M&A success.

99. Complementary synergies as a result of an acquisition in one market allows the firm to develop new products as a result of the synergy that permits entry into new markets where they are not currently competing:[79]

> This too suggests that acquisitions are being used for the purpose of entering into new markets by assembling a portfolio of complementary technologies.

[74] Ferrary, M, *Specialized organizations and ambidextrous clusters in the open innovation paradigm*, European Management Journal, 29 (3), 2011, p 186.

[75] See: Geis, G T, *Semi-organic growth: tactics and strategies behind Google's success*, John Wiley & Sons, Inc, Hoboken, New Jersey, 2015.

[76] Barnett, J M, *'Killer acquisitions' reexamined: economic hyperbole in the age of populist antitrust*, University of Chicago Business. Law Review (forthcoming 2024), p 40.

[77] Barnett, J M, *'Killer acquisitions' reexamined: economic hyperbole in the age of populist antitrust*, University of Chicago Business. Law Review (forthcoming 2024), p 40.

[78] Bauer, F and Matzler K, *Antecedents of M&A success: the role of strategic complementarity, cultural fit, and degree and speed of integration.*, Strategic Management Journal, 35 (2), 2013, p 271.

[79] Barnett, J M, *'Killer acquisitions' reexamined: economic hyperbole in the age of populist antitrust*, University of Chicago Business. Law Review (forthcoming 2024), p 28.

3. Acquisition of nascent competitors

100. In this section we describe the empirical and theoretical evidence regarding the acquisition of nascent firms. We set out below:

    a. the concerns raised regarding the acquisition of nascent competitors;

    b. the evidence regarding these acquisitions in relation to the pharmaceutical sector, where concerns regarding killer acquisitions originated; and

    c. the reasons why the concerns do not apply outside of the pharmaceutical sector, and the supporting empirical evidence.

101. We find that the recently developed theory of harm in relation to the acquisition of nascent firms applies to specific fact circumstances, but it does not apply across all sectors of the economy. For example, this theory is very unlikely to apply in mergers involving the technology sector, which is mentioned in the consultation paper.

102. Good regulatory practice cautions against designing regulations for a specific circumstance and then applying those regulations generally. This imposes unnecessary regulatory costs and burdens and leads to poorer outcomes.

3.1 Concerns regarding the acquisition of nascent competitors

103. The acquisition of nascent firms[80] by incumbent firms has been a topic of debate in recent years. So called 'killer acquisitions', a theory of harm coined by Cunningham et al in 2018 (and has subsequently been republished by the same authors after revision in 2021), occur when an incumbent firm acquires an innovative target and terminates the development of the target's innovations to pre-empt future competition.[81]

104. The key concern is that incumbents acquire and discontinue a competitor's product (or a product that would otherwise have been supplied by the competitor in the future) in order to:[82]

    a. avoid the competitive pressure the product may create if it matures under the ownership of a competitor; whilst also

    b. avoid cannibalising the incumbent's own sales by ceasing to develop and sell the product after the acquisition.

105. The 'killer acquisition' term arose in relation to the pharmaceutical sector. Cunningham et al (2021) found that between 5.3 and 7.2 per cent of the pharmaceutical acquisitions it examined were killer acquisitions.[83] The overall effect on welfare of these acquisitions is not clear. There would be a loss of welfare from products no longer being developed that consumers may have used, but there is an increase in welfare from the increased incentive to create new drugs because of the potential to be bought out.[84]

[80] These are young firms which provides or may provide in the future products or services whose competitive significance remains highly uncertain. OECD, *Start-ups, killer acquisitions and merger control - background note*, 12 May 2020, para 12.

[81] Cunningham, C, Edrer, F and Ma, S, *Killer acquisitions*, Journal of Political Economy, 129 (3), March 2021, p 1.

[82] OECD, *Executive summary of the roundtable on start-ups, killer acquisitions and merger control*, 10-16 June 2020, p 2.

[83] Cunningham, C, Edrer, F and Ma, S, *Killer acquisitions*, Journal of Political Economy, 129 (3), March 2021, p 5.

[84] Cunningham, C, Edrer, F and Ma, S, *Killer acquisitions*, Journal of Political Economy, 129 (3), March 2021, p 6.

106. Cunningham et al (2021) does not take into account the potential for efficiencies from mergers, even though the data used suggests those efficiencies exist. Again, this implies that the overall effect of the mergers examined by Cunningham et al (2021) may be positive for welfare.[85]

107. The overall effect on welfare from killer acquisitions is therefore not known. Further, any response to reduce these acquisitions is likely to also reduce other efficient acquisitions because it is difficult to identify a killer acquisition from an efficient one when a merger is taking place. There is therefore not sufficient evidence as yet to make changes to the merger regime to respond to the potential for killer acquisitions.

108. Studies consider that the pharmaceutical sector has unique characteristics that are necessary (but may not be sufficient) for killer acquisitions to take place. Winslett (2023) sets out those characteristics, including a long and regulated timeline for new entry, and a clear understanding of the substitutability of products.[86]

> In pharmaceuticals, there is a set and clear regulatory timeline that allows incumbents to accurately assess where their nascent competition will come from, it is clear what products are substitutes for each other, the intellectual property make it clear what the incumbent is buying, and where -because of the regulatory process- essentially no competing products can come onto the scene in a short timeframe.

109. While these characteristics make a killer acquisition more likely, they are necessary but not sufficient conditions for an acquisition to be a killer acquisition, which results in significant effects on the competitive process. The presence of similar characteristics (whether in the pharmaceutical or other sectors) does not mean that an acquisition is a killer acquisition.

3.2 Very unlikely that killer acquisition theory of harm applies to the technology sector

110. The consultation paper says killer acquisitions have been a concern in the technology sector, according to the OECD.[87] We set out below that the killer acquisition theory of harm is very unlikely to apply to the technology sector because:

    a. most products or services in the technology sector are not developed in an open manner with a long, clear timeline, and new innovations can develop quickly – this leads to:

        i. greater uncertainty regarding the products that a nascent firm will develop, and so the potential benefits of purchasing a rival in order to stop its products being supplied; and

        ii. a reduction in the benefit of eliminating a future rival product, because it may be superseded shortly afterwards;

    b. products or services in the technology sector are usually somewhat differentiated from the existing products or services, and they can have many uses. This reduces the incentive to acquire new innovations just to stop them being used; and

    c. the technology sector is less patent-heavy than the pharmaceutical sector, meaning that the ability to acquire and discontinue an innovation in the technology sector does not prevent competitors from creating similar innovations.

111. Last, we show that empirical studies largely fail to support the killer acquisition theory for technology companies. Instead, they find a lack of adverse effects on competition because the acquisitions

[85] Yun, J M, *Written Testimony of John Yun on nascent competition and acquisitions*, 24 September 2019, pp 8-9.

[86] Winslett, G, *Populists' overreach on antitrust and big tech*, November 2023, p 27.

[87] Competition Taskforce, *Merger reform - consultation paper*, November 2023, p 19.

commonly cited in the technology sector appear to have often been associated with competitive or benign outcomes.

3.2.1 Development of products in the technology sector is often opaque and uncertain

112. The uncertainty regarding product development of rivals in the technology sector means that it is difficult for an incumbent to know what product a nascent firm will produce and therefore how much of a competitive threat it will be. This reduces the incentive to acquire a nascent firm just to stop its new products.

113. The technology sector does not have the clinical trial phases, meaning there many people and firms developing ideas for new products and services without a clear way of determining those that are getting closer to finished products. By contradistinction, pharmaceutical firms can monitor potential rivals and give close attention to the handful that are likely to be substitutes and getting closer to market.

114. The pharmaceutical sector's product development timeline and process provides greater certainty and predictability of the potential threat posed by a nascent firm, than is achievable in the technology sector:[88]

> In high-tech fields, however, it can be difficult to tell which innovations constitute a competitive threat.

115. Product development timelines within the technology sector are substantially different to those in the pharmaceutical sector. There are no lengthy regulatory approvals through clinical trials, and no requirements to be transparent about products or services being developed.

116. This removes the ability of incumbent firms to monitor potential competitors in the same way that can be present in the pharmaceutical sector. A potential competitor could appear quite suddenly in the technology sector:[89]

> …technological innovations can often be deployed without extensive testing prior to market launch, and development can continue while the innovation gains traction in the market.

3.2.2 High rate of innovation in the technology sector decreases incentive to eliminate a competitor

117. The fast pace of innovation in the technology sector means that the potential benefit from a killer acquisition is reduced, because any advantage it provides is soon overtaken.

118. The technology sector advances quickly, as firms constantly innovate. Innovations within the technology sector move quickly such that the product cycle is reduced as new innovations enter the market:[90]

> Moreover, the high-technology industry in itself is dynamic as rapid innovations shorten product cycles…

119. According to Littler and Wilson (1990), the dynamic nature of the technology sector means that there is a high turnover of firms, with many new entrants as a result of rapid innovation:[91]

[88] Limarzi, K C and Phillips, H R S, *"Killer acquisitions," big tech, and section 2: a solution in search of a problem*, May 2020, p 3.

[89] Holmstrom, M, Padila, J, Stitzing, R and Saaskilahti, P, *Killer acquisitions? The debate on merger control for digital markets*, Yearbook of the Finish Competition Law Association, 2018, p 10.

[90] Arora, P Kweh, Q L and Mahajan, D, *Performance comparison between domestic and international firms in the high-technology industry*, Eurasian Business Review, 8, 2018, para 479.

[91] Littler, D and Wilson D, *The evolution and strategic management of new technology-based sectors: the case of computerized business systems*, Technology Analysis & Strategic Management, 2 (2), 2007, para 161.

> Fourthly, such sectors can be very dynamic not only because of the rapid, if in some cases erratic, pace of growth but also because of the sometimes frenetic rate of product development, giving rise to short product lifecycles, and the high turnover of firms, with many exits and entrances.

3.2.3 Products/services in the technology sector have many potential uses and are differentiated

120. Relative to products in the pharmaceutical sector, new products and services in the technology sector tend to:

    a. have more potential uses;

    b. be more differentiated; and

    c. have a less certain degree of substitutability with existing products.

121. These all reduce the incentive to purchase a developing product just to stop its development because:

    a. the benefit of stopping the product being developed falls when the new product is a weaker substitute for the existing product, and is more uncertain when that degree of substitutability is less certain; and

    b. the cost of stopping the new product being developed increases when that product may have other uses or value outside of replacing the incumbent's product.

122. The incentive to discontinue an acquired product is lower in the technology sector due to this multi-use nature of technology. Even if the acquired product has some cross-over with the acquiring firms existing portfolio, there is greater incentive to continue the acquired product to expand sales, often through integration, rather than to discontinue it:[92]

> The decision to continue the development of the target's product or to kill it depends on complementarities between products. With strong complementarities, the acquirer prefers to continue the product rather than killing it.

123. Unlike the pharmaceutical sector, technology innovations often have more than one application or use:[93]

> Many new technologies can be used for many different purposes and in different contexts…

124. Products within the technology sector tend to be differentiated, which reduces the incentive to discontinue a rival product in order to weaken competition, and increases the loss from discontinuing a product or service once because the new product is more likely to expand sales. There is also less clarity in the technology sector about how substitutable new products and services will be, which increases the risk of acquiring a firm simply to eliminate its product.

125. Products and services in the technology sector tend to be differentiated and firms often look to provide a range of complementary services:[94]

> By contrast, innovation in digital markets relies on product differentiation, complementarity, and ecosystem building.

[92] Gautier, A and Lamesch, J, *Mergers in the digital economy*, Information Economics and Policy, 54, 2021, p 11.

[93] Hong, S and Tam, K Y, *Understanding the adoption of multipurpose information appliances: the case of mobile data services*, Information Systems Research, 17 (2), 2006, p 162.

[94] Ivaldi, M, Petit, N and Unekbas, S, *Killer acquisitions: evidence from EC merger cases in digital industries*, TSE Working Paper No. 13-1420, September 2023, p 9.

3.2.4 Intellectual property rights in the technology sector lessen the incentive for killer acquisitions

126. The technology sector is less patent-heavy than the pharmaceutical sector.[95] The ability to acquire a potential rival product does not therefore necessarily eliminate future competition as other competitors can innovate in similar ways without infringing on patent protection.

127. This reduces the incentive to acquirer innovations according to the 'killer acquisition' theory of harm posed by Cunningham et al, because there is less benefit to the acquiring firm from reducing the competitive pressure as a result of an acquisition.

128. The economic literature discusses the reasons provided for there being fewer patents in the technology industry. Graham et al (2010) discusses that the most commonly cited reasons by technology firms, which are vast, include the ability to innovate around patents:

> These included: not wanting to disclose information; the cost of getting the patent, including attorneys' fees; that competitors could have easily invented around the patent; that they believed trade secret was adequate protection; the cost of enforcing the patent, including actions in court; that they did not believe the technology was patentable; and that they had no need for legal protection.

129. There is less ability to design around a patent in the pharmaceutical sector where there are strong intellectual property rights. As phrased by Barnett (2023), this ability to design around separates the technology and pharmaceutical sectors further:[96]

> By contrast, in technology markets outside pharmaceuticals (especially software), patent protection is often difficult to enforce or reasonably circumvented through "design-around" products.

130. This lessens the incentive for 'killer-acquisitions' in the technology sector, even when accompanied by a patent. The ability to design around patents reduces the benefit to the acquiring firm of lessening competitive pressure through an acquisition.

3.2.5 Empirical evidence shows that killer acquisitions rarely occur in the technology sector

131. Empirical studies have largely concluded that killer acquisitions rarely occur within the technology sector. For example, Ivaldi et al (2023) says that:[97]

> Empirical work suggests that killer acquisitions are a rare phenomenon.

132. An empirical study of acquisitions in the Europe expressed caution regarding the extension of Cunningham et al (2021) into the technology sector. The study concluded that:[98]

> Our findings fail to support the killer acquisition conjecture.
>
> ….
>
> First, given that the killer acquisitions conjecture claims application in controllable transactions, we now know that there is no evidential basis to change the law to make it stricter.

[95] For example, there were more than twice as many applications for patents in the pharmaceutical sector than the computer technology sector in Australia during 2022. Australian Government, *Australian IP Report*, 2023, p 16. See also: Grabowski, H, *Patents, innovations and access to new pharmaceuticals*, Journal of International Economic Law, 5 (4), 2002.

[96] Barnett, J M, *'Killer acquisitions' reexamined: economic hyperbole in the age of populist antitrust*, University of Chicago Business. Law Review (forthcoming 2024), p 17.

[97] Ivaldi, M, Petit, N and Unekbas, S, *Killer acquisitions: evidence from EC merger cases in digital industries*, TSE Working Paper No. 13-1420, September 2023, p 5.

[98] Ivaldi, M, Petit, N and Unekbas, S, *Killer acquisitions: evidence from EC merger cases in digital industries*, TSE Working Paper No. 13-1420, September 2023, p 21.

133. Two further empirical studies came to similar conclusions. A 2022 study of 23 acquisitions that are commonly alleged to be killer acquisitions in the technology sector found a lack of adverse effects on competition because of the acquisitions:[99]

> …commonly cited by reform advocates appear to have often been associated with competitive or benign outcomes rather than with adverse effects in market structure.

134. The Israel Competition Authority studied 23 acquisitions of Israeli start-ups during 2014-2019. The study reiterated the need for caution when extending the Cunningham et al (2021) theory to the technology sector:[100]

> …**did not** find direct evidence of an elimination of an acquired product from the target market. [emphasis in the original]

135. Last, Yun et al (2021) says that even those that advocate for greater regulation of nascent firm acquisitions recognise that the evidence of the theory proposed by Cunningham et al (2021) in the technology sector is at best mixed, and more work is required to properly inform policy decision making.[101]

[99] Crandal, R W and Hazlett, T W, *Antitrust in the information economy: digital platform mergers*, Journal of Law and Economics, 65 (6), 2022, p S500.

[100] Israel Competition Authority, *Acquisitions of Israeli start-ups: ex-post examination*, December 2020, p 4.

[101] Yun, J M, *Are we dropping the crystal ball? Understanding nascent & potential competition in antitrust*, Maquette Law Review, 104 (3), 2021, p 645.

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