

Superstar Phenomenon

Introduction

In recent years, the emergence of 'superstar' firms that are distinguishing themselves from the rest of the economy has drawn increasing academic attention. Such superstars, according to McKinsey's metric, account for 80% of economic profits. They have established higher returns on investment, higher R&D investment, and higher intangible investment (Salehnejad, 2021), and are more productive, more profitable, and more innovative than other high-growth firms (Manyika *et al.*, 2018; Ayyagari *et al.*, 2018). Compared to 20 years ago, superstar firms have created 1.6 times more economic profit on average (Manyika, 2018). With 'scale and scope', they have acquired market power in all sectors of the economy (Shivakumar, 2017). However, superstars are not just mega firms, and they are different from high-growth firms – in these cases, value creation matters more than size.

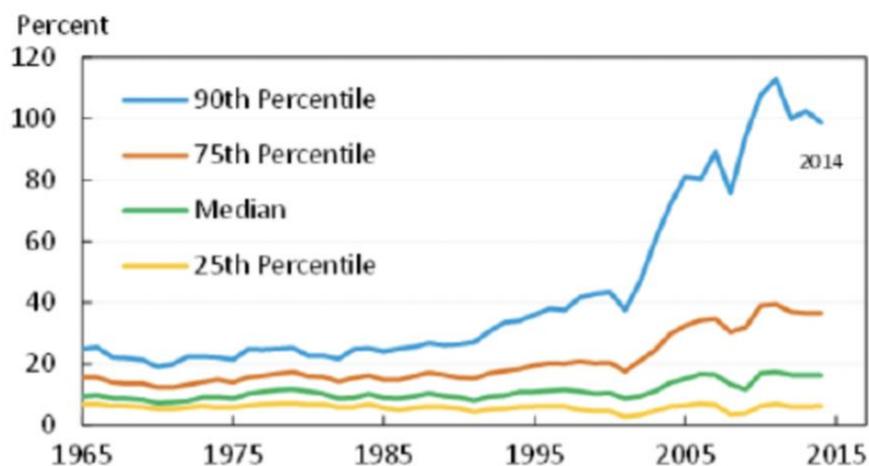
The McKinsey global institute analysed superstar firms by using economic profit as the metric rather than revenue size, market share, or productivity growth, because these other metrics include firms that are large but may not create unique economic value (Manyika, 2018). This superstar phenomenon engenders some puzzling economic questions: Why are these firms doing so well and pulling away from the competition? How can they keep growing and remain relatively persistent over time, even as high-growth firms disappear? In this paper, I will firstly explain the superstar phenomenon through a literature review of the key characteristics of superstar firms, followed by a description of the fundamental mechanisms that have given rise to such superstars. Secondly, using Toyota as a superstar firm case study, I will analyse the links between different corporate strategies to illustrate Toyota's superstar characteristics and how

it is likely to affect the growth of other firms. Finally, I will examine how superstar characteristics contribute to firm resilience and explore how the characteristics of Toyota enable its immunity to economic downturns such as the COVID-19 pandemic.

Literature Review

Although there is no standard definition of a superstar firm, oversize returns on investment, higher R&D investment, higher intangible investment, higher labour productivity, and relative long-term persistence are usually considered the primary attributes of a superstar firm (Salehnejad, 2012; Manyika *et al.*, 2018). According to Manyika *et al.*, the definition of a superstar firm often falls into one of three types: 'increasing convexity of returns', 'outsize gains relative to inputs', or 'massive economies of scale' (2018). First, regarding increasing convexity of returns, Figure 1 shows that the return on invested capital (ROIC) of the top 10 superstar companies hit 100%, thus pulling away from other firms. These firms have higher profit margins and capture the greatest gains in revenue share (Manyika *et al.*, 2018).

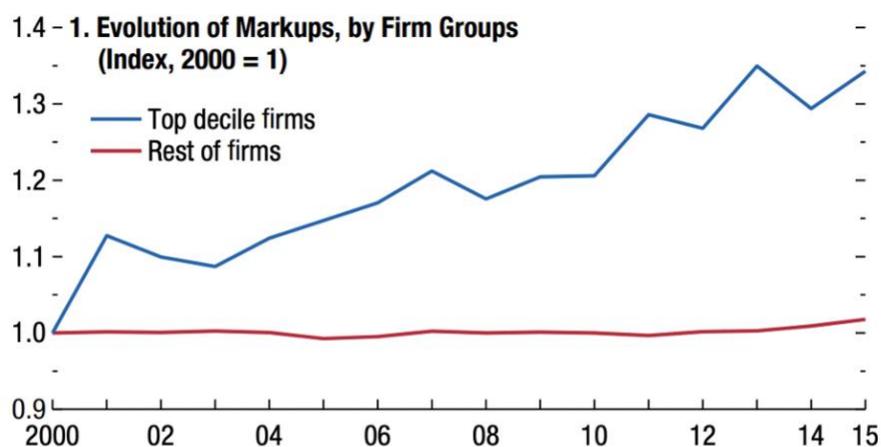
Figure 1: Top 10 Superstar ROIC



Source: VOX CEPR (Ayyagari, 2018).

Second, regarding outside gains relative to inputs, ‘superstars are firms that achieve outside gains in market share for marginal improvements in productivity, regardless of their starting market position’ (Manyika *et al.*, 2018). Rising market power can result from ‘greater competition and winner-takes-most dynamics in the digital age’ (International Monetary Fund, 2019). Figure 2 illustrates the highly uneven markups across firms. Top decile firms tend to be more productive and have higher markups, higher profitability, higher concentrations, and make more intensive use of intangibles than other firms (International Monetary Fund, 2019).

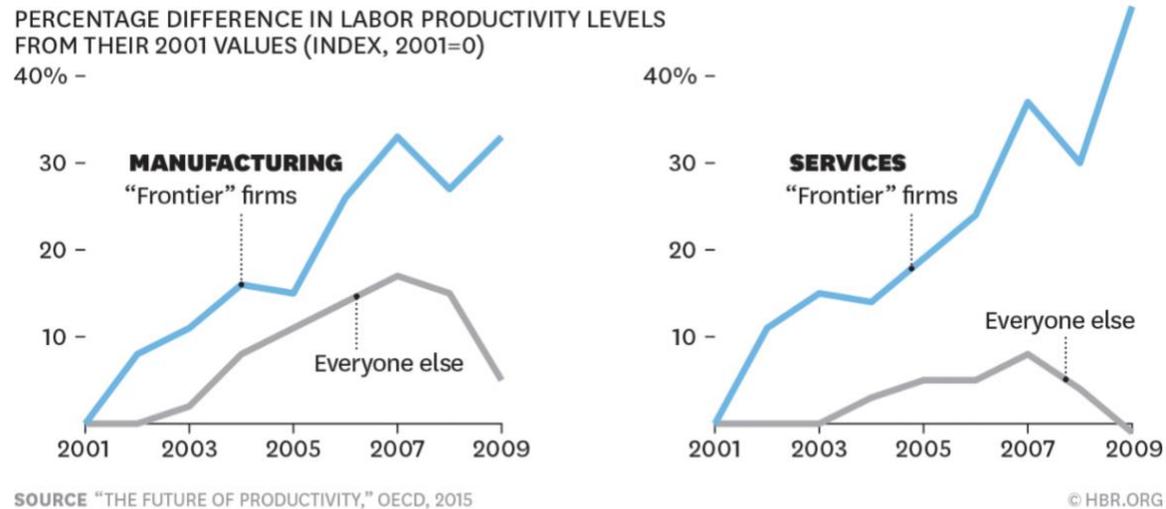
Figure 2: Firm Markups



Source: International Monetary Fund (2019).

Third, regarding massive economies of scale, digital platform firms are scalable, since intangible products have high development costs but low marginal costs (low replication costs) (Salehnejad, 2012). Such firms are more stable and have the potential to reach higher productivity. When looking at labour productivity in manufacturing and service, the gap between the most productive firm and other firms increased significantly (Figure 3). It is not IT that creates superstars, but rather the combination of technological advantage, productivity growth, and market power (Manyika *et al.*, 2018; Frick, 2017).

Figure 3: Labour Productivity Levels

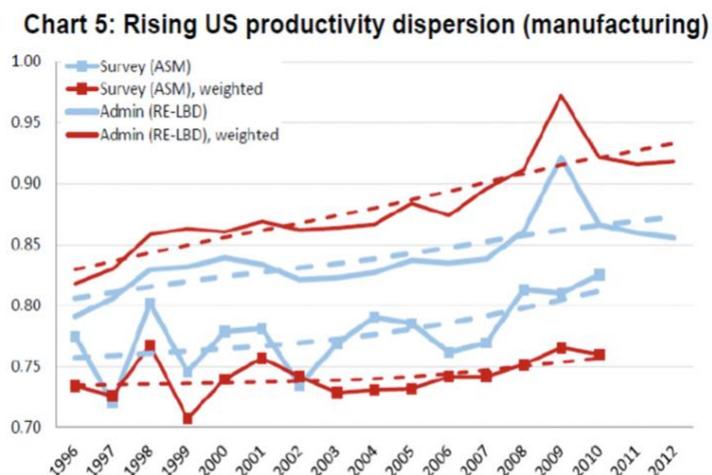


Source: *Harvard Business Review* (Frick, 2017).

Superstar Mechanisms

What exactly creates these differences in rising productivity and increased market concentration? I will explore this question for the superstar phenomenon based on the hypothesised variables of productivity, scale advantages, and digital scalability. First, inequalities between firms have been increasing. Figure 4 illustrates these rising productivity dispersion trends in the US manufacturing sector. This trend can be examined using a Darwinian selection mechanism – with competitive forces in place, the economic environment advantages the most productive firms in an industry; the product market will be reallocated to the most value-added generated firms, and the market concentration will rise whilst the labour share will fall (Autor *et al.*, 2019). Thus, superstar firms gain more market share and thrive.

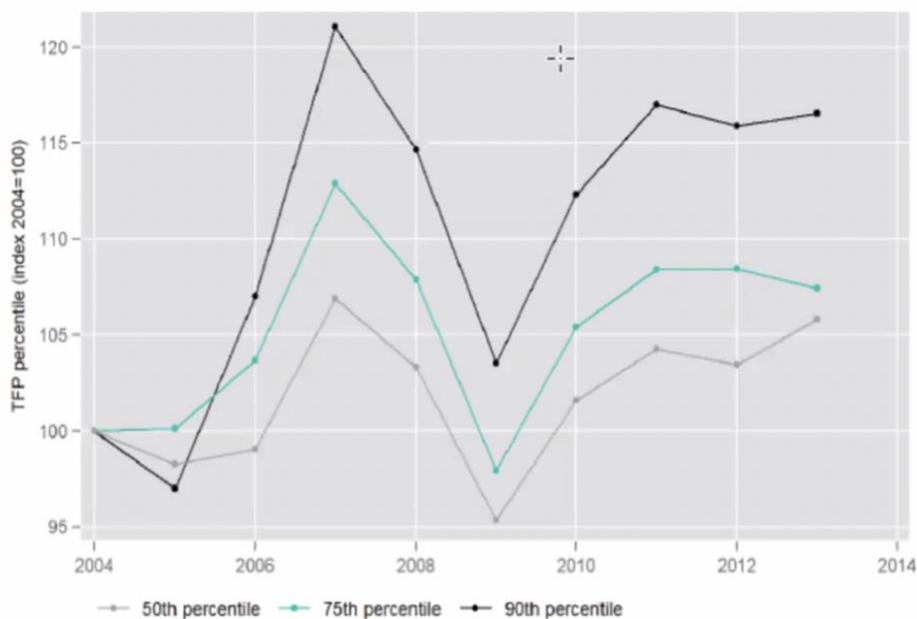
Figure 4: Productivity Dispersion Trends



Source: Salehneja (2012).

Second, investing in intangible assets such as automation, new technologies, R&D, stakeholder relationships, and patents provide further advantages to large firms over other firms. Adoption of more intangible capital is costly. Large firms have better access to resources such as finance and human capital, and are more likely to benefit from a reduction in marginal costs because of their scale and complementary skills and assets (Figure 5). Large firms also invest more in R&D than smaller ones. Given the overall decreases in research productivity and increases in the cost of R&D (Salehneja, 2012), only large firms, with their greater productivity and ability to benefit from cost advantages and increases in market share, can afford to finance innovation.

Figure 5: Marginal Costs



Source: Salehneja (2012).

Superstar firms in digital markets exhibit zero marginal costs for adding extra users, large network economies of scale, and a ‘winner takes all’ dynamic (Reenen, 2018). Furthermore, the rapid fall in quality-adjusted ICT prices and intangible capital has given large firms advantages in large overhead cost scenarios and enabled productive firms to further lower their costs and expand their market share (Autor *et al.*, 2019). Figure 6 represents the cost curve of scalable businesses that realise profit maximisation. When the average cost is decreasing, productive firms become more efficient and gain higher profit margins, enabling them to lower costs. Figure 7 shows how the adoption of automation increases firms’ capital intensive and lowers the average price.

Figure 6: Cost Curve

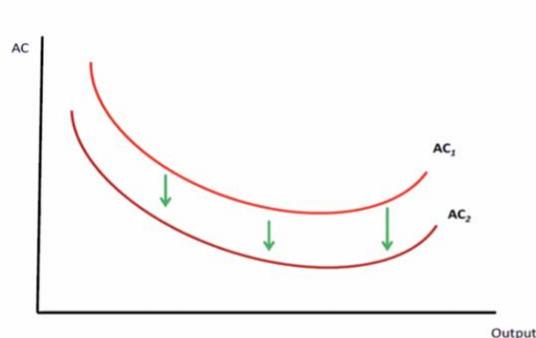


Figure 7: Relationship of Capital and Labour



Source: Salehneja (2012).

Superstar firms have become winner-take-all and have realised higher market concentration due to globalisation. This trend increases market competition and advantages productive firms because they are more likely to survive in a highly competitive market (Reenen, 2018). Globalisation lowers search costs. Moreover, according to the Darwinian selection mechanism, the market rejects inefficient firms and reallocates market shares towards more productive firms, paving the way for superstars.

Toyota: Superstar Characteristics and Corporate Growth Strategy

Technological and Market Conditions

The rise of superstars is the natural result of digital innovation, including advances in the collection, processing, and provision of information (Korinek, 2017). A superstar firm that deploys automation technology using digitisation and IT can be scaled at close-to-zero cost, cut its unit labour costs, and choose a level of output, thus reaching lower average costs and higher profit margins. The transportation sector is at the cusp of such innovation (Korinek, 2017).

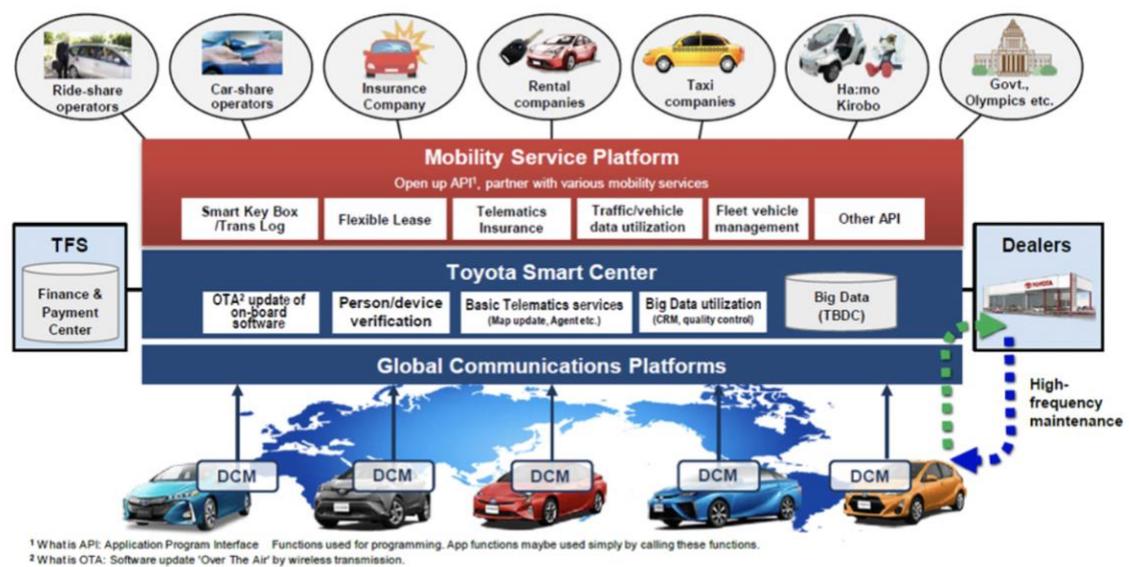
Toyota, as a superstar firm, is at the forefront of AI and robotics technology research. Toyota invested \$1 billion in a Silicon Valley R&D centre to pursue their goal of reducing the negative environmental effects of automobiles and establishing a more sustainable society (Toyota, 2015).

Toyota's growth strategies – such as demand creation, network effect, and general purpose technology (GPT) – provide enormous growth potential and return on investment, and thus establish strong competitive advantages and barriers for entry. Toyota has developed technology to resolve social issues such as automobile safety, gas emission regulation, and energy conservation (Toyota Commemorative Museum of Industry and Technology), as well as creating demand and investing in customer acquisition. Toyota's president, Akio Toyota, announced in 2018 that the company would 'redesign Toyota from a car-making company into a mobility company that provides services related to the movement of people around the world' (Marklines, 2018) (Figure 8). By installing a Data Communication Module (DCM), Toyota can cooperate with various industries and services, such as rideshare, car rental, and taxi services. Through the consolidated GPT, knowledge can be productively transferred from one product to another.

Spill-overs of knowledge between distinct production processes allow industries to utilise economies of scope and increase productivity (Salehneja, 2012). The more products and services Toyota offers, the more data it is able to process and the more it can explore new markets and contribute to customers, society, and Toyota's own business. By expanding big data usage and positioning itself as a mobility service partner (Figure 9), Toyota can achieve diversification by collaborating with partners such as Amazon, Pizza Hut, and Uber to enter new

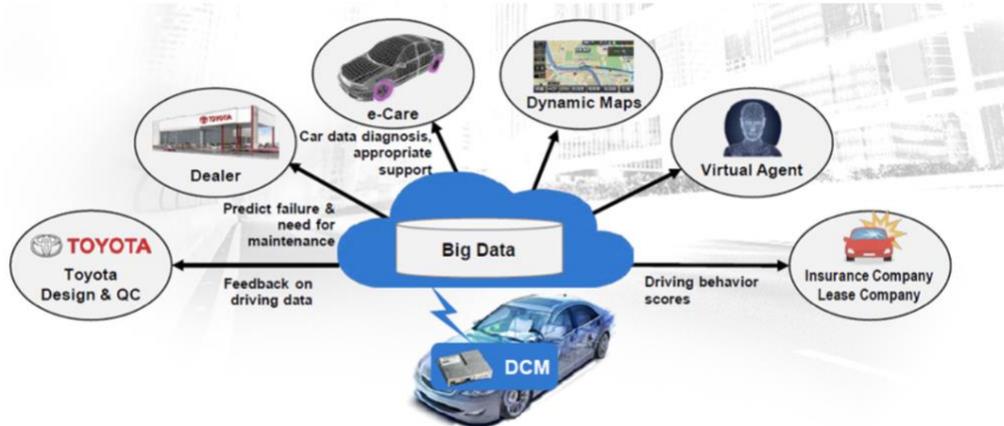
product markets and create new value for cars as a mobility service (Marklines, 2018). This connected company strategy allows Toyota to achieve economics of scale, lower average costs, and a lower penetrating price. Building a connected platform allows Toyota to establish strong network effects barriers to create more customer demand, block potential market entrants, reduce the marginal cost of each additional unit of output, and further increase its market share.

Figure 8: Foundation of Toyota’s Mobility Strategy, the Mobility Service Platform (MSPF)



Source: Marklines (2018).

Figure 9: Expansion of Big Data Usage



Source: Marklines (2018).

Internal Mechanisms

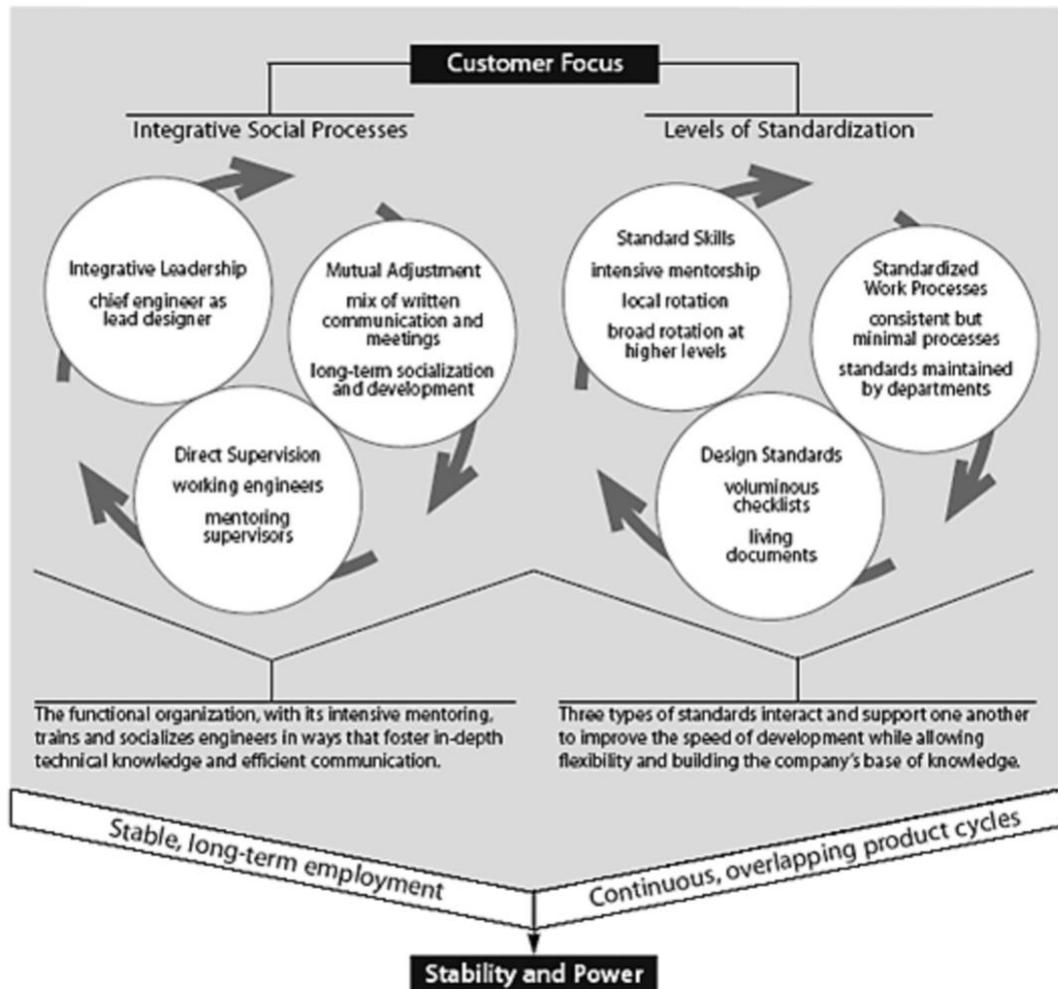
Inequality in digital capital is increasing as the top decile firms pull further away from their competition. This phenomenon is consistent with the concept that technology-intensive firms make increased investments in training and skills (Tambe *et al.*, 2020). Innovations such as those of Toyota require considerable organisational re-engineering and skill development. Toyota implements its strategy through internal mechanisms such as lean manufacturing, coordination, an in-house training centre, and engineering checklists (Sobek *et al.*, 1998). Toyota's management system is known as the Toyota Production System (TPS), which aims to reduce cost and eliminate waste (Parksberry and Parsley, 2010).

Toyota's reliance on highly formalised rules imposes potential limits on their use of cross-functional teams. To avoid such rigid policy drawbacks, Toyota has combined their highly formalised system with policies to ensure that each project is flexible and benefits from other projects (Sobek *et al.*, 1998). To achieve effectiveness, they have implemented the strategy of

lean manufacturing. As an illustration of Toyota's impact on the automobile and other industries, companies all over the world have begun to emulate their *Kaizen* strategy (Parksberry and Parsley, 2010).

Toyota's managerial practices can be grouped into six mechanisms. Three are integrative social processes: mutual adjustment, close supervision, and integrative leadership. The other three are levels of standardisation: standard skills, standard work processes, and design standards (Sobek *et al.*, 1998). This organisation allows all functions to coordinate and reinforce each other. The coordination mechanism fosters in-depth technical knowledge, efficient communication, and mutual interactions to improve the company's knowledge base (Figure 10). Toyota's 'learning curve' directly impacts their productivity and allows them to use knowledge to their competitive advantage.

Figure 10: Coordinating Mechanism Interactions



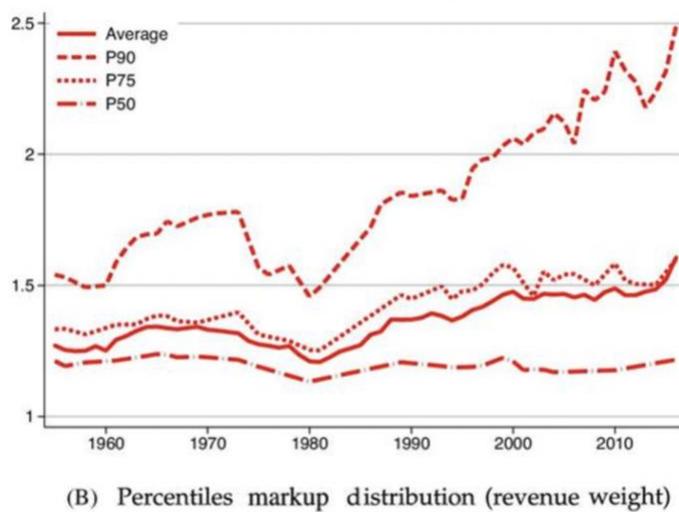
Source: Sobek, D.K. Liker, J & Ward A. C. (1998).

Market Evolution

According to Reenen (2018), competition has not disappeared; rather, the nature of competition has changed. The success of such firms may be 'as much due to intensified competition "for the market" rather than anti-competitive mergers or collusion "in the market"' (2018). Business concentration has increased significantly due to the emergence of

superstars. When designing competitive policies, the economic and social implications generated by this new business environment cannot be ignored (Canal, 2019). Anti-trust regulations are primarily responsible for the increase in the market power of superstars. The widened productivity gap could 'reflect anti-competitive practices to prevent the less productive firms from catching up' (Reenen, 2018). In a less competitive environment, incentives to invest and innovate are reduced, since fewer entries mean that companies do not need to invest to the same extent. This ultimately has a negative impact on productivity (Canal, 2019). Superstar firms maintain a higher level of investment in intangible assets, higher productivity, and higher capacity for innovation. According to Darwinian selection, the market reallocates market shares from low-markup firms to high-markup firms (Figure 11). This increase in markups also indicates the pricing power of firms. This can be attributed to a change in the 'market structure (less competition) or due to technological change (bigger spread in firm productivity)' (Loecker *et al.*, 2020).

Figure 11: Percentiles Markup Distribution



Source: Loecker *et al.* (2020).

Corporate Resilience

Economic crises such as the Great Recession and the COVID-19 pandemic are disruptive for firms. Crises are associated with higher uncertainty, higher cost of capital, supply chain disruptions, and deteriorating consumer demand (Salehnejad, 2020). Large drops in demand force firms that lack liquidity to close. According to Flammer and Ioannou (2016), firms that sustain R&D and CSR perform better following economic recovery; intangible strategic resources such as innovation capability and stakeholder relations improve corporate resilience during and after such recessionary periods. The COVID-19 pandemic has increased the need for resiliency, which 'isn't a lever to be pulled; rather, it's a combination of actions, technologies, and strategies that companies work on every day' (Mckinsey, 2021).

While other firms save their way out of the crisis, superstar firms invest their way out (Flammer & Ioannou, 2016). As Toyota president Akio Toyoda stated, we as 'human beings and

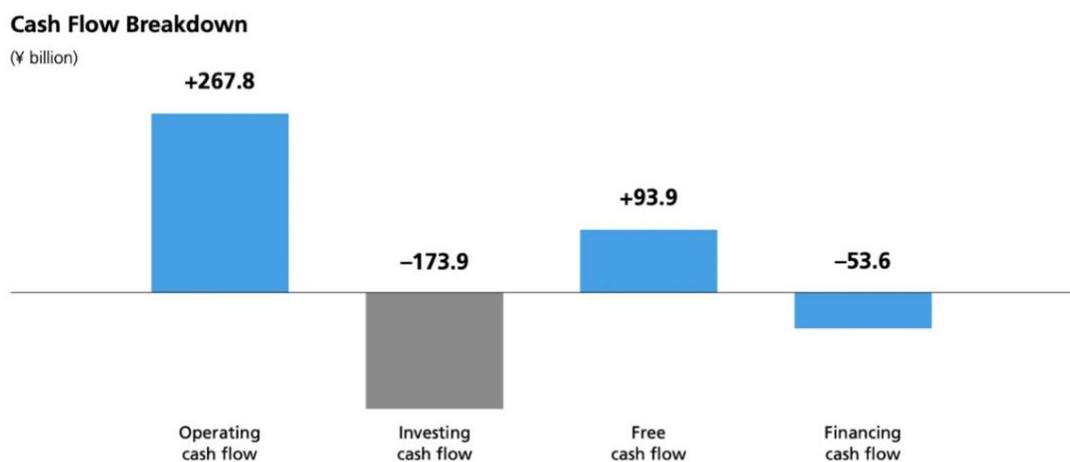
as companies, should live our lives. With Earth, with society, with all stakeholders – live together’ (ToyotaTimes, 2020). For instance, Toyota continued its investments in CSR programs, using primary initiatives to support the medical sector and automotive industry by listening to stakeholders to determine how the company could contribute during COVID-19. Those measures include production of 3D-printed medical face shields, using the Toyota Productive System (TPS) to improve medical equipment manufacturer productivity, providing transportation support for infected patients, and leveraging supply chain cooperation to procure face masks (Toyota, 2020).

During fiscal year 2021, Toyota’s expenditures on R&D were approximately \$9.87 billion. According to Toyota, the ‘intellectual property that R&D generates is a vital management resource that Toyota utilises and protects to maximise its corporate value’ (Baipai, 2021). Firms’ own majority patterns can push productivity even further and increase market share. For example, Toyota was granted 2,079 patents in 2020, and owned 22,157 patents during the COVID-19 outbreak (Baipai, 2021). These competitive advantages allow them to stay ahead of the curve. Toyota’s highly resilient business model, especially their high-quality supply chain management, reduces their exposure to pandemic-related chip shortages (Fitchrating, 2021). Furthermore, Toyota’s signature *Kaizen* efficiency will allow them to reduce future costs and yield larger savings once the auto market recovers (Yuzawa, 2020).

While most carmakers suffered losses in 2020, Toyota made a profit of R25 billion (Branquinho, 2020). Although the impact of COVID-19 threatens the global economy, Toyota continues to enact its global vision and enhance business activities that contribute to society. Figure 12 represents Toyota’s cash flow during COVID-19. Net cash flow is 267.8 billion JPY.

Toyota continues to invest during the economic downturn, expending net 173.9 billion for acquisition of property, plants, and equipment. Financing cash flow is mainly used to pay dividends to shareholders (Toyota Tsusho Corporation, 2020). Toyota has focused on achieving stable growth and maintaining its financial position, and has adopted a policy of ‘funding the less liquid portion of working capital with long-term debt’ (Toyota Tsusho Corporation, 2020).

Figure 12: Cash Flow in the Fiscal Year Ending 31 March, 2020



Source: Toyota Tsusho Corporation (2020).

Conclusion

Superstar firms exhibit high levels of innovation intensity, digitisation, R&D investment, and skilled labour. They have better access to financial resources, human capital, and technologies, and persistently maintain and enhance productivity to acquire market share and scale advantages. Superstar firms are pulling away from their peers and smaller firms because they create economic value rather than size, market share, or productivity growth (Manyika *et*

al., 2018). For Toyota, its digitisation and automation technology allow the company to reach a scaled economics of scale and realise lower costs to obtain a larger market share. Network effect and GPT have established high barriers of entry and established strong competitive advantages for Toyota. Combined with its internal *Kaizen* and coordination mechanisms, these measures allow Toyota to save considerable costs and build consolidated knowledge that directly increases productive capacity (Tambe, 2021). Unlike mega firms, which may disappear in several years, superstar firms are growing persistently. Their ability to increase intangible strategic resources such as innovation and stakeholder relationships allow them to sustain competitiveness both during and after economic recessions (Flammer and Ioannou, 2016).

In this study, I particularly used the views of John Van Reenen (2018), an MIT applied economist, to analyse the market evolution and risks arising from the market dominance of superstar firms. Various studies have been conducted on this issue, and many conclusions remain incomplete. Some questions remain regarding whether the new business context given the rise of superstars is the result of either a reduction in competition or strong competition (Canals, 2019). The study of the superstar phenomenon has just begun, and more attention should be given in future studies to both the rise and fall of superstar firms in the new business environment.

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