The Interdependence Imperative: Business Strategy, Complementarities and Economic Policy

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This Version: November 2020

Abstract

An enduring idea in economics and management sciences is that successful business strategies exploit complementarities across management practices within a firm. From this complementarity perspective, the success of business strategy requires utilizing a variety of interdependencies across management practices. Navigating large arrays of possible interdependencies implies that strategic decision-making is often conducted under high complexity and uncertainty. This paper provides an introduction to the conceptual foundations of complementarities in business strategy, and its implications for strategic decision-making and managerial learning. Against this backdrop, I outline issues of measurement and data collection for strategy practices, drawing on recent measurment efforts by academic researchers as well as national statistical agencies. The last part of the paper discusses how increased large-scale data collection on firm activtity complementarities and strategy practices can inform a variety of policy areas, such as antitrust policy and merger review, industrial and innovation policy, tax policy and public-private partnerships.

[1] I would like to thank the organizers, Simon Quinn and Daniela Scur for inviting me to participate in this Special Issue for the Oxford Review of Economic Policy. I am also grateful for helpful comments from Tobias Kretschmer, Simon Quinn, my discussant Cameron Hepburn, the workshop participants at the virtual conference for the Oxford Review of Economic Policy Special Issue and from an anonymous referee.

1 Introduction

Almost 25 years ago, Michael Porter, one of the founding fathers of the field of strategic management posed the question "What is Strategy?" in the Harvard Business Review. And while not every part of his answer stood the test of time[2], one of his key insights, namely that business "strategy is about combining activities" proved to be enduring. Since Porter's article, a growing research literature has shown that understanding business strategy from the perspective of interdependencies is imperative for understanding why some firms are consistently more productive, profitable, and innovative than their competitors, see Leiblein, Reuer and Zenger (2018). One example for the successful exploitation of such interdependencies is Disney's ability to generate value for customers not only from producing blockbuster movies, such as "Frozen", but also profit from related demand for TV, music, merchandizing as well as theme park content in the wake of such box office successes.

This paper argues that an analysis of business strategy and the role of interdependencies among firms' strategic choices is valuable for how economic policy shapes firm performance and vice versa. The importance of such interdependencies also emphasizes the need to better understand how top managers make strategic decisions, and how these decisions affect firm performance, competitiveness, and ultimately national income. To illustrate the importance of business strategy, let me highlight three specific examples of economic policy areas, to be discussed at the end of the paper.

First, industrial policy often seeks to encourage firms to innovate via R&D tax credits (Dechezleprêtre, Einiö, Martin, Nguyen and Van Reenen (2016)) or seeks to subsidize adoption of productivity-enhancing technologies such as Data-Driven Decision-Making (Brynjolfsson and McElheran (2016)), Artificial Intelligence (Agarwal, Gans and Goldfarb (2018)) or structured management (Bloom, Lemos, Sadun, Scur and Van Reenen, this issue). Are these technologies and management practices "universally best practices" and should therefore be indiscriminately supported by governments? From the perspective of business strategy, the answer is almost always "no", i.e. the value of most technologies and management practices typically depends on a firm's

[2] For example, Porter started with the claim that "Operational Effectiveness is not Strategy", which has been disputed by much of the recent literature on structured management practices, see Sadun, Bloom and Van Reenen (2017).

strategy in systematic ways. In this sense, the ideas outlined in this paper focus on firm-internal complementarities among management practices, while some of the other papers in this special issue focus on external forces that interact with management practices, such as competition (Bloom, Lemos, Sadun, Scur and Van Reenen, this issue) and the supply of skilled managers (Valero, this issue).

Second, antitrust policy must balance potential public benefits from mergers against potential market power enhancements. In this context, many of the largest mergers refer to efficiency-enhancing "synergies" that more than offset the risks of increased market power. Again, an analysis of business strategy allows one to evaluate the credibility of the proposition that the efficiency of two combined firms is higher than the efficiency of the separate firms, as discussed in section 5.2.

Third, the growing importance of corporate social responsibility (CSR) efforts is likely to increase the complexity of executive decision-making. On the one hand, CSR efforts often will expand a firm's objectives beyond profit-maximization towards additional goals such as environmental sustainability, social progress, and community development. On the other hand, firms pursuing purpose beyond profit (Edmans (2020); Henderson (2020)) will also need to consider of many more types of interactions, such as interdependencies between financial incentives and social preferences of employees, see Ashraf and Bandiera (2018). In other words, an increased number of highly interdependent decisions leads to more decision complexity and highlights the importance of practices that enable executives be deliberate and decisive in the face of this complexity, see Simon (1949). How executives make decisions and what practices might enable them to act more consistent, proactive, and evidence-based becomes even more important with increased importance of CSR. Throughout this paper, I discuss recent advances in measuring bounded rationality and strategic decision making, building on work by Yang et al. (2020) and discuss consequences of such work for economic policy.

The paper is written with at least two target audiences in mind. The first is policy makers, who seek to understand how business strategy and economic policy are connected. Joint considerations of these two policy areas are rare, since both relate to entirely different scientific fields: business

strategy is the domain of strategic management, while economic policy is the domain of economics.

The second is members of national statistical agencies. Efforts to measure structured management for samples of thousands of firms have been adopted by statistical agencies in Japan, Mexico, Germany and the UK, while academic research has pursued the measurement of structured management beyond manufacturing to sectors such as education, health care and services. No comparable efforts exist for representative data on business strategy and strategic decision-making, except in very rare cases, such as Canada. This paper therefore gives a selective overview of currently existing approaches for gathering data on business strategy, outlines topics in need of more data collection and gives examples for policy areas that would benefit from more large-scale data on business strategy.

The paper is structured as follows. Section 2 begins with an illustrative example for the key ideas. Section 3 lays the conceptual foundations, by introducing ideas related to complementarities across firm activities and why these complementarities are crucial for understanding business strategy and vice versa. Section 4 gives an overview of current methods for collecting data on business strategy and outlines areas in need of increased data collection. Section 5 then uses the insights from the previous two sections and provides examples of policy areas that would benefit from the collection of representative data on business strategy and strategically important firm activities. Section 6 concludes.

2 An Illustrative Case: The Walt Disney Company

Let me begin with a company case that exemplifies many of the key ideas in this paper: the Walt Disney Company, or "Disney" hereafter. Founded in 1923 by Walt Disney and this brother Roy, Disney is a market leader in the media and entertainment industries. Media and entertainment in turn is one of the most dynamic industries in the global economy and subject to several ongoing disruptive innovations. One such disruptive innovation is the rise of online streaming services and the continuing competitive quality-escalation between premium cable providers such as HBO and Showtime as well as streaming services such as Netflix, Amazon Prime and DisneyPlus. Another example is how connected smart devices are reshaping consumption patterns among different entertainment options, such as gaming, social media, online retail and other online entertainment.

Media and entertainment has also been for a long time a feircely competitive industry, that has not only been subject to boom-bust cycles of expansion and consolidation, but is also well-known for some of the most spectacular merger failures of all time. The most notorious of these failures was the AOL-Time Warner merger of 2000, which by some estimates destroyed over a billion dollars in company value, see Carroll and Mui (2008).

Against this backdrop, Disney has thrived for almost a century. Disney deserves our attention not only for this endurance, but also for its stellar success. In the last 20 years, it has acquired a number of high value targets, such as Pixar in 2006 (for 7.4 billion dollars), Marvel in 2009 (for 4 billion dollars) and Lucasfilm in 2012 (for another 4 billion dollars). And these acquisitions seem to have paid off: as of the time of this writing, 12 of the 20 highest grossing movies of all time were produced by Disney or its subsidiaries, each one grossing far above 1 billion dollars at the world-wide box office. In other words, Disney seems to have achieved synergies with its acquired companies that are exceedingly rare for the type of competitive industry in is part of.

Beyond this ability to benefit from acquisition synergies, Disney's various business segments exploit complementarities, which create better value for customers as well as superior profits for the company. To understand these complementarities better, consider how Disney's business segments are organized along a supply or value chain. Disney creates entertainment content such as movies, TV shows and trademarked characters with a variety of production companies, such as Walt Disney Pictures, Twentieth Century Fox, Marvel, Lucasfilm and Pixar. This content is then distributed via traditional channels using Disney's media networks, including Disney, ESPN, Freeform, FX, National Geographic and ABC. Disney also offers this content through novel distribution channels such as the streaming services Hulu and DisneyPlus, thereby directly competing with similar offerings by Neflix, Amazon Prime and AppleTV. Once consumers of all age groups are attracted to its content, Disney offers a variety of live experience options such as their famous theme parks, hotels, and cruise lines. Additionally, Disney has a network of manufacturing partners to which it licenses trademarked content to produce merchandizing goods, which content consumers and park visitors alike can purchase to have a piece of Disney in their home. To realize how instrumental this complementarity across activities is for Disney's success, consider a blockbuster movie, such as "Frozen", which was relased in 2013 and compare it with a

movie such as "Jurassic World: Fallen Kingdom", which as released in 2018. Despite being similarly successful at the box office, profits from the movie "Jurassic World: Fallen Kingdom" for Universal Studios only included its box office profits as well as profits for video-on-demand after the movie's box office run. In contrast, "Frozen" generated not only these profits, but an additional 1 billion dollars in merchandizing revenue alone and ongoing profits from the usage of Frozen characters for TV spinoffs and theme park content[3]. In other words, complementarity among Disney's activities, enable the company to profit in many more ways than competing movie production companies such as Universal Studios.

How was it possible for Disney to build such an impressive media conglomerate that benefits many times over from a given piece of media content through complementarities? As Zenger (2013) noted, Disney as a company has benefitted from a clear and distinct "theory" of how to create value for its customers and how to exploit complementarities among its activities. Indeed, it seems that generations of executives at Disney, benefitted from a blueprint for how Disney's business strategy exploits complementarities across theatric films, publications, theme parks and merchandizing that was formulated by Walt Disney and published in the Disney archives in 1957. As Zenger notes, although the elements of Disney's business strategies have become more complex over time, much of the core theory of how Disney creates and captures value was already formalized in 1957. This is even more remarkable, in the face of huge changes in Disney's competitive environment, such as changes in regulation, the fall of the Iron Curtain, Globalization, the 9-11 terrorist attacks, the 2007-2008 financial crisis, the entry of online streaming services and the COVID-19 pandemic. Many other companies would have been tempted to modify or expand their business model beyond the family-friendly image that is still at the core of Disney today. Disney in contrast, has been committed to its value proposition and its "theory" (Felin and Zenger, (2018)) of why its strategy works so well.

3 Business Strategy and (Organizational) Complementarities

3.1 Conceptual Foundations

Empirical work dating back at least to the 1980s has shown that there exist dramatic and persistent differences in productivity and profitability, even among firms within narrowly defined industries,

[3] See: https://www.forbes.com/sites/natalierobehmed/2015/07/28/the-frozen-effect-when-disneys-movie-merchandising-is-too-much/

see Schmalensee (1985), Dunne, Roberts and Samuelson (1989), Baily, Hulten and Campbell (1992), Syverson (2011). According to Syverson (2004), manufacturing firms in the top 10% are on average twice as productive as firms in the bottom 10%. In other words, the top performing firms tend to produce twice as much output as the worst firms, with the same amount of capital, workers and materials. These differences are not only staggeringly high, but also puzzlingly persistent. In fact, basic economic theory would predict that with such strong profit incentives, competition for inputs such as ideas, talent and capital might quickly erode these performance differences, see Fama (1970) and Barney (1991). A key question therefore is "What explains persistent performance differences across firms within narrowly defined industries?"

One helpful concept is business strategy (henceforth "strategy") from the field of Strategic Management. Strategy can be defined as a combination of choices to achieve and sustain competitive advantage, which in turn is defined as the ability to earn above average firm profits within an industry, see Barney (1991), Porter (1996). As a consequence, strategy is potentially a key driver in our understanding of persistent firm performance differences. Following Leiblein, Reuer and Zenger (2018), decisions are more likely to be strategic, the more they involve consideration of many interdependencies. These interdependencies can be different in nature. In this paper, I exclusively focus on internal interdependencies, i.e., interdependencies among management and organizational practices, as in the literature on organizational economics, see Brynjolfsson and Milgrom (2012).[4] Internal interdependencies are formalized using the concept of (organizational) complementarities, following Milgrom and Roberts (1990). Two management practices can be defined as complementary if the adoption of one practice increases the benefits of adopting the second practice. The idea that complementarities matter for firm performance can be traced back at least to Chandler (1962), who argued firms like GM, matched their product diversification strategies with multidivisional organizations. Porter (1996) argued forcefully that complementary adoption of activities can be a crucial mechanism through which firms create and maintain competitive advantage. To understand this, consider the following example that follows Porter's arguments. Suppose firm "A" has adopted 10 different management practices to improve its product quality and therefore achieve competitive advantage. At the same time, let the

[4] Another prominent type is competitive interdependence, which is typically analyzed by the field of Industrial Organization. Furthermore there is intertemporal interdependence, which is analyzed by Corporate Finance and Innovation Economics.

probability that a competitor successfully imitates a given management practice be 90%. Suppose this success probability is independent across practices. Despite the high chance of this competitor to successfully imitate each individual management practice, the chance of successfully imitating the entire system of 10 management practices is only 35%[5]! How costly this imitation failure is depends on the degree of complementarity across the 10 management practices. In the extreme case that all 10 practices are perfectly complementary, a competitor would reap no benefit from adopting any number of practices that falls short of copying the entire system. In other words, perfect complementarity would provide a very strong barrier to imitation and therefore a source of sustainable competitive advantage, as shown by Rivkin (2000). A practical example of such complementarity considerations is Intel's "Copy Exactly!" approach to plant design, see Hruska (2012). In every new chip plant, Intel exactly copies every controllable manufacturing process variable from existing high productivity plants to maximize the productivity of the new plant.

Recognition of the potential importance of complementarity across firm activities for competitive advantage leads to at least three distinct but related areas of interest for empirical work. The first is the analysis of complementarity among firm activities and management practices, see for example Athey and Stern (1998), Ennen and Richter (2010), Hong, Kueng and Yang (2019), McElheran, Ohlmacher and Yang (2020). For example Hong, Kueng and Yang (2019), show that performance pay and concentration of decision authority at the middle management level are complementarity and that deviation from this patterns imply higher bankruptcy rates in Canadian firms. Similarily, in McElheran, Ohlmacher and Yang (2020), show that the optimal degree of structured management practice adoption depends on a manufacturing firm's production process strategy and that firms that over or underadopt structured management exhibit lower plant productivity. Additionally, organizational complementarities also often encompass sociological factors, such as company culture and organizational norms and their interaction with more formal elements such as decision authority and incentives, see Akerlof and Kranton (2005); Ashraf and Bandiera (2018). For example, Helper and Henderson (2009) document how the failure to develop relational contracts and worker trust undermined GM's attempts to introduce lean manufacturing and several structured management practices. Recent empirical work in this area has utilized

[5] Under independence, the joint probability that all 10 practices are successfully adopted can be calculated as $0.9^{10} = 0.348$

natural or field experiments in organizations to document a host of important interdependencies, such as complementarity between team-oriented values and performance information systems as in Blader, Gartenberg, and Prat, (2020); trust and decentralization of decision authority as in Bloom, Sadun and Van Reenen (2012); reciprocity among employees and performance pay as in Mas and Moretti (2009) and Bandiera, Barankay and Rasul (2005); or practices that facilitate mentoring relationships and performance pay as in Sandvik, Saouma, Seegert, and Stanton (2020).

The second area of interest for empirical work is the analysis of strategic decisions, defined as key choices that are complementary to many other firm choices (Leiblein, Reuer and Zenger (2018)). A classic example for such a strategic choice is a firm's decision to position its product offerings either as "low cost and high volume" or "high price and high quality". Each of these choices is likely to have consequences for many related management practices, such as pricing, quality monitoring, product design, supply chain decisions, employee incentives etc.

The third area of interest for empirical work is strategic decision making, as complemetarity across firm activities raises questions about the process by which managers arrive at decisions. Returning to Intel's "Copy Exactly!" practice, a natural question might be whether Intel is able to do better by more systematically understanding which combinations of manufacturing practices drive higher performance and selectively adopt these combinations instead of blindly copying the plant layouts of existing high-productivity plants. However, pursuing such a fully rational approach, can quickly become infeasible, especially if the firm is uncertain which practices are complementary and which are not. Going back to our numerical example from before, the consideration of 10 management practices with only 2 choices per practice, already implies 1,024 different choice combinations. This set of possible combinations grows to over 1 million if the number of different practices instead is 20 or if the number of choices per practice is 4 instead of 2. In fact, Rivkin (2000) argues that managerial choice problems with uncertainty about which choices are complementary and which are not, quickly become "NP-hard"[6], i.e. it can be shown that the associated computational problem cannot be solved in finite time.

[6] The term "NP hard" comes from Computational Complexity Theory, where it stands for a class of problems for which computation requirements grow faster than at a "polynominal" rate, therefore "non-deterministic polynomial acceptable" problems.

Managers often rely on simple heuristics to tackle problems that are beyond a fully rational solution in cases of high complexity. For example, a manager might use simple local adaptation to search for the best solution: start with a random initial combination of practices, change one practice at a time and only keep practices that increase performance. However, as documented by the literature on "rugged performance landscapes", such as Levinthal (1997), Rivkin (2000), Siggelkow and Levinthal (2003), Rivkin and Siggelkow (2003), Siggelkow and Rivkin (2005) such simple local search can quickly become stuck in a local optimum. It might seem that the firm cannot find a better combination of management practices, but only because the manager has not explored radical shifts in several management practices at once. For a survey of this literature, see Siggelkow (2009) and Baumann, Schmidt and Stieglitz (2018). However, theoretical work has shown that one possible way to address the complexity and uncertainty resulting from the potential importance of complementarity among management practices is to use simplified mental models (Gavetti and Levinthal (2000)), "analogies" (Gavetti, Levinthal and Rivkin (2005)) or "theories" (Felin and Zenger (2018)) to navigate the high complexity search for novel management practice combinations (Csaszar and Levinthal (2015)). This research raises questions about how managers learn about complementarities and what type of evidence they use to make strategic decisions. It explains why companies like Disney have been successful by focusing on clear and compelling theories of how to create value. Importantly, recent experimental evidence by Camuffo, Cordova, Gambardella and Spina (2019) has shown that hypothesis-driven search strategies can be beneficial for startups, navigating the creation of novel offerings and business models.

To summarize, complementarity across firm activities and management practices has been proposed as one possible explanation for persistent performance differences across firms. This perspective in turn challenges us to empirically analyze complementarities across management practices as well as causes and consequences of strategic decisions and the process of strategic decision making.

3.2 Alternative Perspectives on Business Strategy

This paper takes a subjective and therefore necessarily incomplete view of the connection of business strategy and economic policy, based on my own expertise on the subject and space contraints. However, it might be useful to provide a birdseye's view on the contrast between the

perspective of this paper and several other competing views of persistent performance differences across firms.

One such perspective is of course "structured management", which captures a bundle of monitoring, target setting and incentive practices that have been shown to boost firm performance, see Bloom, Lemos, Sadun, Scur and Van Reenen (this issue). As the other papers in this issue show, structured management has important implications for a variety of economic policies, from small business training programs (McKenzie, this issue), and public sector management (Ali, Fuenzalida, Gomez and Williams, this issue) to education policy (Valero, this issue; Leaver, this issue). The reader is referred to these excellent papers for a discussion of structured management and economic policy.

An alternative answer to the question of what drives persistent performance differences across firms, is company culture. Indeed, some attribute the quote "culture eats strategy for breakfast" to Peter Drucker. Additionally, a fast-growing literature analyzes "corporate purpose" – which captures pro-social company goals beyond profit – as a more tangible manifestation of corporate culture. This work shows theoretically and empirically that firm purpose can be a powerful intrinsic motivator for employees, see Henderson and Van Den Steen (2015) and often also improves firm performance, see Gartenberg, Prat and Serafeim (2019), Henderson (2020), Edmans (2020). However, the view of strategy laid out here and the perspective of corporate culture and purpose are not mutually exclusive. On the contrary, an increased emphasis on corporate purpose is likely to reinforce the importance of strategy. On the one hand, increased investment in corporate purpose and company culture as motivator for employees implies increased importance of interactions between company culture and traditional financial incentive and promotion systems, see Ashraf and Bandiera (2018). On the other hand, recognition of this expanded set of possible interactions among organizational practices and company culture practices reinforces the complexity of decisions. As a consequence, practices that can help to deal with such complexity, such as complexity-reducing theories or hypotheses become even more important.

Another alternative perspective on what drives firm performance is "strategic resources" (Barney (1991)) or "dynamic capabilities" (Teece, Pisano and Shuen (1997)). These resource or capability-

based perspectives share the view that factor markets imperfections allow some firms with valuable, rare and costly-to-imitate resources or capabilities to earn persistently high profits, see Barney and Clark (2007); Teece (2007). In a certain sense, this perspective is not so different from the view of recent economic models of firm heterogeneity, which assume persistent productivity differences and can also be used to analyze frictions that impede efficient factor reallocation across firms, see Melitz (2003); Hsieh and Klenow (2009); Yang (2020a).[7] However, measuring firm resources and capabilities has proven to be challenging and these perspectives are often more helpful in determining what is not a resource, than verifying what is a resource. Additionally, various authors have already discussed the implications of this view for different types of economic policy, such as competition policy (Lockett and Thompson (2001), Teece (2007)), patent and innovation policy (Teece (2007)), macroeconomic stabilization policy (Agarwal, Barney, Foss and Klein (2009)) and international trade policy (Sutton (2012)).

4 Measurement and Data Collection for Strategy Practices

This section provides a subjective and stylized overview of current approaches to measure strategy practices, with a special focus on surveys by statistical agencies and academic researchers[8]. Strategy practices are broadly defined as decisions or processes related to a firm's strategy. I will begin with general measurement issues and potential biases, as a backdrop for my discussion of several past and ongoing efforts to measure strategy practices. Based on the conceptual discussion and the review of existing empirical work, I will then highlight some promising areas for new large scale data gathering on strategy practices.

4.1 Measurement issues

The majority of efforts to directly measure strategy practices relies of self-reported firm-level data and are therefore subject to potential measurement biases that are similar to the measurement biases for management practices, see Bloom and Van Reenen (2010). Here, I highlight three types of respondent biases that are of particular interest for the measurement of strategy practices.[9] I also

[7] Interestingly, due to the fact that theories of strategic resources and dynamic capabilities have been developed in the field of Strategic Management, questions of how public policy might reduce factor market imperfections, are almost never discussed in this literature.
[8] Due to space constraints I am unable to also discuss a variety of surveys from private consulting firms.
[9] Of course, the measurement issues listed here apply to a similar degree to the measurement of management and organizational practices more generally.

discuss how these biases likely impact the measurement of strategy practices themselves as well as the correlation of these strategy practices with firm performance.

Surveys on strategy practices might suffer from secrecy bias, defined as the unwilligness of respondents to honestly answer questions about strategic choices they consider to be important for the maintaince of competitive advantage. An example of such a secrecy bias is information about the receipe for "Coca-Cola", which is protected not by patents but instead by a trade secret. Information about other strategic choices might be similarly hard to elicit. Secrecy bias is likely to either lead to systematic non-response or potentially very noisy responses, which will reduce the correlation of measured strategy practices and firm performance.

Another form of respondent bias for strategy practices is social desirability bias, defined as the tendency of respondents to give responses they think will either please the survey team or avoid embarassement. For example, almost no manager might admit that his decisions are not based on data at all. Social desirability bias might take different forms, but is often associated with the respondents wanting to appear more rational and deliberate in their decisions and will therefore tend to make firms appear more systematic and structured than they actually are. At the same time, the bias in the correlation of measured strategy practices and firm performance due to social desirability bias is unclear. It does not seem obvious why managers of lower performing firms will seek to please interviewers more than managers of high performance firms.

A third form of bias is the manager enthusiasm bias, in which respondents in high performance firms are so satisfied with their firm's practices that they exaggerate how deliberate and systematic such practices are. This issue potentially not only biases survey results towards finding that strategy practices are more deliberate and rational on average, but could generate an upward bias in the correlation of strategy practices and firm performance.

4.2 Strategy Content

I begin my discussion of the measurement of strategy practices with survey instruments that seek to measure strategy content, defined as any decision about key areas that are likely to affect many firm activities or future decisions, following similar definitions by Van Den Steen (2016), Leiblein,

Reuer and Zenger (2018).

4.2.1 Past and Current Measurement Efforts

In many respects, Statistics Canada has been at the forefront of the development of survey measures of organizational and strategy practices in representative data collected by national statistical agencies. In the late 1990s, Statistics Canada developed the "Workplace and Employee Survey" (WES), building on ideas of the British Workplace and Employment Relations Survey (WERS), which itself dates back at least to 1980. The goal of WERS and related surveys was to empirically measure workplace environment characteristics and many of the related surveys, including the WES, therefore have survey data from both employers and employees[10]. Among the unique features of the Canadian WES was its panel dimension, combined with sampling weights that made the data representative for around 1 million employer firms in Canada. Importantly, the WES introduced an explicit question about a firm's business strategy using a "closed end" question methodology in which respondents simply answer multiple choice questions. In particular, the survey asks "Please rate the following factors with respect to their relative importance in your workplace general business strategy". Responses vary from "Not applicable", scored at 1 and "Not important", scored at 2 to "Very important" and "Crucial", scored at 5 and 6 respectively. Respondents are asked to rank 15 possible factors, including for example "Undertaking research and development", "Developing new products and services", "Reducing labor costs", "Total quality management" or "Reorganizing the work process". The advantage of asking about strategy using this type of self-reported 1-6 scale is that it is relatively easy to gather strategy measures at low cost and low response burden for participants. Additionally, since it is unclear, whether any of the listed choices is a "best practice", this type of question is unlikely to be affected by secrecy bias, social desirability bias or manager enthusiasm bias. On the other hand, this type of survey question heavily relies on a respondent's (subjective) interpretation of "importance". For example, while one respondent might think that strategic choices in general are not important, a second respondent might think that almost all strategic choices are very important. As a result, the responses across individual respondents and firms might not be directly comparable. However, this type of question does allow researchers to extract comparable information about relative strategic priorities. And although these measures of strategic priorities do not necessarily measure

[10] Other surveys that are similar in spirit are the Australian Workplace Industrial Relations Survey and National Organizations Survey in the US. See OECD (2017).

any form of "best practice", Yang, Kueng and Hong (2014) show that these strategic priorities are systematically correlated with firm performance outcomes such as productivity, profitability and innovation outcomes as well as organizational practices such as decentralization, performance pay, firm training and others.

Data collection for the WES survey ended in 2006, at least partly due to high costs of maintaining a representative panel dataset. It was replaced in 2009 with the Survey of Innovation and Business Strategy (SIBS), which is still ongoing, although as a repeated cross section. The SIBS approach to measure strategy avoids the comparison issues of the WES by mostly focusing on contrasting opposites. The SIBS strategy question is: "Over the next five years, (...) which of the following long-term strategies is most important to this business?", with possible responses being "Main focus on good or service positioning", "Main focus on low-price and cost leadership" or "They are equally important", building on a typology similar to that of Porter (1979)[11]. The advantage of this direct comparison of opposites is that there are less issues of comparability across respondents. On the other hand, there are also several disadvantages. It potentially omits an array of other possibly important strategic choices. Furthermore, using a larger number of opposite questions for more strategic choice dimensions still does not capture the relative importance of strategic choices across different questions.

There are also growing efforts by academic researchers to collect comparable data on strategy content, as exemplified by Yang, Christensen, Bloom, Sadun and Rivkin (2020). They measure the degree to which strategies are formalized, including how deliberately decisions about market positioning and product differentiation are made and information about barriers to imitation as in Barney (1991). Since these types of questions are more likely to be subject to secrecy, social desirability, and manager enthusiasm biases, Yang et al. build on Bloom and Van Reenen (2007, 2010) and use an open-ended, structured, double-blind interview process, as is standard in the empirical literature on structured management. The interview process is "open-ended", as questions start with open-ended questions, such as "How do you typically come up with ideas about new strategic initiatives?". It is "structured" as there is a systematic and detailed scoring grid

[11] Porter (1980) proposed to classify business strategies generically into "cost leadership" and "differentiation" with market scope as a second dimension, which range from niche markets to mass market.

to categorize responses and initial answers trigger follow-up questions on details and examples. It is “double blind”, as interviewers have no information about the performance of the company and respondents do not know anything about the scoring grid. Beginning with open-ended questions reduces issues with social desirability bias, while undisclosed scoring of answers as well as follow-up questions for details and examples of more deliberate actions counter manager enthusiasm bias and secrecy bias. The clear advantage of this methodology is that categorization is done by interviewers and therefore less prone to subjective interpretation differences among respondents. It also allows to control for differences in interpretation by interviewers by rotating interviewers and then controlling for interviewer fixed effects later on in the regression analysis. The main disadvantage of this method is that it is usually very time consuming and costly to run. However, data collected in this way can be used to benchmark the biases in closed-end questionnaires (i.e. multiple-choice survey questions) of the same questions.

Several researchers have also measured strategy content by using recent advances in Natural Language Processing (NLP) in combination with business descriptions in regulatory filings of public companies. For example, Hoberg and Philips (2010) use similarity in business descriptions of 10K filings to measure product differentiation across public companies. Additionally, Menon, Choi and Tabakovic (2018) use text from the same business description section to measure major strategic changes as well as the degree to which firms are focused on few business segments. Measures based on regulatory filing text have the advantage that they are readily available without additional data gathering efforts and that they are less affected by social desirability bias towards researchers. However, it should also be noted that public filings such as these are more likely to be subject to both secrecy bias and manager enthusiasm bias, as such filings are partly advertising materials for investors.

4.2.2 Potential Extensions

As the previous section showed, most of the current efforts to measure strategy content, are focused on a few key strategic decisions. Much less is currently known about the set of activities that consitute firms’ internal value chains, which is defined as the set of activities a firm carries out to create value for customers, following Porter (1985). Currently, there is no large scale, representative survey collecting data on how important activities such as inbound and outbound

logistics, operations, marketing and sales and post-sale services are for product or service costs. There is also no large scale data how firms allocate resources across these activities and which activities they consider to be the most complementary. The absence of such data is a missed opportunity for several reasons. Although there is limited historical data on strategic decisions, we currently do not understand, how firms organize their value chains to fit their strategic decisions. As I will argue in section 5, this type of information is potentially important for a diverse set of policy areas, such as industrial policy, antitrust policy and public-private partnerships. Additionally, collection of data on the extend of complementarities between these activities could be directly used in combination with cost shares of activities to estimate how important such complementarities are to explain productivity differences across firms. Current research has demonstrated that supply chains across sectors matter to understand economy-wide productivity and international trade, as shown by Jones (2011), Acemoglu, Varvalho, Ozdaglar and Tahbaz-Salehi (2012), Costinot and Rodríguez-Clare (2014). Similar quantitative evidence on the importance of value chains within firms, especially large corporations, is currently missing and is sorely needed.

In addition to data on value chain activities, there is a lack of representative data on practices that specify and reinforce company culture and socialize employees. Companies invest large sums not only to formally train their employees to work together but also to motivate them by more than just financial incentives. More detailed data on such value and identity-shaping practices would help us not only understand better how important such intangible factors are for firm performance by themselves. They would also enable us to better understand interdependencies between company culture and organizational practices, such as structured management, data-driven decision-making, and decentralization of decision authority. And a better understanding of such interdependencies in turn will help us understand persistent productivity differences across firms.

4.3 Strategy Process

This section gives an overview of efforts to measure the strategy process, defined as the internal process by which firm executives make and adjust strategic decisions. Data on strategy process is even rarer than data on strategy content, but as I will argue later, is at least as informative for different policy areas as data on strategy content.

4.3.1 Past and Current Measurement Efforts

There is a rich literature in the field of Strategic Management, that has sought to understand how managers make strategic decisions. For surveys, see Eisenhardt and Zbaracki (1992) and Eisenhardt and Bingham (2017). However, with the exception of early work by Frederickson (1984), Frederickson and Mitchell (1984) and Frederickson and Iaquinto (1989), efforts to gather strategy process data on more than just a dozen firms, has been rare. This is partly due to the difficulty of very low response rates of senior managers and especially CEOs, which are the executives most deeply involved in strategic decision making.

To fill this gap, Yang et al. (2020) developed a novel survey instrument to collect strategy process data in using the open-ended, structured, double-blind interview method described above. The goal of this survey is to measure strategy practices that enable CEOs to make consistent, proactive and evidence-based strategic decisions. Within companies they mainly target CEOs or executives of similar seniority, which is facilitated by the fact that their respondent sample draws from alumni of Harvard Business School. Beyond the data on strategy formalization I discussed in section 3.2.1, Yang et al. (2020) have two additional sections on strategy process. First, a section on strategy development, which focuses on the question: "How do executives come up with strategic ideas and how do they choose among alternatives?". It includes six factors that quantify the degree of decision rationality, such as (1) the systematic and proactive search of the competitive environment for opportunities, (2) evidence-based selection of strategic initiatives including explicit formulation of assumptions, (3) regularity of strategy meetings and connections of strategy and implementation discussions, (4) degree of advance preparation of strategy meetings, (5) routinization of the exploration of strategic alternatives and (6) the degree of systematic risk evaluation to voice potential concerns. This section therefore quantifies to what degree decisions are shaped by a process emphasizing consistency, proactivity and evidence-based discussions to facilitate unbiased decisions as well as prepare executives for effective learning from strategy outcomes.

The second section on strategy process focuses on strategy implementation and broadly aims to answer the question: "How are strategies executed and how do executives learn from strategy outcomes?". In particular, this section includes five factors contributing to implementation, such

as (1) anticipation of potential implementation problems, (2) regular reviews of outcomes and comparison to initial assumptions, (3) systematic validation of mechanisms and learning in the wake of surprises, (4) regular communication of strategies to employees outside top management and (5) anticipation of potential resistance to change outside top management. This section therefore not only enables Yang and coauthors to measure the degree to which implementation questions are embedded in strategy deliberations, but also provides direct evidence on the degree to which firms learn from implementation and strategy outcomes.

Constructing an overall score that captures how consistent, proactive and evidence-based strategy practices are, Yang et al. obtain three core results. First, there are large within-industry differences in strategy practices. Second, more consistent, proactive and evidence-based strategy practices are systematically correlated with firm size and firm growth. Third, they show how a sudden and systematic shift in the core strategy course at HBS had long lasting effects on how CEOs make strategic decisions, even decades after graduating. This suggests that business education matters in shaping strategic decision making and is consistent with the view that it changes the mental models CEOs use to analyze and learn from experience.

4.3.2 Potential Extensions

The data on strategy process gathered by Yang et al. (2020) is clearly only a first step as it suffers from sample selection issues and is therefore not representative. Gathering more representative data might require researchers to restructure the survey into a closed-end multiple choice form, similar to how the initial survey by Bloom and Van Reenen (2007) was eventually translated into the US Management and Organizational Practices Survey (MOPS) and similar management practice surveys in other countries, such as Japan, Mexico, Germany etc.

In addition to the CEO-level data on strategy process gathered by Yang et al (2020), it is well-known that large organizations such as corporations delegate many strategic decisions to departments or business units. This type of delegation is crucial for any organization trying to balance the trade-off between coordinating to exploit complementarities and fostering employee initiative and adaptation to local circumstances as argued by Alonso, Dessein and Matousheck (2008). In addition to more detailed activity-level cost and allocation data discussed in section

3.2.2, data on the which strategic decisions are delegated and how department-level managers make strategic decisions as in Yang et al. (2020) is crucial to make progress in this area. This data would be especially useful in combination with data on performance pay and promotion incentives for lower level managers as well as reporting hierarchies and communiation across departments.

5 Business Strategy and Economic Policy

This section builds on the previous two sections and outlines a number of economic policy areas for which large scale data on strategy content and strategy process would be useful.

5.1 Competition and Antitrust Policy

Antitrust policy can be broadly defined as measures that foster competition and limit market power through regulation of business practices and business combinations. Antitrust policy is a natural area of application for insights of theories of competitive advantage, as these are effectively theories of competition.

Consider for example the question of whether there exist entry barriers or barriers to competition in a specific industry or market. As discussed in section 3, understanding imitation barriers is a key component of theories of competitive advantage based on management practice complementarities. An industry might exhibit high concentration of sellers, not because of anti-competitive practices by the largest firms, but due to the fact that complementarity across management practices prevents smaller competitors from imitating the leading firms. As an example, consider Southwest Airlines, which is the largest domestic airline in the US with a 24% total market share as well as a top market share in 25 of the top 50 US metro areas. Southwest consistently outperforms peers in airline industry: it was profitable for 46 consecutive years, never close to bankruptcy with an average annual stock return since 1977 of around 18% (until 2020). Porter (1996) argued that Southwest's key was to compete with long-distance buses and cars by offering short-haul routes and frequent departures while at the same time controlling costs by ensuring high aircraft utilization and lean ground crews. It successfully exploited complementarities between its airplane fleet, gate operations and market positioning as low-cost airline to achieve persistent profitability. Other airlines, trying to enter Southwest's market space, such as the short-lived "Continental Light" quickly failed, after struggling to compete with Southwest's unique combination of firm activities. This type of natural imitation and entry barrier

is clearly associated with a large social gain due to Southwest's price competitiveness, which might offset any anti-competitive implications.

A second antitrust area for which value chain complementarity data as in section 4.2.2 is potentially valuable is merger analysis. Firms frequently cite expectations of large synergy effects, defined as increases in value from the combination of two firms, compared to the value of separate firms, as justification for mergers and acquisitions. In other words, these firms claim the existence of important complementarities between the activities of joining companies. Analyzing firms' business strategy can help to evaluate the credibility of such synergy claims. Consider the case of Disney's acquisitions in the last 15 years, discussed in section 2. In Disney's case there are good reasons to believe that the acquisition of intellectual property associated for example with Marvel, increases the value of Disney's media network and theme park business and therefore lead to large synergies. Indeed, Disney completed construction of the "Avengers Campus" in California in 2019. At the same time, an analysis of strategy and complementarity might also raise doubts on claims of synergies. Returning again to the Southwest example, recall Southwest's core strategy relied on narrow strategic choices, such as offering only low-price direct flights, using only one type of aircraft etc. Suppose that Southwest would now propose a merger with a large legacy carrier, such as Delta, which relies on offering many different types of flights at different price points, uses different types of aircraft and manages a wide "hub and spoke" route network. In this context, any claims of synergies between the two companies should be considered with skepticism, based on our understanding of Southwest's core strategic choices. Importantly, in the absence of representative data and analysis of the complementarity of firm activities, claims about synergies often need to rely on data and estimates provided by the combining firms themselves. In contrast, collection of data on firm value chain complementarity would allow antitrust agencies to evaluate the likelihood of syngeries claims in the associated industries before the merger. This can provide important insights, since mergers might always be in the interest of involved companies, due to the possibility of increased market power. However, if expected synergies never realize, the same merger might not be in the public's interest. As a hypothetical example, consider a microchip manufacturer M, seeking to acquire a large supplier S, citing synergies from increased sunk investment incentives on the part of supplier S to improve the production process of intermediate goods provided to M. Recent representative evidence by Atalay, Hortascu and Syverson (2014) has shown that most firms that own vertical supply chains seemingly do not use them to ship

intermediate products across establishments they own. If the same pattern holds for the microchip manufacturing industry, claims of synergies based on intermediate good shipments should be considered skeptically. More general firm value chain data might shed light on the scope of synergies in different industries more broadly.

Another example for helpful data in merger analysis, is data on delegation of strategic decisions and divisional compensation, mentioned in section 4.3.2. For this example, consider one of the largest failed merger of all times, the AOL-Time Warner merger of 2000. Much of the synergy logic of that merger rested on the merged entity to centralize advertising along the media value chain from content creation to distribution. However, this synergy never materialized, partly due to AOL-Time Warner's divisional managers' failure to give up advertising responsibilities, as argued by Dessein, Garicano and Gertner (2010). This work also suggests several empirical predictions, based on data on delegation of strategic decision making, communication and incentive structures that can be used to evaluate the likely realization of synergies for proposed mergers.

5.2 Taxes and Subsidies

A basic principle in the theory of optimal taxation is that governments should encourage and subsidize value-creating activities with high social benefits, while taxing value-destroing, socially harmful activities, or excessive rent-seeking, see Auerbach and Hines (2002).

One area, which is traditionally considered to create more social than private value and is therefore a natural area for government subsidies, is industrial and innovation policy. For the purposes of this section, I define industrial and innovation policies as any type of policy with the goal of promoting firm productivity and innovativeness. A typical example of industrial and innovation policy are R&D tax credits, which are often granted with the intention of incentivizing private research activities, whose social returns might exceed private returns, see Dechezleprêtre, Einiö, Martin, Nguyen and Van Reenen (2016). However, as Yang, Kueng and Hong (2014) show, different types of innovation activity, such incremental vs radical innovations are systematically different across firms with different business strategies. This is consistent with a complementarity view of strategy and innovation activities. Furthermore, as Acemoglu, Akcigit, Bloom and Kerr (2018), argued, undifferentiated R&D subsidies are likely to end up subsizding inefficient incumbent firms at the expense of efficient entrants. Similar inefficiencies have been shown for

investment tax credits such as bonus depreciation and other general business tax credits, see Patel and Seegert (2020) and Konda, Patel, and Seegert (2020).

More representative data on business strategies can help to target R&D subsidies towards firms with business strategies that are complementary to innovation activities with high social returns, such as general purpose technologies (Helpman (2003)) or green technologies (Acemoglu, Aghion, Bursztyn, and Hemous (2012)). For example, it is well documented that US government defense R&D was crucial in promoting the growth and expansion of young and dynamic companies in Silicon Valley, see Heinrich (2002). If it is true that firms with product novelty as business strategy are generating systematically more radical innovations, as documented by Yang, Kueng and Hong (2014) for Canada, then providing R&D subsidies to such industries and regions with many novelty strategy firms might be more effective than undifferentiated R&D subsidies. On the other extreme, no R&D tax credit would have induced a firm like Kodak in the 1980s to embrace Digital Photography. Kodak was the market leader in film sales at that time and its strategy was more focused on the risk that Digital Photography would cannibalize its profitable film business, see Larish (2012). Companies with such a focus on exploitation strategies are therefore unlikely to expand R&D in a socially valuable way, see Yang (2020b).

Another important example for industrial policy is the establishment and support of regional economic clusters or special economic zones, see Porter (1989) and Jones (2011). The logic of such special economic zones is often to exploit positive local externalities, through the spreading of ideas and the pooling of local labor markets. However, a major challenge for policy makers in successfully promoting such local clusters is that many initiatives are not based on evidence of local spillovers. A growing empirical literature, exemplified by Greenstone, Hornbeck and E. Moretti (2010), and Brynjofsson, Foster, Jarmin, Patnaik, Saporta-Eckstein, Van Reenen (2019) has begun to provide evidence for some types of local spillovers. The complementarity logic of section 3 suggests that data on value chain activities of firms can be valuable in the design of special economic zones. Specifically, governments can identify the “most important bottlenecks” (Hausman, Rodrik and Velasco (2005)) that firms face across the complementary activities in their value chains. Targeted investments could then relax those bottlenecks. Consider for example the complementarity of activities between small biotech startups and large pharmaceutical firms, as

documented by Arora and Gambardella (1990). Biotech startups combine specific scientific expertise with entrepreneurial novelty strategies, while large pharma firms have manufacturing and distribution capabilities combined with strategies more focused on exploiting current business opportunities. However, both types of firms might require local infrastructure, such as universities, airports and city amenities to attract skilled workers, see Baily and Montalbano (2017). Building such "innovation ecosystems" requires not only sufficient funding but expertise to target investments on types of infrastructure most complementary to firm activities.

A third area that is related to industrial and innovation policy is provision of data products by statistical agencies and government support of research into the drivers of firm productivity. A natural question that arises in this context is whether governments should be involved in these areas at all, given that there are already strong private profit incentives to generate insights that increase firm performance. However, this argument ignores the fact that similarly strong profit incentives apply to innovation and R&D, areas that many government incentivize via subsidies or patents because the social return to these activities is higher than private returns. Additionally, the high demand for data and research on the determinants of firm productivity is often met by unrepresentative research by "management gurus" as argued by Micklethwait and Wooldridge (1996) or research by management consulting firms, which are focused on selling billable hours but not generating transparent and reproducible research, see Kiechel (2010). The empirical work on the World Management Survey (WMS) by Bloom, Sadun, Van Reenen and coauthors and the work building on the WMS offers an alternative model in which representative data by statistical agencies and reproducible scientific research can provide useful insights for both policy makers and company executives. On a general level, representative evidence on the effectiveness of some popular business policy prescriptions by management gurus can help reduce the likelihood of large mistakes based on advice of management gurus. More specifically, large scale data on how managers make strategic decisions, as in Yang et al. (2020), can be valuable from at least two different perspectives. First, data on the type of evidence CEOs use to make different types of strategic decisions, such as innovation investments or business expansions, would help guide the creation of new survey data at statistical agencies. For example, heavy use of geographic data from data products such as the county business patterns might suggest demand for new representative geographic business data products. Second, data on strategy practices would enable statistical agencies to provide more direct representative evidence on potential drivers of firm performance

and competitiveness.

Data on business strategy and value chain complementarity can also inform discussions about optimal tax policy. For example, data on broad metrics of the social and environmental impact of firm activities in combination with value chain information can be used to set optimal commodity taxes. A simple example of this are carbon taxes, which are levied on gas, the use of which contributes to CO2 emissions. But while the complementarity of gas and economic activities such as energy production and consumption is well understood, the same is not true for other socially harmful activities and products, such as addictive products and services (such as opioids, marijuana, and some types of mobile gaming) or political misinformation, see Mace, Patel, and Seegert (2020). In this context, higher taxation of political online advertising might be welfare enhancing, since it reduces socially harmful political rent-seeking while preserving freedom of expression. Furthermore, a better understanding of the absence of complementarities can also inform tax policy. For example, for some industries retained earnings might not really be used to finance investments. At the same time, these retained earnings might be complementary with harmful activities, such as political rent-seeking or empire building by CEOs. In such industries, taxation of retained earnings might be welfare-enhancing, see Guvenen, Kambourov, Kuruscu, Ocampo-Diaz and Chen (2019).

5.3 Corporate Social Responsibility and Public-Private Partnerships

According to a classical argument by Friedman (1970), businesses should focus on profit-maximization, while governments should use economic policy to encourage socially desirable activities and discourage socially harmful activities. However, there is an increasing recognition that in the absence of effective government, corporate action might help to address a number of social challenges, from climate change to education. Indeed, Morgan and Tumlinson (2019) argue that firms often have a comparative advantage in public good provision and reduction of harmful externalities from production.[12] But even if businesses are committed to corporate social responsibility (CSR) and socially beneficial corporate purpose, an important follow up question is where and how private firms should best pursue their CSR goals. A compelling answer in the spirit of strategy and complementarity is given by Porter and Kramer (2006). They argue that CSR

[12] In a nutshell, their model shows that firms might be able to more easily solve free-rider problems in public good provising and that in many situations involving harmful externalities, production reduction is typically more efficient than clean-up of the externality after production.

activities are most effective, if they complement a firm's existing core business activities and competitive advantage. If this would not be the case, it is easy to see that NGOs or government agencies might instead have an advantage in a given set of CSR activities. In this context, data on value-chain activities and complementarities can uncover opportunities for public-private partnerships, by showing which types of CSR activities are complementary with firms' business activities. For example, Disney's core business activities are related to entertainment content creation and marketing, especially to children and young adults. Disney therefore is ideally positioned to support educational initiatives and raise awareness of healthy nutritional practices, two areas, in which Disney is indeed active. Another example along the same lines is that the continuing operation of Disney theme parks is complementary to energy usage, so Disney recently built a 270-acre, 50-Megawatt solar facility in Orlando, where it powers two of the four theme parks at Disney World.[13]

As previously mentioned a growing number of researchers argue that CSR initiatives are not only valuable from a social perspective, but are often increasing firm performance, see Edmans (2020); Henderson (2020). If confirmed, tying competitive government procurement contracts to meeting pre-specified goals for CSR practices might enhance firm performance while promoting socially valuable CSR activities. More detailed data on firm CSR activities and practices that seek to motivate employees with corporate purpose would enable research to rigorously evaluate this hypothesis.

Additionally, the adoption of multiple social objectives beyond profit maximization will tend to increase the complexity of strategic decision making, especially for large corporations. In this context, data and research on decision-making can help corporate decision-makers to navigate complex problems of balancing multi-dimensional objectives. At the same time, this research in strategic decision making practices as in Yang et al. (2020) can help to potentially attenuate behavioral decision-biases that tend to emerge in situations with complex problems, such as short-termism and limited attention. By supporting this type of complex decision-making in the face of long-run challenges not only for private businesses but the public at large, research on complementarities and strategy practices can help corporations to improve economic policy and therefore support a more socially and environmentally sustainable future.

[13] For both examples, see: https://thewaltdisneycompany.com/app/uploads/2020/02/CSR2019Report.pdf

6 Conclusion

This paper argues that increased data collection on strategy practices is beneficial for a variety of economic policy areas, from antitrust policy and industrial/innovation policy, to public-private partnerships.

The core idea of this paper is that business strategy is about "combining activities" by either jointly adopting practices that reinforce each other, or by avoiding to adopt practices that offset each other. A key insight from this interdependency perspective for economic policy is that firm context matters. As a consequence, "magic bullets", which boost firm profitability and economic growth if only universally adopted, almost surely do not exist. In the absence of such magic bullets for firm strategy or economic policy, company executives and government policy-makers need to better understand the contexts in which a given policy tool or practice matters.

This importance of context in turn means that large-scale, representative data is needed to provide reliable estimates on which types of contexts matter for different management or organizational practices. The benefits of such data are difficult to overstate, as they directly relate to our fundamental understanding of how firms create and sustain persistent productivity advantages. Such productivity advantages at widely considered to be at the heart of the wealth of nations and the most effective weapon against economic stagnation and poverty. My hope is that policy makers and statistical agencies find some of the insights described in this paper to be a useful starting point for designing new survey instruments and collecting representative data on business strategy and firm value chains.

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