

Everything Everywhere All At Once: competition policy and industrial policy choices in an era of structural change

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Abstract:

There is a clear revival of active industrial policy in many OECD economies. There is also a renewed activism in competition policy, with broad issues such as digital market power, the green transition, and geopolitics on the agenda of competition authorities. The new activism reflects technological transformations that are reshaping economic structures and hence presenting policy-makers with long-run supply-side economic challenges. In this context, there is no clear assignment of policy tools to different bodies, but rather a need for coordination of policies across domains. Nor can technical decision-making by economic regulators be separated from the need to make normative judgments about the strategic direction of the economy. This implies two fundamental unsolved institutional challenges: how to combine expert analysis with political legitimacy; and how to coordinate policies across bodies whose responsibilities or remits sometimes conflict.

Keywords: competition policy, industrial policy, structural change, institutions, legitimacy.

JEL codes: L40, L50, O40

I. Introduction

There is a policy transition under way in many OECD economies, marking a clear shift from the ‘neoliberal’ rhetoric of market-first policy approaches, characteristic of the decades since 1980, to greater government activism. This is perhaps most evident in the revival of industrial policy. Among the high-profile initiatives are the US Inflation Reduction and CHIPS Acts and the EU’s formal industrial policy, which have introduced large-scale public investment and other incentives. The stated reasons are the need for technological transition (energy and digital) and geopolitical or economic security. A similar renewed activism has appeared in competition analysis and enforcement, where newly prominent issues include the digital and energy transitions, and concerns about the nationality of acquirers, as well as traditional antitrust issues.

This new activism has emerged due to several pressures. One is the sequence of large shocks to the global economy since the financial crisis in 2008, and consequent concerns about economic resilience and security. Another is that the previous market liberal consensus is perceived to have delivered poor outcomes, with stagnant living standards since at least 2008 and markets that have tended toward greater concentration, at least in some OECD economies.

The focus here is on the implications of the technological transformation under way in two general purpose technologies, energy (in response to the climate crisis) and digital and artificial intelligence (AI). These, on the one hand, mean that markets (or even products) are not well-defined and, on the other, that at least some countries will hope to gain commercial advantage from being at the technology frontier and capturing share in new and growing international markets. Structural shifts in the economy due to the technological transformations imply that competition decisions will overlap with industrial and trade policies, and that competition authorities are increasingly

finding themselves confronted with questions that are not obviously part of their remit—such as how competition policy can help the green transition, or tackle income inequality or online misinformation.

Such questions underline a fundamental challenge for competition policy: what has been for some decades an arena of positive or ‘technocratic’ decisions—a standardized analysis in terms of consumer welfare in a reasonably well-defined economic structure—is becoming unavoidably normative. This is because when policies are potentially market-shaping, as they are bound to be during a period of major technological change, merger decisions will be more than usually important in determining market structure. For instance, digital markets with network effects and increasing returns will often tip in favour of a winner-takes-most or dominant player. How should the economic welfare analysis evaluate this, if different counterfactuals vary mainly in the identity of the dominant company, or in the prevailing technology standard? Competition authorities are increasingly facing questions about broadly normative issues such as sustainability, inequality, and national security, within an institutional framework that assumes their role is technical and objective. In short, what is the appropriate economic welfare framework for evaluating policy decisions in the context of structural change and the resulting new activism, and what implications does this have for policy accountability and institutional responsibility?

In particular, when should competition policy be selected as opposed to the many tools of industrial policy (publicly-funded R&D, tax credits, subsidies, advance market commitments) or regulation (consumer protection, standards, non-tariff measures, etc.) to achieve these broader aims? While industrial policies have been implemented in practice (despite a political rhetoric that has often been critical of them—see, for example, [Crafts and Hughes \(2014\)](#)) throughout the past five decades, the boundaries between what were distinct policy domains seem to be blurring. For example, how should competition authorities take account of their government’s ambitions to promote a particular kind of technological product such as batteries or frontier AI models through industrial policies; does the state aid or national champions debate need revisiting?

New or sharper trade-offs are also highlighted in the suite of policy reports on digital markets ([Crémer et al., 2019](#); [Furman et al., 2019](#); [Stigler Center, 2019](#)). These framed the policy issue as making digital markets more competitive through *ex ante* regulatory and other measures as well as *ex post* enforcement where necessary. For example, the Furman Review emphasized the scope for data portability and interoperability, which involve behavioural regulation and issues concerning common technical standards. This directly raises the question of when regulations and competition involve trade-offs (reflecting the classic view of regulations as entry barriers and thus a necessary consumer-protection evil from the perspective of competition policy) and when they are complements (reflecting the more recent view of the need for market-shaping interventions). Other new questions include how does competition policy interact with trade policy as well as industrial policy, and with newly salient aims such as geopolitical security and economic resilience. For example, should competition authorities be concerned not only with the nationality of acquirers but also how they are funded and whether they get state subsidies or tax breaks? The new activism raises questions of policy design and assignment.

This article argues for explicit coordination between competition policy and industrial policies, setting them in the context of national governments’ strategic supply-side economic aims. After briefly describing recent developments in both competition policy and industrial policy (in section II), it suggests that an approach to the selection of policy tools requires a more clearly articulated framework (section III). Unlike in traditional macroeconomics, no clear assignment of supply-side policy tools is possible; rather, the challenge is coordination across domains of policy, taking account of trade-offs. The strategic issues facing governments are not adequately addressed by the standard microeconomic welfare analysis that has characterized competition policy in recent decades. While this has served policy-makers well in the past, the structural changes in the economy being brought about by technological transformations involve normative choices, not just positive analysis. This calls for the explicit recognition of the need for policy coordination in the light of broader national aims, with a more systematic framework (section IV). The article concludes (section V) that an appropriate institutional environment is needed to navigate the policy trade-offs and complementarities.

II. Recent policy developments

For some decades, competition policy has become an increasingly technocratic domain. Expert economists and lawyers undertake a complex analysis and reach a determination (within the relevant judicial framework) about the likely effects of a merger or operation of a market in terms of an economic welfare criterion. In many jurisdictions the criterion is consumer surplus (although [Werden \(2013\)](#) argues this is a misinterpretation of US practice). This practice implicitly assumes that there is a possible ‘correct’ answer: that although the analysis may be flawed or contested, a determination in terms of the specified welfare standard is possible. Competition

authorities have also become more independent from the political process, in parallel with other institutional developments such as independent central banks or fiscal councils (Tucker, 2018), as political decision-makers were seen to be overly vulnerable to special interests, the emotional appeal of ‘saving jobs’, or the short-term imperatives of the electoral cycle. So even though the analysis involves carrying out an explicit economic welfare evaluation, the implementation of competition policy has widely come to be seen as a separate, expert domain (Coyle and Dahmen, 2024).

However, this insulation of competition analysis and enforcement from value-laden or (small p) political choices has begun to erode. One early example was the UK government’s decision in 2008/9 to add banking to the list of strategic sectors in which politicians could determine merger outcomes, in order to enable rescue mergers to take place quickly during the financial crisis. Another instance is more recent political concern about the dominance of Big Tech in digital markets, along with some (mixed) evidence of increasing concentration in many other markets (see Affeldt *et al.* (2021) and Amity and Heise (2024) for overviews). Lina Khan’s 2017 article, ‘Amazon’s Anti-Trust Paradox’, had an enormous impact, generating what has been called the ‘neo-Brandeisian’ movement in the US and beyond. This perspective emphasizes the political damage caused by the concentration of economic power, as well as introducing a renewed focus on vertical restraints and market structures. Many jurisdictions have introduced new legislation and enforcement practices in response to digital market dominance. However, there has been little acknowledgement of the implication that rapid technological transitions (in ‘green’ domains as well as digital), making market-shaping inevitable, are reintroducing normative considerations into competition policy. The existence of competing ‘schools of thought’ in competition analysis, after a long period of a settled core analytical framework, is in itself a signal that political choices are being made.

In any case, the character of digital markets makes it difficult to apply the traditional analytical toolkit. As the influential policy reports all described, digital platforms create new categories of goods and services, always cross-subsidize between ‘sides’ or user groups, and may set zero prices to consumers that make it difficult to argue that prices are ‘excessive’. Platforms are likely to operate at a loss until reaching critical mass; and often ‘envelop’ adjacent markets once they reach that point. All these features make tools such as market definition and concentration indices challenging. Traditional analysis does not capture the phenomenon of markets tipping, the role of data in cementing a dominant position, or the importance of innovation in competition ‘for’ (instead of ‘in’) markets. Hence the US (with Lina Khan and Timothy Wu in key Federal Trade Commission and Department of Justice roles under the Biden administration) has taken a more activist enforcement approach, while the EU has passed its Digital Services Act and Digital Markets Act, and the UK has legislated creating the Competition and Markets Authority (CMA)’s new Digital Markets Unit, imposing *ex ante* regulatory and behavioural requirements on ‘strategic’ or gatekeeper platforms.

This does not seem to be a new, settled mode of competition policy, however. Key digital markets are not readily contestable even with these new frameworks, and the continuing technological advances in generative AI may further cement the position of Big Tech companies (CMA, 2023, 2024). Given the huge scale economies involved, these are all American or Chinese. Across the OECD, some of the behaviours of these companies and consequences of their services are seen as unacceptable—as revealed, for example, by the public and political debates about online harms, deep fakes, misinformation, and tax avoidance. Given the many gatekeeper roles in digital markets, at different levels of the technology stack, national security and national technology capability issues are also coming into play.

Other normative issues are also entering competition policy debate. For example, transition to net zero will require agreement on technical standards and information sharing, as well as reshaping economically important sectors such as autos and construction. A concern about job quality has led to scrutiny of digital platforms’ monopsony power. In the more uncertain global environment there are shifts in attitudes to technology transfer agreements and a desire to promote supply chain resilience. The prevalence of global supply chains or production networks in some markets means there are numerous supply bottlenecks creating vulnerabilities. One prominent example is Taiwan’s TSMC (Taiwan Semiconductor Manufacturing Company), absolutely dominant in the supply of advanced chips. However, the cost and quality efficiencies from the process of increasing specialization of each link in a supply chain are in tension with the efficiency benefits of competition, as the efficient scale of production of a sufficiently specialized component may be a single company; this global supply chain context brings trade policy into the calculation (Bown, 2023; Coyle, 2023).

In many of these instances, competition policy and industrial policy overlap. For example, the US has subsidized TSMC (by a reported \$15 billion in grants and tax credits) to establish a production facility in Arizona. There has been a broad-based revival of interest among policy-makers and economists in the role of active industrial policies or ‘missions’ in the green transition. The drivers of the shift to activism have been the same as those affecting

competition policy: technological transitions, supply chain resilience, a concern for inequality and job quality, and geopolitical security.

Broad national competitiveness concerns have also prompted a more positive attitude to industrial policy. The ‘China shock’ (Autor *et al.*, 2013), along with the regional and labour market inequalities that might in part be attributable to global trade, have focused attention on supply-side policies in general. A number of economists have argued for policies to create ‘good jobs’ (Rodrik, 2022) and to ensure that countries or regions retain capabilities such as engineering or materials know-how to enable the long-term sustainability of value-added production (Tassey, 2014; Bessen, 2015).

Until recently, there has been little evidence concerning the scope of industrial policy activism. But recent papers indicate it has clearly increased (Criscuolo *et al.*, 2023; Juhász *et al.*, 2023; Evenett *et al.*, 2024). While cases such as the proposed Siemens–Alstom merger blocked by the EU in 2019 on the basis of its strong, and strongly enforced, state aid responsibilities, reopened debate about the interaction between competition and industrial activism some years ago, Evenett *et al.* (2024) document an acceleration in discussion of industrial policy in the major business media from the mid-2010s (and are starting more systematic collection of data on what they term ‘new industrial policies’). State aid policy remains, of course, an important competition policy tool within the EU, as a guarantor of the effectiveness of the Single Market. But the Commission has responded to US industrial policy activism, and to extensive Chinese state aid to its exporters, by loosening the state aid framework with its 2023 time-limited ‘Temporary Crisis and Transition Framework’ in the context of evidenced trade distortions and the ‘General Block Exemption Regulation’ in the context of green transition. It remains to be seen whether this policy shift is sustained. Although the older academic rationale for industrial policies focused on infant industry protection in developing countries, the new evidence makes it clear that advanced market economies plus China engage far more in industrial policy intervention than do low-income countries, whether measured by fiscal spend or number of interventions. The types of policy vary among countries; for example, the UK approach is heavily weighted towards tax expenditure tools, whereas other countries focus on export finance, support for small and medium-sized enterprises (SMEs), or skills. The OECD’s evaluation of nine member countries found that much of the focus was sector specific, and that green transition is an increasingly important stated rationale. The US, EU, UK, and Korea have all announced explicit green industrial policies in recent years (Criscuolo *et al.*, 2023).

Recent academic studies have had a somewhat more positive verdict on the outcome of such policies than the post-1970s tradition of scepticism about government failure and the likelihood that governments were more likely to pick losers than winners (Juhász *et al.*, 2023). However, as Criscuolo *et al.* (2023, p. 9) comment,

Virtually every government uses industrial strategies, but surprisingly little work is devoted to quantifying them, analysing their structure or evaluating their effectiveness.... [T]he evidence on the effectiveness of single industrial policy tools, let alone entire industrial strategies, is mixed and not always convincing.

In the light of the—at best—mixed evidence in its favour, the future case for industrial policy will require a better articulated rationale. With this in mind, the next section turns to policy taxonomies and trade-offs.

III. Supply-side policy taxonomies

Competition policy and industrial policy have largely overlapping ultimate aims. Both are intended to deliver the more efficient allocation of resources across the economy in current markets and, through enhanced innovation, in future. Juhász *et al.* (2023) define industrial policy as, ‘those government policies that explicitly target the transformation of the structure of economic activity in pursuit of some public goal’ (p. 4). Criscuolo *et al.* (2023) define it as ‘interventions intended to improve structurally the performance of the business sector’. The definition used by Evenett *et al.* (2024) is broader: ‘Any targeted government intervention aimed at developing or supporting specific domestic firms, industries, or economic activities to achieve national economic or noneconomic (e.g., security, social, or environmental) objectives’ (p. 6). Often, definitions of industrial policy exclude agriculture (although it is increasingly technology-intensive), and sometimes also services, but these exclusions are not compelling; after all, manufacturing value added accounts for just 13 per cent of GDP on average across the OECD, and 8 per cent in the UK. Nor is it clear why public corporations or even public services should be excluded, given their close interaction with market activities. Juhász *et al.* suggest alternative policy goals, such as creating good jobs, stimulating weaker regions, or promoting climate transition. What these definitions have in common is that industrial policies are supply-side or structural interventions aimed at a policy goal.

Competition policy could be considered as a specific industrial policy instrument, mainly focused on consumer outcomes through market contestability, and sitting alongside the producer-oriented interventions more conventionally described as industrial policies. In the conceptual framework they develop for industrial policies, Criscuolo *et al.* (2022) locate competition policy as a supply-side instrument affecting industry dynamics. Their useful taxonomy organizes policies largely according to the channels through which they work (Figure 1). (The ‘demand’ category consists of instruments using demand to shape the structure of supply.)

This distinction between supply and demand instruments is intuitive but does not provide any guidance as to how to select policy instruments in relation to policy aims, either ultimate or intermediate. An alternative approach could organize policy instruments according to the rationale for intervention. The classic economic welfare rationales include the existence of an externality (which can take many forms), the need for a public good (such as infrastructure, public education, or R&D) as an input, and coordination failures (Figure 2). In this case, competition policy is classified as directed at market failures.

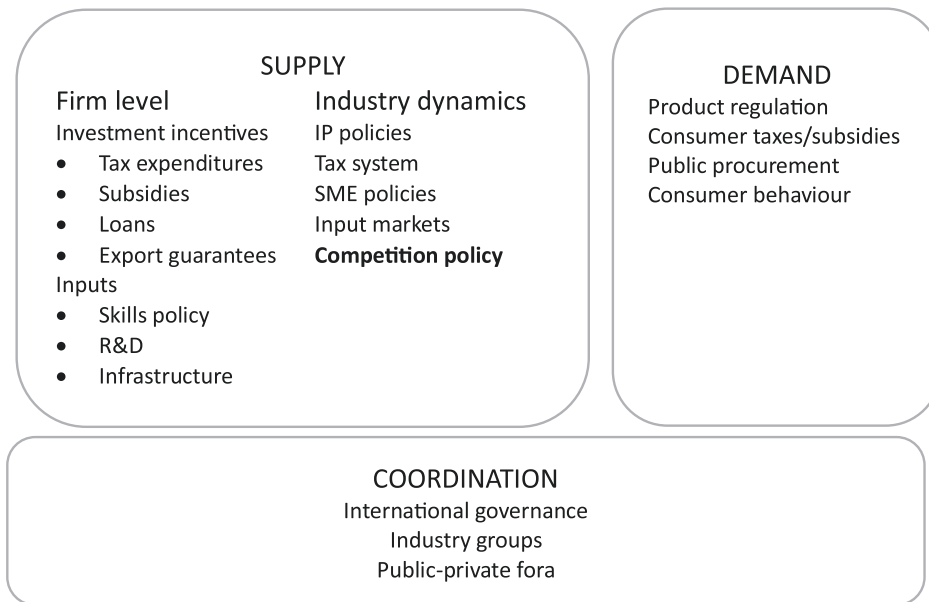


Figure 1: Taxonomy of industrial policy instruments by channel

Source: Adapted from Criscuolo *et al.* (2022, Figure 4).

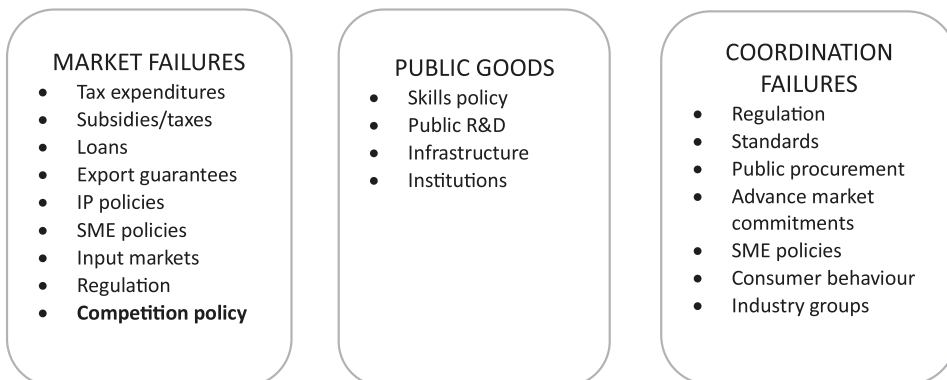


Figure 2: Taxonomy of policy instruments by economic welfare rationale

Source: Author’s own.

Juhász *et al.* (2023) categorize learning-by-doing arguments, increasing returns to scale, and also rationales such as a desire for good jobs or national security, as externalities. This may be stretching the definition of an externality too far. However, they also argue that Pigouvian taxes and subsidies are the correct policy instrument to apply in this case, whereas if the definition of externalities is so expansive the policy menu is surely much longer, and includes competition policy.

Despite their economic logic, neither of these approaches produces a taxonomy that clarifies the trade-offs between different policy instruments; and although the second broadly links instruments to economic welfare rationales, it omits the evaluative criteria for policy choices. The limitation of both is that they do not take account of the political and normative aspects of policy choice in the context of significant structural change with multiple possible ‘equilibrium’ outcomes and many strategic complementarities between instruments. In particular, considering competition policy as a narrow market failure instrument certainly does not help either explain why the agenda of competition authorities has been expanding as described above, or give any guidance as to how competition policy ought to evolve. The ‘economistic’ frameworks are therefore incomplete.

For example, as has been noted (e.g. Aghion and Griffith, 2008; Coyle, 2019), the context of rapidly changing technological markets calls for a Schumpeterian approach to competition policy, with a focus on innovation and entry—although forward-looking merger or market assessments are challenging both analytically (as there are huge uncertainties) and in terms of the legal evidence requirements. While the individual consumer perspective may be an adequate welfare measure in a relatively stable economic environment, the economic welfare evaluation of policies in the current context of structural transformation needs to consider a collective societal perspective rather than that of individual consumers. The non-linearities and non-convexities involved in aggregate economic outcomes put a wedge between the individual and the social. As Baumol (1952 (1967)) noted, the evaluation of society’s economic welfare in terms of individual choices is valid only given the assumption (in the welfare theorems) that individual decisions are independent of each other; the reasoning is circular. If there are external economies in consumption (such as network effects) or production (such as scale or learning economies), marginal prices and costs are not measures of marginal social utility. Yet there are many examples of interdependence, from the very existence of increasing returns to the tipping points that characterize digital platforms. This includes interdependence between consumption and production.

Recent times have brought many examples of policy decisions that implicitly acknowledge this complexity, including new barriers to Chinese takeovers in ‘strategic’ sectors such as digital technologies, or the national interest perspectives on developing and distributing Covid vaccines. An earlier example was the UK Competition Commission’s (2009) decision on ‘Project Kangaroo’ that banned the UK’s commercial public-sector broadcasters from forming a joint venture in long-form video content for the next 5 years. The rationale was that it would foreclose this nascent market to new entrants thanks to the parties’ compelling catalogue of content. The economic reasoning overlooked the incentive of a digital platform to have as much content as possible to drive demand and usage on its other side. The decision paved the way for the US’s Netflix to become the UK’s biggest broadcaster within a few years. Given the economies of scale and network effects involved, this was a market that would always tip. Should the identity of the dominant player, British or American, have been a consideration, given the UK’s existing strength in the creative industries? If the proposal had concerned AI businesses in 2023, with more awareness of non-linear dynamics, the competition analysis would probably have been different.

There are many other issues that will call for strategic decisions in the years ahead: are there technological standards on which companies should cooperate rather than compete; should ‘national’ champions be encouraged in frontier technologies in which the country has a comparative advantage; should there be data sharing to reduce waste along supply chains given environmental imperatives? Such considerations point to the need for a broader evaluative framework than short- to medium-term consumer welfare. There are many areas of the economy experiencing rapid technology-driven change where either inherent dynamics (as in digital markets) or intellectual property protection (as in biomedicine and synthetic biology) or learning-by-doing, scale economies, and choices concerning standards (as in green energy technologies or EVs) imply concentrated markets. Competition decisions will shape market structures, have multiple potential spillovers or unintended consequences, and touch on contexts where society (or political decision-makers) attach weight to non-economic efficiency goals. Market structures will be evolving for years, possibly decades.

Non-technocratic issues are already landing on the desks of competition authorities. For example, under President Biden US Executive Order No. 14036 (86 Fed. Reg. 36,987, Section 1) states,

This order affirms that it is the policy of my Administration to enforce the antitrust laws to combat the excessive concentration of industry, the abuses of market power, and the harmful effects of monopoly and

monopsony—especially as these issues arise in labor markets, agricultural markets, Internet platform industries, healthcare markets (including insurance, hospital, and prescription drug markets), repair markets, and United States markets directly affected by foreign cartel activity.

In the UK the Competition and Markets Authority has reported on issues such as the resilience of supply chains, monopsony power, and environmental sustainability. Similarly, the EU and other European competition authorities have responded to interest in the relationship between competition policy and environmental challenges, or technology cooperation.

What does this imply in practice? One possible response is that competition authorities are not appropriate bodies for determining such goals or societal priorities. For example, [Tirole \(2022\)](#) argues that ‘[m]ultiple missions given to a single agency may reduce accountability’. He advocates the use of other instruments for other goals—such as carbon taxes or direct regulation for green energy aims. [Peretz \(2023\)](#) makes a similar accountability argument, in the context of the UK’s new Digital Markets, Competition and Consumers Act. He notes the breadth of the decision-making powers the Act delegates to the CMA without any provision for political scrutiny, and with only limited procedural rights of appeal for the tech companies designated as strategically important. The powerful reason for the latter, new, limitation—which the companies lobbied against—was that the inevitable consequence of allowing substantive appeals would be constant litigation. If decisions by an independent authority are confined to a tightly defined criterion, such as consumer welfare, the delegated powers are being exercised in a technocratic context. Peretz argues (as I have here) that decisions in digital markets are not purely technocratic as they will be market-shaping and concern ‘important matters of public policy involving questions of value and distribution, combined with the absence of precise parameters set by elected politicians for the exercise of those powers’. He proposes either a role for the relevant Minister in setting parameters, or, as second best, a separate, independent CMA panel in cases of dispute.

The first-best solution of getting politicians to make clear normative decisions about difficult choices seems a rather remote possibility, however. So if the obvious taxonomies do not help guide policy choices, and yet structurally-important choices are perforce being made in both competition policy and industrial policy, what is the right framework and which institutions should play what role? The next section turns to the challenges of policy coordination.

IV. A framework for policy choices

The choices considered here are those that need to be made in the economic domain. Although the economic style of reasoning has dominated the public policy agenda in recent decades ([Berman, 2022](#)), current policy debates are starting to recognize that other criteria may outweigh the imperatives of economic efficiency, or economic growth. For example, conflict or geopolitical requirements involve non-efficiency priorities. So did the need for rapid vaccine deployment during the pandemic, with the US triggering the Defense Production Act to intervene in the market ([Bown and Bollyky, 2022](#)).

Even within the economic domain, though, there are conflicting requirements in this new landscape. One that [Rodrik \(2023\)](#) has highlighted is the interests of people as workers rather than as consumers, in his call for high-quality jobs in the domestic economy under the banner of ‘productivism’. This in itself seems likely to sometimes conflict with competition policies required to consider consumer welfare: the interests of people as workers may conflict with their interests as consumers. Similarly, the debate about the potential automation of white collar jobs using AI to cut costs and jobs has prompted questioning of the adoption by businesses of productivity-enhancing technology ([Acemoglu and Johnson, 2023](#)), whereas competition is often motivated by appeals to the effect of contestable markets on productivity, innovation, and consumer outcomes.

Yet navigating the structural changes under way successfully requires a strategic approach including institutional evolution ([Stiglitz and Greenwald, 2014](#)). What criteria are needed to navigate the complex set of trade-offs and the inherent uncertainty due to technological and political shifts alike? In the first instance, some normative direction must be set by political decision-makers. Legislation underpinning competition policy often already includes strategic carve-outs, such as national security and defence, or media, or additional layers of scrutiny, such as the Committee on Foreign Investment in the United States. But this defensive approach is insufficient in the context of technologically driven structural change described here, when policy inaction will shape markets just as much as will positive action. A second layer of legitimate political guidance needs to come from a strategic supply-side economic framework. For example, a government may decide to set priorities such as investment in zero carbon generation, or on enhancing a national capability in a specific sector or area of technology. This kind of priority-setting

is common in strategic policy documents; examples in the UK include the 2017 Industrial Strategy or the 2021 Plan for Growth that replaced it. Such strategies need to have sufficient political consensus and be sustained for a reasonable time if they are to have any structural effects on economic capacity and productivity, which has certainly not been the case in the UK (Coyle and Muhtar, 2023). However, they are the right kind of formal documents for articulating the normative framework and legitimizing the delegation of more technical decision-making.

Given such a framework, the messy detail of how to bring about more strategic aims involves specific choices of policy instruments and reconciling potentially conflicting actions by departments, regulators, and competition authorities.

To stay with the example of broadcasting used above, the UK's publicly owned Post Office coordinated 18 wireless manufacturers to establish the BBC, initially a commercial company, as an industrial policy intervention in 1922. The move was intended to ensure the UK could compete with the then-dominant RCA (Radio Corporation of America) of the US in a nascent new technology sector. Since then a range of industrial policy instruments using it as a vehicle have ensured the growth of a strong and export-intensive broadcast sector. These have included public funding for training, R&D investment, advance market commitments to buy independent programmes and new music, and even seeding the highly successful UK games industry via the BBC's commissioning of the Micro computer in 1982. The liberalization of broadcasting by the Thatcher government in 1990 injected new competition into this market, but the presence of the strong public option and continuing regulation ensured rivalry took place over quality as well as audience numbers. Given the shift starting in the early 2000s to over-the-top digital technologies with their extremely large economies of scale and network effects, away from traditional broadcast, the market became more global. No single UK broadcaster was ever likely to become dominant. This was the moment at which the competition decision in 2009 prevented the joint venture that might have at least kept the UK market for a UK entity (Coyle, 2019). Consumers of the newer streaming services enjoy an excellent service but at higher cost if they choose to subscribe, and without classic public service content (such as local news or dramas oriented to local cultures and politics). At the same time, the UK's supply-side production capabilities are being slowly eroded. It is a reasonable counterfactual history to suppose that if the 2009 decision had taken place in the light of the subsequent decade of analysis of the dynamics of digital markets, the joint venture would have been approved (Van Rompuy and Donders, 2014).

A previous example of the need to account for the interaction between short-term competition and consumer outcomes on the one hand and longer-term supply-side outcomes on the other was the creation of the UK's National Grid. The 1926 Electricity (Supply) Act paved the way for a nationwide grid, built by private and municipal supply companies through the 1930s, before being nationalized in 1947. The UK had fallen far behind the US in the pace of electrification in the early twentieth century. In 1919 it had about 600 companies supplying power, but using competing standards (AC and DC, different frequencies); and even after consolidation after the First World war, the supply of electricity remained fragmented and inefficiently small-scale. As Hannah (1979) points out, the early history of the grid well illustrates the challenges of inconsistent private and public incentives. The need to develop common standards and achieve economies of scale required coordination, and while the pre-war legislation achieved this to some extent, the many competing providers developed inconsistent pricing policies and technologies. The new grid provided a framework for sufficient consistency for national electricity transmission, but the resistance of many of the producers to further standardization ultimately led to post-war nationalization.

The same theme of the importance of technical coordination is well demonstrated by the EU's brokering of a multi-stakeholder agreement of the GSM (Global System for Mobile Communications) mobile telephony standard in 1987. The need for a common standard was seen in the Commission as necessary for a harmonized market that would benefit European producers and spur technological innovation through enhanced trade competition.

The aim clearly was to parallel the forthcoming competition in the service market with increased competition in the upstream equipment manufacturing sector, since an open and interoperable standard would favour cross-national entry of incumbent and newcomers (possibly also small firms). (Mina, 2003, p. 445)

Implemented from the early 1990s, within the decade GSM was the pan-European standard, and within 20 years it had become essentially global. Consisting of a number of 'essential' patents, GSM thus replaced a number of earlier (incompatible) sets of standards, and enabled network equipment and handset manufacturers to achieve substantial economies of scale (Pelkmans, 2001). While initially the US mobile telephony market had been more integrated than the European, from 1989 it experienced a standards battle with the entry of Qualcomm's CDMA standard in competition with the prior AMPS standard. By the end of the 1990s, mobile penetration was lower in the US than EU, and call costs higher.

The detail of the policy coordination involved will vary in different market contexts, as these three examples illustrate. Figure 3 sets out the relationship between industrial policy instruments and competition policy in terms of the likelihood of conflict with strategic policy aims. This is not a neat analytical classification because the context of difficult global challenges like the environmental crisis, a new general purpose technology in AI, and a political environment in which the legitimacy of ‘experts’ has been widely challenged is complex and messy. Some policy tools enter in more than one column, reflecting the importance of policy design. However, it does indicate where those several expert bodies might start to think about coordination over shared structural aims, and the legislative or policy environment in which that can happen. At present the structure of decision-making across different regulatory bodies is incapable of dealing with the complexity of the decision environment. The UK’s creation of the statutory Digital Markets Unit and the informal Digital Regulation Cooperation Forum recognize this in the context of digital markets, with the latter providing for information exchange and recognition of the potential for contradictory decisions; but the need for organizational structures to change is wider, and must also dock with political choices. Indeed, the absence of effective political strategy may be one reason non-technical choices are increasingly reaching the desk of competition and other regulators. At a minimum, not only do specified sector regulators need to be formally required to have regard to competition outcomes among their duties, but so too do all those developing policy interventions.

It should be noted that this refers to domestic competition policy and the domestic market; prior examples of successful industrial development protected domestic industries from competition in the domestic market during their ascent of the learning-by-doing and scale curves but also ensured they were exposed to competition in export markets (Juhász *et al.*, 2023). The policy shift is from the consumer to the producer lens but not in the sense of incumbent producers operating in a reasonably well-defined market and technological environment, and the consideration of total surplus as the welfare criterion. Rather, the focus is on ensuring the economy has the capabilities needed to continue to innovate new products, use new innovations, and produce higher value added products (Tassey, 2014), and so be able to grow national productivity and living standards over time. This approach rests on the importance of tacit knowledge such as acquired engineering know-how and localized capabilities such as a specialized supply chain with embedded relationships and trust that reduce information asymmetries and frictions.

A full discussion of the need for a re-evaluation of welfare economics is beyond the scope of this article (Coyle *et al.*, 2023). The point here is that the economic welfare framework conventionally applied in either competition analysis or microeconomic policy evaluation does not take account of the path-dependent dynamics of economic growth in the current context of technological transformation, nor of the interdependence between production and consumption. Unsurprisingly, in the context of structural economic changes, the policy debate is increasingly—and rightly—informed by the long-term dynamic supply-side issues. As Juhász and Lane argue (2024), this context means that an effective industrial policy requires sufficient state capacity; this applies equally to effective coordination between competition policy and other supply-side policies.

ALIGNED WITH COMPETITION POLICY	SOME IMPLICATIONS FOR COMPETITION POLICY	POTENTIAL CONFLICT WITH COMPETITION POLICY
<ul style="list-style-type: none"> • Advance market commitments • Infrastructure/utility regulation • Regulation (standards, interoperability) • Skills policy, input markets • Public procurement 	<ul style="list-style-type: none"> • Public R&D • Specific infrastructure • Tax expenditures • Subsidies/taxes • Loans • Export guarantees • IP policies • SME policies 	<ul style="list-style-type: none"> • Regulation (entry barriers) • Public investment • Public procurement • SME policies • Consumer behaviour • Industry groups/data sharing

Figure 3: Industrial policy instruments and implications for competition policy

Source: Author’s own.

The separation between the normative framework of political choice and delegation of positive analysis to competition authorities (or other regulators) that has characterized the past four or five decades is rapidly eroding. This poses an as-yet unaddressed institutional challenge: neither requiring economic regulators to make value judgments nor expecting politicians to adopt a strategic perspective while avoiding old problems of special interest capture seems either a plausible or attractive alternative. The inherent cross-border dimension of these policy issues makes the institutional challenge all the harder, although the substantial interactions of industrial and competition policies with trade policy also go beyond the scope of this article.

V. Conclusions

There has been a return to more active industrial policies in major advanced economies, after several decades in abeyance. The contributory factors include recent economic shocks and a more uncertain geopolitical environment, but this article has focused on the role of the technological transformations in digital and energy in structural economic change. Governments perceive a national interest in the position of their producers and their workforces in considering using a range of industrial policy tools to affect supply-side outcomes. Alongside the increased use of active industrial policies, which have generally been considered to conflict with competition and state aid policy, competition authorities are also being tasked with addressing questions that go well beyond their standard agenda of merger control and state aid, such as green transition, online harms, or inequality and job quality. Such questions are also not amenable to the standard consumer welfare analysis used by competition authorities, as they involve structural, supply-side questions.

This article has argued that in the context of significant structural economic change, policy-makers should indeed focus on the economy's supply-side capabilities for long-term growth, and that this requires more coordination across policy domains. A simple assignment of policy tools to tasks is not possible, not least because of the interaction of producer and consumer choices and outcomes in the context of structural change. Some industrial policy tools are well-aligned with traditional competition policy, and some not. Moreover, the detail of policy analysis will depend on the specifics of the context and—as the examples earlier showed—there are some inescapable trade-offs.

Trade-offs imply normative choices. In democracies, this points to the need for mechanisms of accountability. Past experience of industrial policy in the post-war decades underlined the vulnerability of political choices to lobbying by interest groups, paving the way for increasingly independent competition policy. Yet if these are not to be political decisions, accountable through elections or legislative processes, the bodies taking them will need new forms of accountability for their legitimacy—particularly given that there has already been some backlash against 'experts' or technocrats. Nor are competition authorities the obvious bodies to be coordinating across the whole range of supply-side policies in order to navigate structural economic change in the interests of society as a whole, even though this is a role they are increasingly being tasked with in digital markets. Yet coordination is essential when an assignment of policy tools to tasks and therefore to specific bodies is not possible. So there are two fundamental unsolved institutional challenges: how to combine expert analysis with political legitimacy when the positive and normative aspects of policy decisions cannot be separated; and how to coordinate policies across bodies whose responsibilities or remits may sometimes conflict.

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