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ORIGINAL ARTICLE OPEN ACCESS

Skill-Biased Policy Change: Governing the Transition to the Knowledge Economy in Germany, Sweden and Britain

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Received: 16 January 2025 | **Revised:** 6 July 2025 | **Accepted:** 18 August 2025

Funding: This work was supported by Leverhulme Trust, RPG-2022-151.

Keywords: digital transition | high skills | knowledge economy | skill-biased policy change | technology

ABSTRACT

How have advanced capitalist democracies transitioned from a Fordist to a post-Fordist, knowledge-based economy? And why have they followed seemingly similar policy trajectories despite different economic models and sectoral specializations? We develop the notion of skill-biased policy change to answer these questions. Drawing on a distinction between valence and partisan issues in the transition to the knowledge economy, we highlight the partisan and business group politics underpinning different policy areas to argue that policies that create or mobilize high-level skills attract relatively broader consensus across political parties and business groups than protective labor market policies targeted at the lower end of the skills distribution. The argument is illustrated through case studies of Germany, Sweden, and the UK—three countries that have transitioned to a knowledge-based economy but that have done so by relying on markedly different sectoral specializations.

1 | Introduction

How have advanced capitalist democracies governed the transition from a Fordist to a post-Fordist knowledge-based economy? This question has attracted growing interest from scholars of comparative political economy (CPE) and public policy in recent years. By and large, extant scholarship in CPE has sought to establish and explain persistent cross-country *variation* in the face of similar structural shocks caused by the widespread adoption of digital technology, pointing to countries' distinct sectoral specializations that require different sets of policies and institutions (Iversen and Soskice 2015; Iversen and Soskice 2019; Baccaro and Howell 2017; Baccaro et al. 2022; Hall 2020), reinforced by the heterogeneous preferences of domestic producer groups (Thelen 2014, 2019; Hassel and Palier 2021, 2023).

Our contribution to the special issue engages with these debates by outlining an alternative theoretical perspective that builds on the notion of skill-biased policy change (Diessner et al. 2022; Diessner, Durazzi, and Hope 2025). Unlike the variation approach, we submit that different sectoral specializations increasingly rely on *similar* sets of underlying policies, owing to the proliferation of information and communications technology (ICT) and the resulting need for higher-level skills across sectors. Drawing on insights from labor economics as well as Iversen and Soskice's (2015) distinction between 'valence' and 'partisan' issues in the knowledge economy, we argue that consensus among political parties and business groups over a given policy in the transition to the knowledge economy is contingent upon the extent to which the policy contributes to the creation or mobilization of high-level skills for the leading sector(s) of

[Correction added on 10 September 2025, after first online publication: Affiliation 2 has been added for Sebastian Diessner. All subsequent affiliations have been renumbered accordingly.]

the country's economy. By implication, we should expect to see a relatively consensual expansion of high-level skill formation systems across countries, as opposed to a more conflictual reconfiguration of other key institutional spheres in the realm of labor markets and industrial relations. In other words, we theorize policy change to be biased towards promoting and supporting the formation of high-level skills, and thus to be more favorable towards workers at the top of the skills distribution than those lower down the distribution.

We probe into our theoretical propositions with case studies of Germany, Sweden, and the UK—three countries that have made strides towards the post-Fordist knowledge-based economy but that have done so by relying on markedly different sectoral specializations. We zoom into policy change since the 1990s, focusing on two sets of policies: (i) policies that have as primary goal the creation of high-level skills (such as higher education and training) and (ii) policies that have a protective function for individuals lower down the skills distribution (such as labor market policy and industrial relations), paying particular attention to how political parties, business groups, and labor unions articulated their preferences, and how they coalesced to turn these preferences into policies. The empirical evidence suggests that the notion of skill-biased policy change can add value to explaining the transition to the knowledge economy across different advanced capitalist democracies.

The paper proceeds as follows: Section 2 revisits the CPE literature on the transition to the knowledge economy and highlights its gaps; Section 3 outlines our theoretical framework; Section 4 provides details on the case selection strategy and data collection; Sections 5–7 present the three case studies; Section 8 discusses and concludes.

2 | Comparative Political Economy and the Transition to the Knowledge Economy

Advanced capitalist democracies have transitioned into knowledge-based economies since the turn of the century, characterized by an increasing reliance on—and complementarity between – (high) technology and (high-level) skills (Iversen and Soskice 2015, 2019; Durazzi 2019; Hope and Martelli 2019; Thelen 2019; Hall 2020; Hassel and Palier 2023; Diessner, Durazzi, Filetti, et al. 2025). A growing body of work in economics, political science, public policy, and political economy has sought to understand and explain this transition away from the Fordist mode of production and the changes in political-economic institutions that have underpinned it.

A frequent point of departure for understanding how countries evolve in the context of common structural-economic shocks remains the much-debated varieties of capitalism (VoC) approach, according to which political economies can be differentiated in terms of their reliance on (non-)market coordination across key institutional spheres, leading to the seminal (if perennially controversial) distinction between coordinated and liberal market economies (CMEs and LMEs) (Hall and Soskice 2001; Hancké et al. 2007). In line with VoC, different varieties of capitalism should be expected to double down on their respective 'comparative institutional advantage' in either radically innovative high-technology service and manufacturing sectors (in the case of LMEs) or incrementally innovative traditional manufacturing sectors (in the case of CMEs) throughout the transition to the knowledge economy, upholding rather than undermining the labor market and welfare state institutions that have traditionally supported these sectors.

However, since the turn of the century, political economies appear to have developed in a way that has been far less path dependent than VoC had assumed. In a key contribution on the transition to the knowledge economy across advanced democracies, Thelen (2019) charts significant variation in how the universe of CMEs has evolved in particular: whereas Germany upheld its traditional manufacturing sector, the Netherlands deindustrialized more heavily and moved into dynamic services, while Sweden maintained some core manufacturing despite also branching out into ICT industries. In this account, variation in how countries transition to the knowledge economy is explained by distinct cross-national public policy choices that serve the needs of dominant sectors in the (knowledge) economy. Public policy choices, in turn, are the outcome of political decisions that the literature ascribes to the influence of different actors in the policy process. While Thelen (2014, 2019) emphasizes the organizational features of producer groups combined with state capacity, Baccaro et al. (2022) and Baccaro and Pontusson (2022) advance the notion of 'growth coalitions' that are dominated by producer groups and, in particular, by business organizations within them. By contrast, Garritzmann et al. (2022) focus primarily on how social classes coalesce around particular (social) policy options for the knowledge economy (cf. Beramendi et al. 2015), while Hassel and Palier (2021, 419) devise a framework that brings together the producer groups and partisan political approaches. Despite assigning a different (relative) importance to actors in the realms of producer groups or partisan politics, an important shared finding emerging from these contributions is that specific political coalitions have emerged across countries and have led to *different* policy choices, which in turn sustain different 'types' of post-industrial knowledge-based economic models.

Stark differences, for instance, have been theorized with respect to social protection and skill formation. Social protection has been characterized by a turn towards inclusive social investment policies in Northern Europe, but not elsewhere—where 'traditional' insurance-based solutions (as in Continental Europe) or private options (as in Anglo-Saxon countries) are considered predominant (Thelen 2014; Hassel and Palier 2021; Garritzmann et al. 2022). Skill formation has instead been depicted as relying on the expansion of higher education in both Northern European and Anglo-Saxon countries, featuring respectively an inclusive and publicly financed system versus an elitist and privately financed one (Hassel and Palier 2021, 40), whereas Continental Europe is still seen as prioritizing intermediate vocational skills (Thelen 2019; Wren 2021; Hassel and Palier 2021).

The 'different public policies in different political economies' approach, however, finds itself confronted with several empirical puzzles. Sweden, the poster child of social investment policies, for example, has seen its commitment to training for the unemployed falter in recent years (Davidsson 2018)

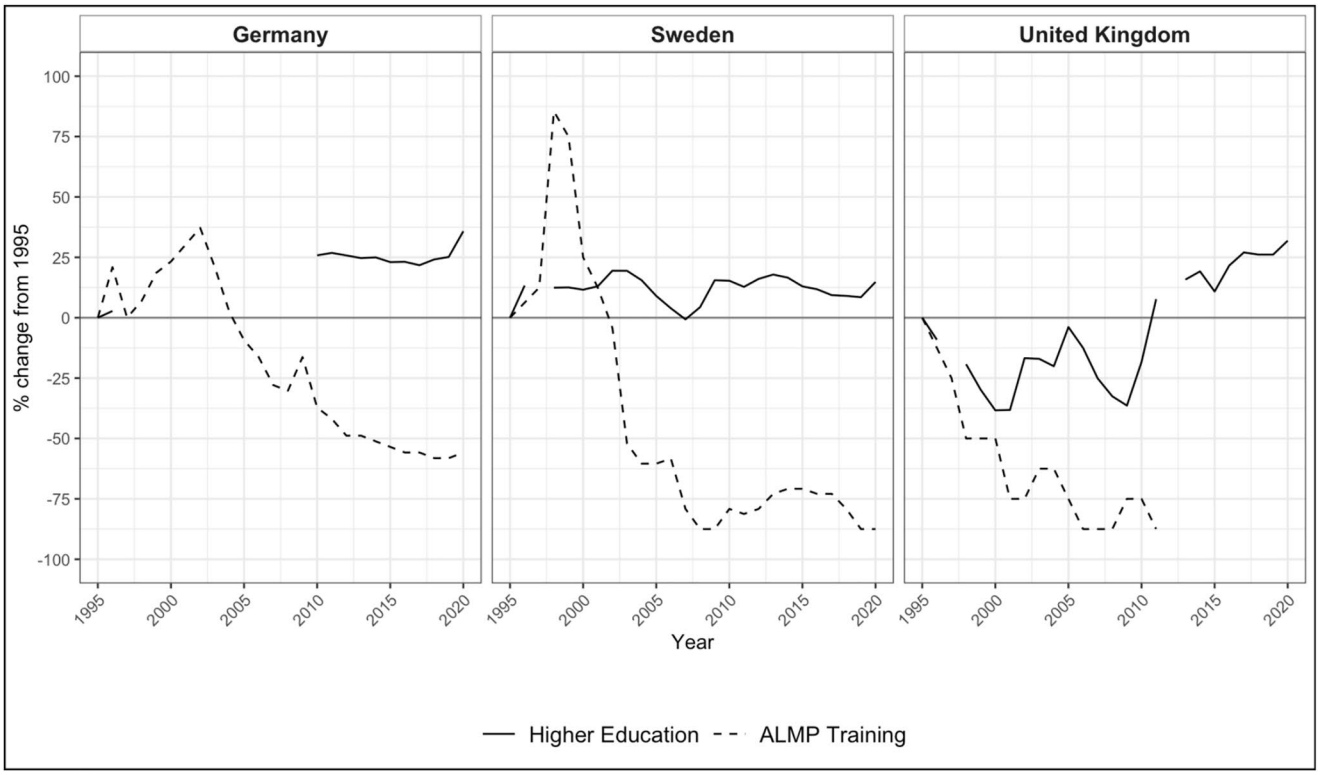

FIGURE 1 | Relative change in public expenditure on ALMP training for the unemployed and on higher education (1995 baseline). *Source:* Authors' elaboration based on OECD (2024) and UNESCO (2024a).

and has re-oriented its active labor market policy (ALMP) framework towards 'workfarist' measures traditionally associated with liberal market economies, in line with a broader liberalization and commodification of its labor market (Ryner 2004; Ferragina and Filetti 2022). Germany, in turn, has seen a growing commitment to expanding higher education (Diessner et al. 2022; Iversen and Soskice 2019), while the UK—despite British universities financing themselves largely via tuition fees—today has a higher education system that is not more elitist in terms of access than that of Sweden (Bonoli et al. 2017, 72). At the same time, all three countries have undergone a deregulation of employment protection and witnessed a drop in collective bargaining coverage, albeit to varying degrees (Baccaro and Howell 2017).

In short, different countries have indeed pursued different economic strategies (as we also show with newly collected data in Section 4), but they have done so by partly relying on rather similar public policy choices. Figure 1 illustrates these similarities by reporting 25 years of public spending on ALMP training and higher education across three countries—Germany, Sweden, and the UK—that the literature has convincingly shown to be championing different economic models. We select these two policy areas for illustrative purposes. Higher education is a prime example of policies aimed at the creation of high-level skills (Durazzi et al. 2025), while training for the unemployed is instead commonly thought of as a protective policy for individuals lower down the skills distribution who are a core constituency of ALMP (Bonoli et al. 2017). In all three countries, we can observe how public commitments towards higher education are in relative terms greater at the end of the 25-year period than they were at the beginning. The opposite holds true for training for the unemployed. At the same time, we also observe some within-country variation over time. How can these developments be explained? The main theoretical challenge is to devise a framework that can help us explain similar policy trajectories across countries with different economic structures—something that the extant CPE literature has struggled to account for thus far. We aim to do so in the following section, by means of leveraging the theoretical construct of skill-biased policy change and theorizing its underlying politics.

3 | The Politics of Skill-Biased Policy Change: Five Theoretical Propositions

By theorizing the politics of skill-biased policy change, we sketch out a different theoretical approach to how we can understand the transition to the knowledge economy in advanced capitalist democracies. Our basic theoretical proposition is inspired by Iversen and Soskice's (2015) distinction between 'valence' and 'partisan' issues in the knowledge-based economy and can be articulated as follows: the political support that a given public policy attracts in the transition to the knowledge economy is contingent upon the extent to which the policy contributes to the creation and/or mobilization of high-level skills for the leading sector(s) of a country's knowledge economy. If a policy fulfills this purpose—higher education policy would be an obvious example—we expect it to be treated as a 'valence' issue in the political arena, enjoying relatively broad support among producer groups as well as parties across the political spectrum. If, however, a policy does not fulfill this purpose—ALMPs being one prominent example—we

expect it to be treated as a 'partisan' issue. This is because the (typically lower-level) skills that are created or mobilized via ALMPs are marginal to the production strategies of firms in the leading sectors of the knowledge economy. As a result, the extent to which governments decide to invest in policies that are targeted at the lower end of the skills distribution is a political choice that is more likely to be contested by rivaling political parties. We unpack this proposition further in the remainder of this section.

Technological change is the starting point of our argument. In line with prominent findings from labor economics, it has now become increasingly accepted that the large-scale adoption of ICT throughout the transition to the knowledge economy has been 'biased' towards highly skilled workers, given that ICT enhances the productivity of these workers vis-à-vis workers lower down the skills distribution (Autor et al. 2020; Acemoglu 2002; Card and DiNardo 2002; Goos and Manning 2007). This means that firms that seek to thrive in high-value added segments of the global value chain are increasingly dependent on the joint availability of technology and high-level skills, regardless of whether national knowledge economies are geared relatively more towards the high-end services or advanced manufacturing sectors (Durazzi 2019, 2023; Durazzi and Benassi 2020; Diessner et al. 2022; Iversen and Soskice 2019; Hall 2020). Accordingly, we should expect broad agreement among political parties and producer groups in advanced sectors that the transition to the knowledge economy requires governments to step up the supply of high-level skills (proposition #1). While this may be *framed* differently by actors from the left or right of the political spectrum—for instance, the former might think of it as creating high-quality employment opportunities and the latter as satisfying the needs of business in the advanced sector—we expect political conflict to be relatively muted in this policy realm (Durazzi 2019, 2023). Importantly, as indicated above, the complementary relationship between technology and high skills applies to both high-end services *and* advanced manufacturing, leading us to expect broad political support for the expansion of high-level skills irrespective of the sectoral orientation of a country's knowledge economy.

Moving to the realm of protective policies, and specifically to labor market policy and industrial relations, we build on the logic discussed in Diessner et al. (2022); Diessner, Durazzi, and Hope (2025) to argue that the link between these policies and the skills needs of the advanced sectors becomes more tenuous. This is partly because, in the knowledge economy, high-level skills can also serve a *de facto* protective function: highly-skilled workers are sought after because their skills are complementary with technology, making them strategically important for firms and allowing them to access and retain high-quality employment by virtue of their skill level (Diessner, Durazzi, and Hope 2025; Gallego et al. 2022). Lower down the skills distribution, however, workers are unlikely to access the benefits of the knowledge economy through market mechanisms as they do not enjoy the productivity-enhancing effect that technology grants their highly-skilled peers. To the contrary, they may see their wages fall behind those of highly-skilled workers, find their employment conditions to be more precarious (e.g., due to the proliferation of temporary contracts) or even have their jobs replaced by technology. For workers lower down the skills distribution, therefore, reaping the benefits of the knowledge economy depends on the presence of protective institutions that align their wages with those of the highly-skilled (such as collective bargaining), safeguard their incomes (such as unemployment benefits) or create re-employment opportunities (such as ALMP training) (Lee 2024; Diessner, Durazzi, and Hope 2025). However, the extent to which these protective policies will be deployed is unlikely to be a valence issue and more likely to be subject to partisan contestation (Iversen and Soskice 2015).

As a result, we expect actors' preferences to vary more systematically as far as protective policies are concerned, and to be broadly structured along class lines. That employers and center-right parties have adopted a pro-liberalization stance in the post-Fordist era has been amply documented (Baccaro and Howell 2017; Fleckenstein and Lee 2017; Kinderman 2017). In the context of the knowledge economy, employers can use deregulation in the labor market and industrial relations arenas as well as retrenchment of other protective policies not only to cut costs at the lower end of the skills distribution, but also to selectively concentrate wages and non-wage benefits on strategically important highly skilled workers (Diessner et al. 2022; Diessner, Durazzi, and Hope 2025). We therefore expect employers and center-right governments to promote policies that relate to high skill formation, while simultaneously supporting the liberalization of labor markets and industrial relations (proposition #2). Labor unions, by contrast, can be expected to oppose this agenda, not least since deregulation and liberalization weaken unions' scope for collective action and undermine class solidarity (Durazzi and Geyer 2022). Hence, while unions will share with business an interest in promoting high skill formation, they will oppose the deregulation of labor markets and the retrenchment of protective policies (proposition #3).

At the same time, in a context of structural and political power tilting away from labor and towards capital (Baccaro et al. 2022), unions' preferences are unlikely to trigger substantive policy change by themselves, unless they find support also within powerful center-left parties. The position of the latter is, however, theoretically more nuanced and introduces an element of cross-temporal variation. On one hand, it has been shown that the economic policy stance of center-left parties has moved to the right over time, in particular since the 1990s, making it increasingly indistinguishable from that of center-right parties (Hopkin 2020). This stance was reinforced by the belief that skill-oriented policies would hold the key to *both* efficient *and* equitable outcomes in the transition to the knowledge economy (O'Donovan 2023), rendering traditional redistributive institutions and social consumption policies obsolete. This leads us to expect that the policy preferences of center-left governments can at times be more aligned with those of business than those of unions, especially in the earlier phases of the transition to the knowledge economy (proposition #4). On the other hand, the promise of achieving efficient and equitable outcomes via skill-oriented policies alone has far from materialized across the board (O'Donovan 2023). This, we argue, may induce center-left parties to re-align with unions *over time* in opposing the deregulation of labor markets and the retrenchment of protective policies (proposition #5) (see Cigna 2024; Di Carlo et al. 2024).

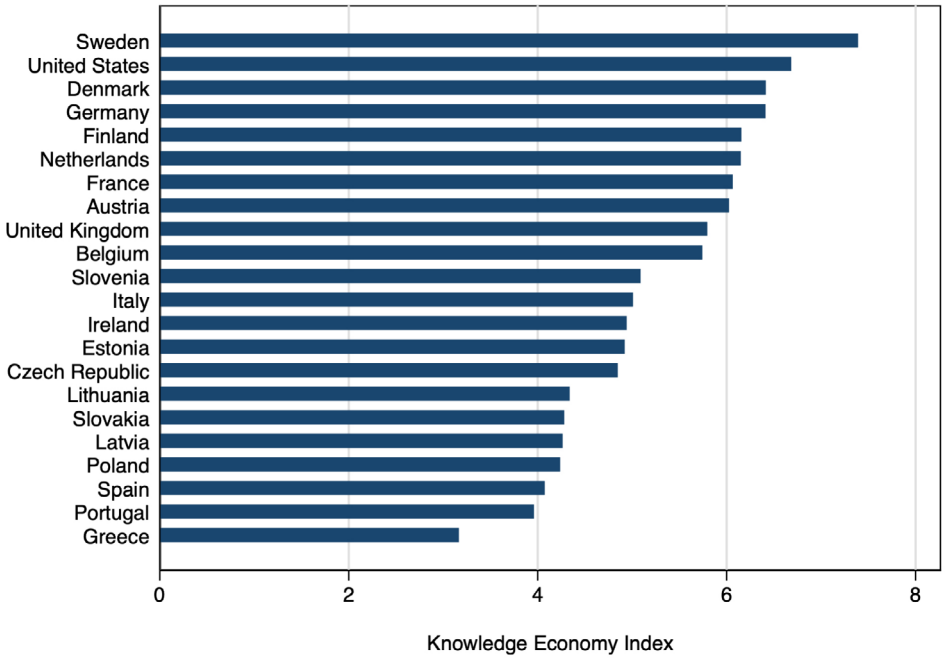

FIGURE 2 | Knowledge economy index in 2019. *Source:* Diessner, Durazzi, Filetti, et al. (2025).

4 | Research Design and Case Selection

To probe into the five theoretical propositions sketched out above, we opt for a series of three concise case studies with the aim to compare countries which (i) have transitioned to the knowledge economy but (ii) display a different mix of sectoral specializations. To this end, we mobilize a recently created 'Knowledge Economy Index' (Diessner, Durazzi, Filetti, et al. 2025). The index seeks to capture the extent to which advanced capitalist democracies have transitioned to the knowledge economy through six indicators that proxy the levels of high skills and technology in domestic labor markets: ICT, robots, and patents, on the technology side, and the share of managers, professionals, and technicians as well as associate professionals, on the skills side. These indicators are combined through Bayesian latent variable analysis to create a composite index of knowledge-intensity across countries and over time, covering 22 countries between 1995 and 2019 (see Diessner, Durazzi, Filetti, et al. 2025 for a detailed explanation of the index). Figure 2 shows the ranking of countries according to their skill- and technology-intensity for the most recent available year, 2019, which suggests that among the advanced capitalist democracies, Sweden, the United States, Denmark, Germany, Finland, the Netherlands, France, Austria, the United Kingdom, and Belgium have transitioned the furthest towards the knowledge economy during the two and a half decades captured by the Knowledge Economy Index.

Apart from aiming to select three cases from the countries in the top half of the index, we also seek to maximize sectoral variation across cases in order to provide a more robust assessment of our theoretical propositions. To this end, the Knowledge Economy Index is split into two separate dimensions that can plausibly be associated with different sectoral orientations of a knowledge economy towards high-end services (dimension 1, proxied by ICT, managers, and professionals) or towards advanced manufacturing (dimension 2, proxied by robots, patents, and technicians and associate professionals) (see Figure 3). That each of these dimensions is indeed positively associated with the share in gross value added (GVA) of either knowledge intensive-services (dimension 1) or advanced manufacturing (dimension 2) is confirmed in Figure 4. On this basis, we select (i) a case of relative 'success' in both sectors (namely, Sweden); (ii) a case of strong advanced manufacturing and below average high-end services (namely, Germany); and (iii) a case of a knowledge economy geared towards the high-end service sector with relatively little contribution of the advanced manufacturing sector (namely, the UK).

In line with our theoretical propositions based on the distinction between valence and partisan issues in the knowledge economy, we trace policy developments in each of the three country cases since the 1990s across the spheres of high skill creation (chiefly, higher education and high-level vocational training, which we expect to be valence issues) and protective policies (mainly, active and passive labor market policy and industrial relations, which we expect to be partisan issues). Through a close reading of policy documents, official statements, and secondary sources, we pay attention to key actors' preferences—covering both political parties and producer groups—and how these have shaped policy developments over time. In particular, this includes speeches and strategy documents by heads of (coalition) governments, government bills and parliamentary motions, and interventions by trade unions and business groups. Sources for all documents are provided in the bibliography (where possible with hyperlinks). It is important to note here that while higher education and vocational training policies can be identified and separated relatively easily, the realm of labor market policy and industrial relations is characterized by functional equivalence between policy areas (Bonoli 2003). Thus, we do not aim to trace

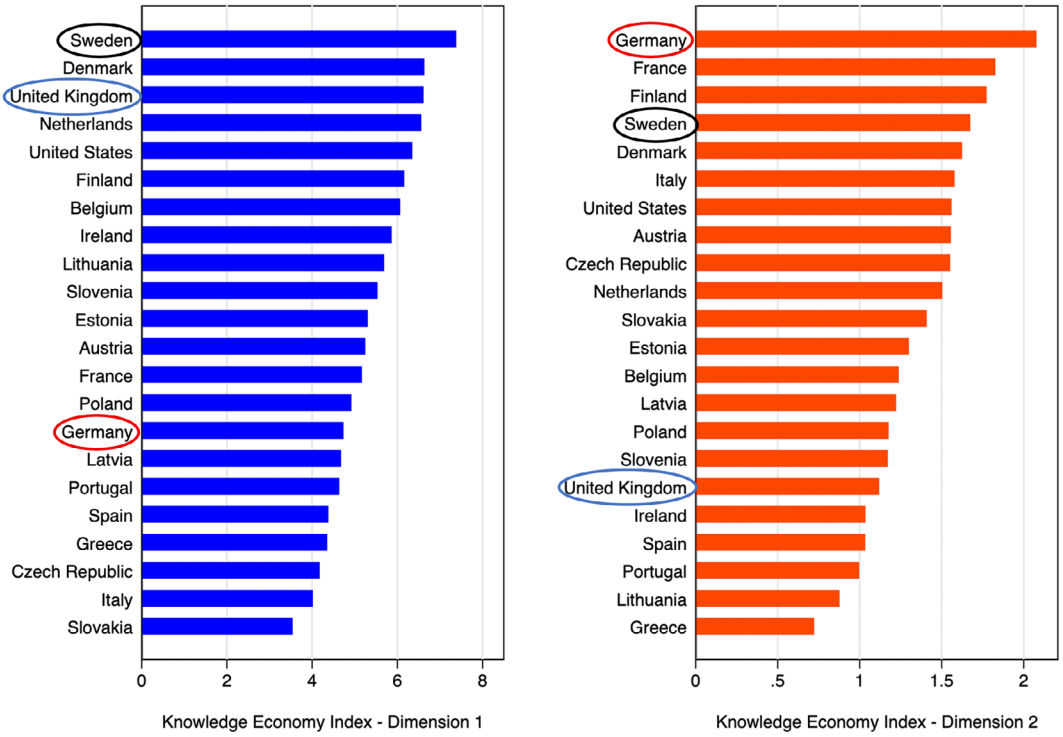

FIGURE 3 | Ranking of countries on the two dimensions of the Knowledge Economy Index in 2019. *Source:* Diessner, Durazzi, Filetti, et al. (2025). [Correction added on 10 September 2025, after first online publication: In Figure 3 of this article, the rankings of countries on the two dimensions of the Knowledge Economy Index in 2019 were published incorrectly due to a misplacement of country labels during the production process of this article. The figure has since been corrected to show the countries in their proper order.]

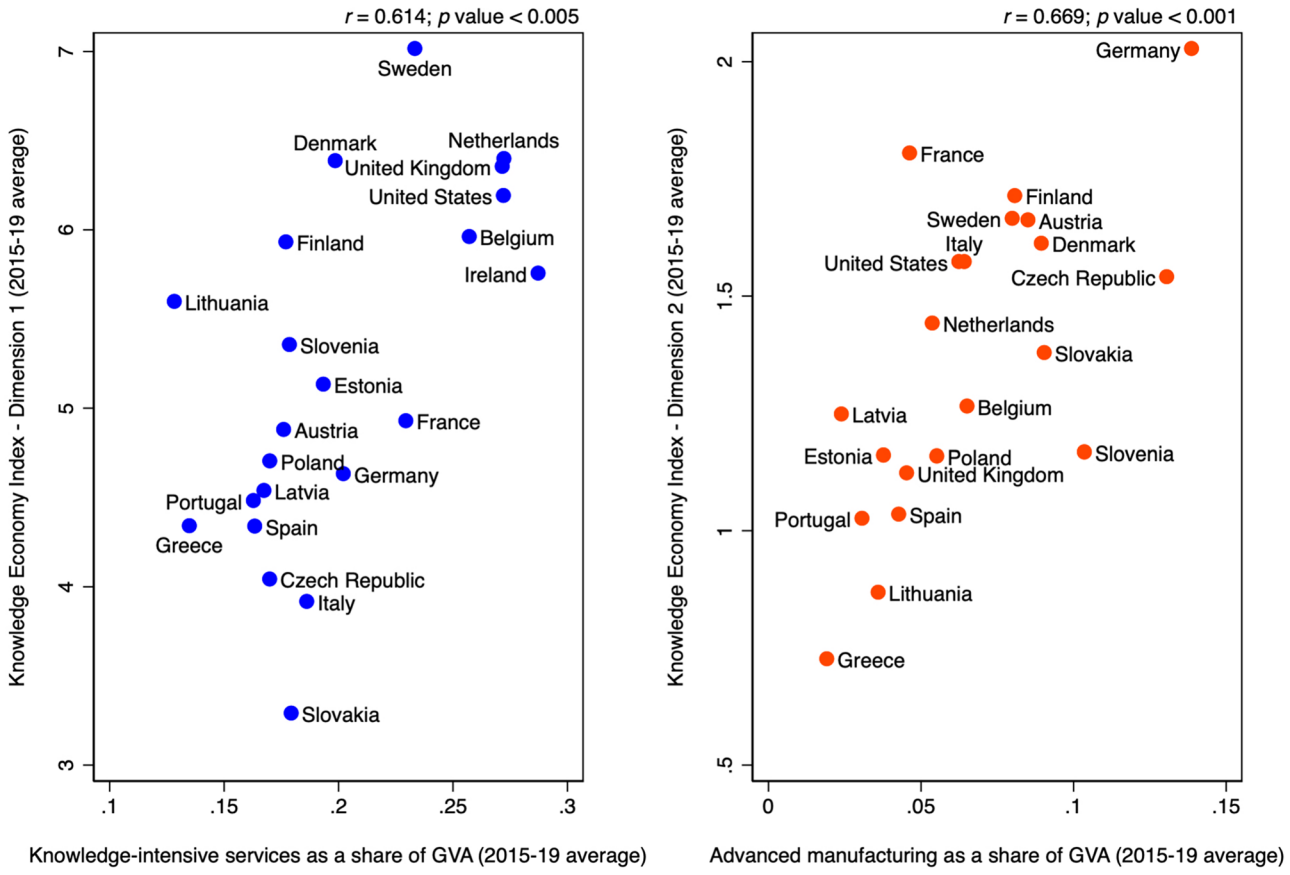

FIGURE 4 | The two dimensions of the Knowledge Economy Index versus GVA shares in leading sectors. *Source:* Diessner, Durazzi, Filetti, et al. (2025).

each policy in the labor market and industrial relations arenas systematically in each country. Instead, we are guided by a contextualized comparison approach where we focus on those elements within the broader set of protective policies that have assumed greater relevance in their respective national contexts over time (Locke and Thelen 1995).

5 | Germany

The German political economy and its core manufacturing sector have undergone a striking transformation in recent decades. Like in other advanced capitalist democracies, a surge in the intensity of information and communications technology has shifted the skills needs of manufacturing firms towards workers with higher and more general education, especially in STEM (Science, Technology, Engineering and Mathematics) subjects (Diessner et al. 2022), whereas 'VET training has become relatively less important' (Iversen and Soskice 2019, 180). This transformation is remarkable, given that the provision of specific skills through non-tertiary education had long been a cornerstone of the German model of coordinated capitalism. The shift reflects growing demands by employers' associations in the late-1990s and early-2000s for a deregulation of the traditional apprenticeship system alongside an expansion of higher education (BDA 2004; Busemeyer 2012; Busemeyer and Trampusch 2013; Durazzi 2019). These demands were catered to by the center-left government of Gerhard Schröder as a means to 'make the individual and businesses fit for the knowledge-based economy of the future' (Blair and Schröder 1998, 4) and eventually culminated in the *Hochschulpakt* (higher education pact) to expand the German university sector which was agreed upon during the first grand coalition government of Angela Merkel in 2007. The pact tied the disbursement of funds to the promotion of STEM subjects in particular (BDA 2008; BDA et al. 2011; Durazzi 2019), and it has been used by several German *Länder* to finance 'dual study programs' in which students obtain both a university degree (typically from a university of applied sciences) and gain relevant work experience through a cooperation agreement between firms and higher education institutions (Graf 2018; Thelen 2019; Durazzi and Benassi 2020; Hassel and Thelen 2023; Mitsch et al. 2024).

Labor unions reacted to these developments in two stages. In the late 1990s and early 2000s, unions prioritized, with limited success, the preservation of the traditional pillar of skill formation in the form of the vocational training system. Then, as vocational training increasingly lost its centrality relative to higher education in the years after the higher education pact, unions underwent a process of internal adjustment that included a novel emphasis on targeting university students and graduates (IG Metall 2012, 2016; Haipeter 2016; Diessner et al. 2022). As a result, higher education has gradually become the center of gravity of the German skill formation system (Baethge and Wolter 2015; Durazzi and Benassi 2020): whereas enrolments at universities have risen sharply, the number of participants in the dual apprenticeship system has dropped since around the late 1990s and with a stark acceleration from the mid 2000s onwards.

Moving to the realm of industrial relations, the German model of coordinated capitalism has been liberalized substantially since at least the early 1990s, as has been widely discussed in the CPE literature. This liberalization has resulted, among others, in sizeable drops in trade union density and collective bargaining coverage (Carlin et al. 2014; Hassel 2014; Addison et al. 2017; Baccaro and Benassi 2017; Diessner et al. 2022). These trends have not been limited to the service sector periphery but have reached into the industrial core of Germany's political economy as well (Oberfichtner and Schnabel 2019). The main support coalition in favor of this trajectory closely resembles that observed in the realm of skill formation, with employers' associations (like *Gesamtmetall*) and their think tanks (most notoriously the *Initiative Neue Soziale Marktwirtschaft*, or initiative for a new social market economy) attacking rather than defending the traditional coordinating institutions associated with the German model (Kinderman 2017; Fleckenstein and Lee 2017), and the center-left coalition government between the SPD and the Greens eventually satisfying these demands for liberalization. Manufacturing firms, in turn, have taken advantage of the greater discretion that liberalization has offered them by shifting wages and non-wage benefits away from low-skilled workers and towards high-skilled workers as the latter became increasingly central to their production strategies in the knowledge economy (Diessner et al. 2022; Diessner, Durazzi, and Hope 2025).

A similar pattern can be identified in the realm of active and passive labor market policies, which experienced a profound transformation in the early 2000s. As in the case of industrial relations, employers' associations alongside business-friendly center-left coalition partners emerged as the key actors behind the liberalization of the Bismarckian, quasi-universalist German unemployment insurance system in 2003 and 2004 (Diessner et al. 2022). The infamous *Hartz* commissions in charge of deliberating and designing the SPD's *Agenda 2010* reforms—which sought to combine a deep retrenchment in unemployment benefits with a ramp-up in ALMPs—came to be dominated by business interests, with employers' representatives outnumbering their union counterparts (Fleckenstein and Lee 2017). While the reorganization of ALMPs was initially considered a success story by labor economists (Jacobi and Kluve 2007), their effect and public reception were largely overshadowed by the dramatic decrease in net replacement rates brought about by the reforms (Clasen 2005; Clegg 2007; Seeleib-Kaiser 2016). The final outcome was a radical reconfiguration of the German unemployment insurance system against unions' vocal opposition (DGB 2003; Diessner et al. 2022). The punitive nature of the reforms, especially with regard to the strictness of sanctions to incentivize active job-seeking, was eventually found to be unconstitutional by Germany's federal constitutional court in 2019 (Weber 2024).

A key difference between the reform of skill formation, on the one hand, and the reforms of industrial relations and labor markets, on the other hand, is that the latter have been characterized by far greater contestation and opposition not only on behalf of labor unions but also from within the political sphere. The *Hartz* reforms in particular marked a structural break that resulted in a partisan realignment that shapes German politics to this day. Schröder's brand of third-way social democracy—which has been notoriously business-friendly and earned him the nickname of 'Genosse der Bosse' (loosely translating to 'comrade of the company chiefs') (Trampusch 2004)—induced large parts of

the SPD to break away and form a new political movement (and eventually, a new left-wing party, *Die Linke*, now facing competition from its own breakaway movement).

Importantly, however, post-Schröder iterations of the center-left SPD—alternating between spells in opposition and acting as junior coalition partner for Angela Merkel's CDU, before leading a three-way coalition from 2021—have sought to undo some of the electoral damage of the Hartz reforms by means of returning to more progressive social democratic and union demands. A hallmark of these attempts at winning back voters disenchanted by the reforms of the early 2000s has been the introduction (in 2015) and successive ramping up (above increases in annual inflation) of the minimum wage under the auspices of SPD-led labor and finance ministries (Dostal 2012; Meyer 2016; Marx and Starke 2017; Schemmel and Picot 2024; Meardi and Seghezzi 2025). This has occurred against the backdrop of vociferous opposition by employers' associations and their economists' predictions of large-scale unemployment, which did not materialize (Mabbett 2016; Ahlfeldt et al. 2018; Börschlein and Bossler 2019). Other notable examples include the so-called *Elterngeld* and *Elterngeld Plus* (parental leave and benefit) policies of 2007 and 2015 (Di Carlo et al. 2024) which were masterminded by the SPD (Alvariño and Thies 2024) and, in particular, the *Bürgergeld* (citizen's benefit) reform agreed by the centrist traffic light coalition in 2023, which formally superseded the *Hartz* reforms and was designed explicitly to weaken the punitive elements of the latter (Merkl 2022; Beckmann 2023; Weber 2024; see also Bonoli et al. 2025, this special issue).

The introduction of a national minimum wage as well as the *Bürgergeld* against employer interests suggest that the trajectory of reform in the transition to the knowledge economy has not been unidirectional in Germany and, in particular, that it has not simply pointed in an unequivocally liberal or 'dualized' direction. Instead, (partial) reversals in the area of labor market policy have been possible over time, depending on the employer-friendliness of the governing coalition and, above all, the positioning of the center-left within the governing coalition.

6 | Sweden

Since the early-1990s, the expansion of higher education in Sweden has been closely tied to the nation's need for workforce upskilling to support the transition to a knowledge-based economy. This need was strongly reflected in the center-right government's rhetoric around educational reforms which emphasized that '[s]trengthening the role of Sweden as a nation of knowledge is one of the government's main tasks. Increasing the number of highly educated people and raising the quality of education is decisive for Sweden's competitiveness' (Government Bill 1992/93: 169 1992). This position was shared by policy-makers on the left of the political spectrum (Motion 1997/98: A710 by Lönnroth 1997), signaling bipartisan consensus and underscoring the valence nature of tertiary education policy. As a result, higher education enrolment more than doubled between the early-1990s and the early-2000s (UNESCO 2024b).

Beyond expansion, Swedish higher education also underwent profound governance reforms which decentralized and marketized universities (Börjesson and Dalberg 2021) – a strategy devised to better connect higher education and industry in a bid to curb unemployment and strengthen the skill base of the labor market (Government Bill 1992/93: 169; 1992; Motion 1993/94: Ub722 by Gustavsson and Linderholm 1994). Despite this marked shift towards decentralization and marketization, the state has sought to retain some control over enrolments in key fields, including STEM subjects and disciplines providing high-skilled public sector workers (SOU 2015). Consequently, since the late 1990s, engineering, ICT, and social sciences each have attracted sizeable shares of students (Statistics Sweden 2024), consistent with a knowledge economy profile that combines successful high-end services with well-developed advanced manufacturing. These reforms notwithstanding, employer organizations have continued to argue for greater influence over course offerings and for greater targeting of public funds towards crucial areas of the Swedish knowledge economy, such as STEM and life sciences, which are hampered by skill shortages (Almega 2023). Similar calls for a better matching of educational provision with labor market demands have also been voiced by unions representing high-skilled workers, such as the Swedish Confederation of Professional Associations (SACO) and the Swedish Confederation of Professional Employees (TCO) (Oscarsson 2013; Thelen 2019).

A key initiative that goes beyond the traditional university system and that can help generate the skills supply to meet growing labor market demands has been the establishment (in 2001) and subsequent strengthening (in 2009) of Higher Vocational Education (HVE) – that is, post-secondary non-tertiary education programs featuring strong state and business involvement and targeting economically important sectors susceptible to the emergence of skill gaps (Kuczera and Jeon 2019). HVE has proved to be a valuable resource for the government and social partners to respond more quickly and flexibly to emerging skills needs (Hassel and Thelen 2023), as exemplified by the recent development of HVE programs on digitalization, green technology, and energy efficiency, among others (ReferNet Sweden and Cedefop 2022).

Moving from skill-oriented to protective policies, we find markedly different, more conflictual political dynamics at play. In the early 1990s, the center-right coalition government, supported by business associations, exploited a period of economic downturn to pass reforms to deregulate the labor market. These reforms were presented as necessary in the transition to a knowledge economy, which was argued to need more 'flexibility' and 'adaptability' in response to the rapid pace of technological change, and in particular of ICT (Commission on the Swedish Labour Law 1995). The deregulation of employment protection legislation in particular revived class conflict between the center-right (including business groups) on one hand and the center-left (including unions) on the other, which escalated in the mid-1990s when a new center-left government supported by the unions pursued a partial re-regulation of the labor market (Davidsson and Emmenegger 2012).

The Swedish industrial relations system has also been under mounting pressure throughout this period, in particular from demands by business groups in the engineering sector who argued that centralized bargaining could no longer guarantee industrial stability and who advocated for bargaining to be pushed

'downwards' to the industry- and firm-levels (Pontusson and Swenson 1996). A decentralization of wage bargaining attracted the support of some unions representing highly skilled workers as well, who sought local wage arrangements to meet their members' demands for wage differentiation based on skill investments (Baccaro and Howell 2017; Thelen 2019). These developments threatened the traditional *Rehn-Meidner* model, through which agreements among the social partners promoted wage solidarity by compressing the wage scale. Between 1990 and 1995, tensions between social partners escalated, compounded by the parallel political conflict on labor market deregulation, prompting the government to establish a state-led commission for business and unions to find an agreement on collective bargaining (Anxo and Niklasson 2006; Bengtsson and Ryner 2017). The outcome was the adoption, in 1997, of the Industrial Agreement (IA).

The IA marked a pivotal shift, establishing coordinated multi-sectoral bargaining and tying wage increases to the productivity of the most efficient, export-oriented, and knowledge-intensive firms (Elvander 2003; Baccaro and Howell 2017; Kjellberg 2019). The agreement reflected a strategic reorientation among employers in the exporting sectors, who pursued a cooperative approach after the more contentious earlier bargaining rounds. Apart from employers' more pragmatic stance, the relative success of the IA has been ascribed to the main unions presenting a united front in the negotiations, allowing them to preserve some degree of centralized bargaining amid far-reaching reform (Elvander 2003). The strength of unskilled workers within the labor movement in particular—exemplified by the LO union—has been credited with preventing the more widespread decentralization that took place in Germany, for example, thus maintaining a relatively higher degree of compensation for the low-skilled (Ibsen and Thelen 2017).

Despite these partial achievements, the IA fell short of preserving the wage solidarity enshrined in the Rehn-Meidner model and created the conditions for wage increases to accrue disproportionately more towards the top of the skills distribution. In a further blow to the labor market position of low-skilled workers—and in stark contrast to the often-assumed Swedish model of social solidarity—the budget for active labor market policies also decreased across the board in the early 1990s (Ferragina and Filetti 2022), and the distribution of expenditures across different ALMP programs changed substantially ever since (see Figure 5 below).

By far the predominant program until the early 1990s, training is the least-funded subset of ALMPs nowadays. The only period of rising training expenditure in the last three decades has been between 1997 and 2001, when the center-left implemented the so-called *Kunskapslyftet* (Knowledge Lift) which aimed at providing lifelong learning opportunities for unemployed individuals as well as the chance to acquire a three-year post-secondary degree at upper secondary vocational colleges (Thelen 2019), both of which had long been advocated for by the LO (Habibija and Löfgren 2019). Since then, however, employment incentives and other, less capacitating measures have emerged as attracting the highest budget shares in Sweden's ALMP portfolio. This shift represents a broader transition away from investing in skills development to a strategy aimed at reducing costs in low-skilled sectors (Davidsson 2018). The move towards prioritizing employment incentives over training has been driven by

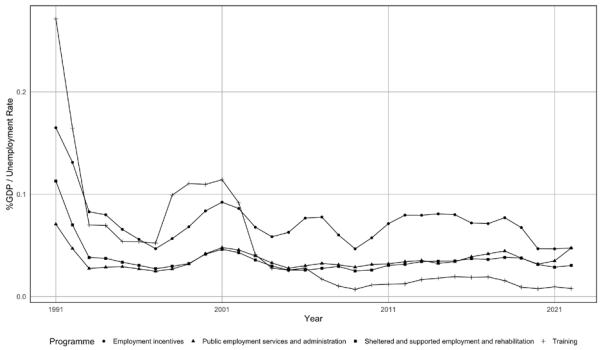

FIGURE 5 | ALMP spending in Sweden by program. *Source:* Authors' elaboration based on Davidsson (2018); extended with spending data from OECD (2024) and unemployment data from World Development Indicators (2024).

center-right coalitions in collaboration with employer groups, and it has accelerated during periods of center-right governance (see, for example, Motion 2005/06: Fi240 by Reinfeldt 2005). Accordingly, the trajectory of change in the areas of labor market policy and industrial relations appears to have followed a partisan logic in the Swedish case, especially when compared to the realm of higher education.

7 | Britain

Policy-makers in Britain turned their attention to higher education policy in the mid-1990s, in an explicit attempt to guarantee an adequate supply of high-level skills for the labor market, fueled by the increasing importance assigned to knowledge-based growth (Wilson 2012, 18; O'Donovan 2023). A major review on higher education policy at the time, the Dearing report, made the link explicit in its title – 'Higher Education in the Learning Society' –, emphasizing how high-level skills were deemed fundamental in a changing socio-economic environment. The review, initiated with bipartisan support in 1996 under a Conservative government and released in 1997 under New Labour, set the scene for radical change in the UK's higher education landscape (Shattock 2012, 155–168; Garritzmann 2016). Particularly telling is the focus on ensuring that the higher education sector provide the skills needed in a fast-changing economy and society (Dearing 1997, 49):

> [...] higher education has become central to the economic wellbeing of nations and individuals. The qualities of minds that it develops will be the qualities that society increasingly needs to function effectively. Knowledge is advancing so rapidly that a modern competitive economy depends on its ability to generate that knowledge, engage with it and use it to effect. Above all the country must enable people, in large numbers and throughout life, to equip themselves for a world of work which is characterised by change. Our examination of the future of higher education must therefore cover the changing context in which it will be operating.

The report also established a direct link between higher education and the substantial expansion of employment in the knowledge-intensive service sector (Dearing 1997, 56), which called for the development of 'generic or transferable skills which are valuable to many contexts' (Dearing 1997, 59). The expansion of higher education envisaged in the Dearing report, and its explicit link with the heavy reliance of the British knowledge economy on services, was politically crystallized by Tony Blair's 1999 Labour Conference speech in which he famously set a target of '50% of young adults going into higher education in the next century' (BBC 1999). Support for this policy change was broad, as evidenced not only by the bi-partisan nature of the Dearing report but also by its alignment with the demands of major business groups, who had become increasingly vocal on the need for reform of skill-formation in the UK throughout the 1990s (Keep and Mayhew 1996).

The expansion of higher education has been accompanied by an increasing focus on high-level vocational skills, again pursued with relative cross-party consensus (Steedman 2011) through successive initiatives by New Labour first and the Coalition and Conservative governments later, with the support of trade unions (TUC 2015) as well as business groups (Payne and Keep 2011). This renewed focus on vocational training culminated in the introduction of a training levy in 2016 and the application of new apprenticeship standards developed by (mostly large) employers since 2017, featuring significantly more complex training profiles than ever before (Benassi et al. 2022). While many of these new training profiles were developed within pockets of the manufacturing sector that have a long tradition with apprenticeships (such as the automotive and aerospace industries), significant engagement by employers in the so-called FIRE services (i.e., finance, insurance and real estate) took place for the first time as well, as evidenced by the development of new apprenticeship frameworks for professional accountants or software developers, for example (Department for Business Innovation and Skills and Department for Education 2015). Although the track record of many of these policy initiatives is mixed and has been hampered by the traditionally weak role of vocational training in the British political economy as well as deficiencies in policy design (Benassi et al. 2022), it is striking to note how both center-left and center-right governments have shared a broad commitment to upskilling that encompasses both expanding higher education and increasing the level and complexity of skills delivered via the vocational training system. These initiatives have enjoyed support beyond political parties, to include business groups and trade unions as well—although the latter have raised concerns over the progressive increase in university tuition fees over time (TUC 2015).

If creating a strong base of high-level skills for the advanced sectors has been a central and shared concern among political and business elites in Britain since the mid-1990s, the opposite end of the labor market has been characterized by a rather different trajectory, with more clearly delineated differences in actors' preferences. To be sure, policy initiatives by New Labour disproportionately targeted the upper end of the labor market and were informed by a belief that the expansion of higher education would create economic benefits that translate progressively into greater social equity (O'Donovan 2023). At the same time, however, the center-left also sought to provide opportunities for the low-skilled and unemployed through its flagship ALMP framework—the so-called *New Deal* programs—which targeted vulnerable groups with a mix of employment incentives and training opportunities (Wiggan 2024), coupled with the introduction of a national minimum wage in 1999 (Grimshaw and Rubery 2011). This emphasis on capacitating rather than punitive ALMPs under New Labour led scholars to identify elements of 'inclusive employability' (Wiggan 2024) and 'liberal collectivism' (Grimshaw and Rubery 2012) in the center-left's approach to labor market policy in the late 1990s. As a result, New Labour's policies attracted some support from trade unions (who argued, however, that these measures were not far-reaching enough) as well as some opposition from business (who, however, appreciated the relative light touch of the measures) (Wiggan 2024).

To be sure, these initiatives did not amount to a break with the core principles of Britain's liberal welfare state (Heins and Bennett 2018). For one, the heavy deregulation of the labor market pursued by successive Conservative governments in the 1980s remained largely unchallenged (Coulter 2018). What's more, unemployment benefits, which had since the late-1970s been progressively eroded, were ultimately aligned to social assistance levels by Conservative and Labour governments alike (Clegg 2008). Eventually, the shift in government composition from New Labour to the Conservatives in 2010 removed the few capacitating elements from the ALMP framework, which was re-designed instead to push the unemployed into low-wage and flexible employment through an intensification of benefit sanctions (Heins and Bennett 2018; Grimshaw and Rubery 2012), triggering strong opposition by unions but enjoying broad-based support from the business community (Wiggan 2024).

8 | Discussion and Conclusion

This contribution to the special issue has sought to embed the notion of skill-biased policy change in a broader political framework in order to explain policy trajectories during the transition of advanced capitalist democracies to the knowledge economy. Our theoretical expectations were captured by a set of five propositions, which we re-assess here in light of the empirical evidence. First, we expected broad agreement across political parties and producer groups that the transition to the knowledge economy requires governments to step up the supply of high-level skills. This proposition has, by and large, been confirmed by the empirical evidence: in all three countries, higher education expanded and/or high-level vocational programs were established or further developed. This trajectory has been pursued with broad bi-partisan agreement and, in general, has been accompanied by relatively low levels of political conflict. Second, we expected employers and center-right governments to support high skill formation alongside the contextual liberalization of labor markets and industrial relations. This proposition is also borne out by the evidence, at least tentatively: the liberalizing push across the spheres of active and passive labor market policies and industrial relations has, by and large, tended to be stronger when center-right governments or coalitions have

been in power (with the notable exception of Germany in the early-2000s).

Third, while we expected unions to be supportive of the expansion of high-level skills, we also expected them to oppose deregulation and liberalization in the aforementioned policy areas. We found that, across the three cases, labor unions have indeed been the loudest voice against the deregulation of the labor market and the liberalization of industrial relations, albeit with varying degrees of success. Fourth, and related, we expected center-left parties to be initially supportive of the trajectory of skill-biased policy change in a way that is more consistent with the preferences of business than with those of unions, as was evidenced by New Labour in Britain and successive SPD-led governments in Germany (but, notably, not by the center-left in Sweden).

However, and lastly, we also expected center-left parties to realign with unions over time in opposing the deregulation of labor markets and the liberalization of industrial relations. The case studies do not provide generalized support for this proposition. A shift in the preferences of the center-left can be detected in the German case, with the SPD championing liberalization in the earlier part of the period before embracing more traditional leftwing demands in order to counter some of the adverse consequences of its liberalizing trajectory, notably through the introduction of the statutory minimum wage. We did not arguably observe a similar process of re-alignment over time in Sweden nor in the UK, despite some attempts at re-regulating temporary employment in the Swedish case after the 2010s.

Looking across the three cases, the evidence therefore suggests that even when the center-left is in power and its preferences align with those of labor unions, protective policies may be pursued in piecemeal fashion and do not amount to a reversal of the trajectory of skill-biased policy change altogether, but rather to a modest taming of some of its more severe distributional consequences. This lends support to Baccaro and Pontusson's (2022) conceptualization of the politics of growth models, which implies that in the post-Fordist era, the playing field of coalitional politics is not leveled but increasingly tilted in favor of capital.

Our argument has broader implications for the CPE literature in that it provides a heuristic to move beyond the dialectic between convergence and persistent cross-national diversity. Instead, we highlight how similarities and differences across countries depend on the policy area in question, and on the different political logics that underpin it. This could pave the way to a more dynamic understanding of the transition to the knowledge economy that transcends the tendency towards identifying institutional path dependencies, by opening the door to instances of (partial) reversal as well. In this vein, future research can and should extend the scope of country cases under consideration—including and especially to those in the lower half of the Knowledge Economy Index (Diessner, Durazzi, Filetti, et al. 2025)—in order to assess whether our proposition of 'similar public policy trajectories in different political economies' extends to countries that have struggled in their transition to the knowledge economy as well, or whether a different pattern may emerge altogether.

Looking ahead, a hard test for our core contention that public policies that aim to create or mobilize high-level skills—as opposed to other, more protective policies—should be understood as *valence* issues rather than partisan issues in the knowledge economy is the return to power of populist, anti-system parties across the advanced capitalist democracies (Hopkin 2020). Whether these parties' anti-establishment politics will go as far as undermining higher education systems altogether—or whether the broad-based consensus across (centrist) parties and producer groups on the desirability of strengthening tertiary education in order to reap the benefits of knowledge-based growth will ultimately prevail—is a vital question for future scholarship in comparative political economy and public policy.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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