

# Dualisation, education and the knowledge economy: Comparing Germany and South Korea

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## Abstract

In post-war Germany and South Korea, not only was vocational education and training key to the two countries' export-oriented growth models, it also promoted social inclusion. More recently, the knowledge economy has put this skills-based, inclusive growth model under pressure, and we see labour market dualisation calling into question the social contracts in the two countries. Studying education reform in Germany and Korea, we analyse government capacity to reconcile efficiency and inclusion in the knowledge economy, in the context of twin pressures from firms (with changing skills needs) and parents (with high aspirations for their children). We show that the German government, drawing on its corporatist past, has been more successful in mediating these pressures than Korea, where hierarchical business relations undermined employer engagement and more inclusive policies.

## KEYWORDS

dualisation, Germany, higher education, knowledge economy, South Korea, VET

## 1 | INTRODUCTION

The transition into the knowledge economy has challenged the skills-based, inclusive growth model of coordinated market economies (CMEs), which had previously managed to reconcile the tension between economic efficiency and social inclusion. In explaining this success, critical importance is typically ascribed to vocational education and

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training (VET), which supplied labour markets with the skills needed for their industrial growth strategies and also promoted stable and well-remunerated jobs. Defining the knowledge economy as 'production and services based on knowledge-intensive activities that contribute to an accelerated pace of technological and scientific advance as well as equally rapid obsolescence' (Powell & Snellman, 2004, p. 201), this article examines the pressures placed on skill formation systems by the shift towards such an economy and explores variation in countries' responses to these pressures. It focuses on Germany and South Korea; two CMEs with export-oriented growth strategies, where post-industrial pressures on collective skill formation systems have emerged from changing skills needs of firms and shifting aspirations among school-leavers and their parents, especially, the latter's drive towards higher education (HE).

These pressures have produced similar challenges for the efficiency function of education as labour market policy and the inclusion function of education as social policy (cf. Carstensen & Emmenegger, 2023). In terms of efficiency, challenges include the need to ensure that the increasingly important HE system produces labour-market relevant skills, the need to maintain the crucial role the VET system plays in providing the specific skills still required by the economy, and the need to supply *both* systems with adequate school-leavers. On the inclusion side, labour market dualisation has undermined established social contracts in both countries. In fact, Baccaro and Pontusson argue that the expansion of low-wage employment represents a 'critical feature of the export-led growth model' (Baccaro & Pontusson, 2016, p. 177; see also Hein et al., 2021). In this context, inclusion challenges are twofold: ensuring on the one hand that the reduced need for intermediate skills does not leave lower-achieving school-leavers with no route into stable employment; and on the other, that the opportunities provided by the growing importance of HE skills offer meaningful options for those who have historically struggled or indeed feared accessing HE (most notably, those from the working class) (cf. Ertl, 2020). Despite growing tensions in the knowledge economy, Carstensen and Emmenegger (2023) argue that balancing efficiency and inclusion in education policy remains feasible but requires *political mediation*, whilst Thelen (2014), more generally, points to the continuing importance of government capacity in CMEs. Examining reforms in VET and HE, this article highlights the role of government in this mediation, particularly how the interrelationship between the twin pressures from firms and parents and government mediation between them have shaped reforms that aim to address efficiency and inclusion concerns.

While the importance of firms in skill formation developments is well documented, we highlight the behaviour of parents as a hitherto underexplored and undertheorised aspect of the political economy of skill formation, which has emerged in the transition to the knowledge economy, in which education is increasingly a positional good determining labour market success. We argue that the role of parents should be considered as similar to that of 'producer groups' in political economy research (where the literature typically focuses on employers and trade unions; cf. Thelen, 2014, p. 22ff.), as parental behaviour (i.e., their educational choices and strategies for their children) has far-reaching consequences for education and skill formation regimes. Not only do we argue that parental behaviour is socially and institutionally 'embedded' (like that of other producer groups), but also that the interaction between their behaviour, firms' behaviour and government mediation between them are important determinants of the success or failure of skill formation systems. Analysis of the twin pressures requires analysing policy change in *both* VET and HE, as firms' and parents' behaviour in one sector have spill-over effects in the other, while government attempts at mediation of these pressures necessarily involve measures across the entire skill formation system. In Germany and Korea, we compare two countries where vocational skills enjoyed a similar prominence in the past but also two sizeable CMEs that remain exceptionally dependent on the export of manufacturing goods. This suggests a greater comparability than, for instance, the comparison of Germany with smaller CMEs (such as Denmark and Switzerland; cf. Katzenstein, 1985). In doing so, the research addresses the puzzling phenomenon of the nominally stronger and more interventionist state, Korea, being considerably less successful in this mediation than Germany, where government has historically played an important but much less active role in managing the skill formation system. Through an analysis of policy documents, official statistics and secondary literatures, we examine the policy responses to the twin pressures in the two countries, which began in Korea in the early 1990s while not in Germany until the early 2000s. While both countries have experienced labour market dualisation and segmentalism in VET

(i.e., the prioritisation of large employer interests at the expense of collective ones), Korea has undergone a large-scale decline of vocational skills, whereas Germany has been able to maintain its apprenticeship model and relatively greater inclusiveness. In terms of efficiency, despite segmentalism, the quality of VET in Germany continues to be viewed positively: the system is ranked seventh in the Global Competitiveness Report by the World Economic Forum (2019), whereas Korea's ranks 23rd. In HE, both countries pursued a considerable expansion of the sector, but more comprehensively in Korea; here the skillset of German graduates, with a respectable 13th rank, also receives greater appreciation than Korean graduates ranked 34th. Moreover, field-of-study mismatch, which affects 50% of Korean graduates, compared to only 26% of German graduates, is estimated to cost the Korean economy 0.97% of GDP, compared to 0.51% in Germany (Montt, 2015). Young Koreans encounter greater difficulties in the education-to-work transition: the NEET rate (15- to 29-years-old not in employment, education or training) was 20.9% in 2019, considerable higher than Germany's rate of 8.2%; and this with broadly comparable overall unemployment rates (Germany: 3.1% and Korea: 3.8%; OECD.Stats).

We argue that Germany's relative success in adjusting its skill formation system for the knowledge economy in comparison to Korea (the dependent variable) is a result on the one hand of the interactions between the twin pressures facing both countries, and on the other, from government mediation between them (the independent variables). While Germany has seen a shift away from the collective basis of its VET system in the face of business pressure, government was able to maintain employer engagement in VET, leveraging the continued appeal for large firms of complex, specific apprenticeships produced by the high-end of VET. Drawing on neo-corporatist pacts, HE was not only expanded with considerable government support but the boundaries between HE and VET were blurred, allowing more inclusive HE while maintaining the attractiveness of vocational training for both firms and parents. This, however, has come at the expense of low-achieving school-leavers, who are increasingly locked-out of apprenticeships that provide a route into stable employment. By contrast, the Korean government failed to promote meaningful engagement of employers in VET. The power balance shifted more clearly in favour of the large businesses created by the government's successful late industrialisation strategy, which was consolidated by liberalisation in both VET and HE. Also, parents continue to overwhelmingly focus on HE because of dualisation. With little clout in the labour market and workplaces, government has instead restructured the HE sector in a top-down manner, but without the blurring of boundaries of HE and VET to raise the status of vocational skills and to alleviate academic drift. While this serves large firms well, small and medium-sized enterprises (SMEs) lose out, and a growing number of graduates compete for dwindling insider jobs. We have thus witnessed the emergence of a *pathological equilibrium* in Korea, in which large firms' and parents' behaviour have led to a collapse of vocational training and which government mediation has little power to shift.

The article is structured as follows: first, drawing on the post-war experience, we provide an account of the relationship between education, growth and inclusion in Germany and Korea and develop our argument of the critical importance of *both* firms and parents in education. The knowledge economy has challenged their stable equilibria, and we subsequently study both governments' capacity to mediate between the twin pressures stemming from firms and parents. The article concludes by comparing the two cases and discussing the findings.

## 2 | EDUCATION, GROWTH AND INCLUSION IN GERMANY AND SOUTH KOREA

Both West Germany and South Korea experienced remarkable economic and social development after the devastation of war: indeed, Korea's 'Miracle on the Han River' after the Korean war is an explicit reference to Germany's post-second-world-war 'Miracle on the Rhine'. During the post-war growth years, Germany was the archetypical CME, featuring industry-based coordination, social partnership and corporatism (Hall & Soskice, 2001; Streeck, 1992), whereas Korean coordination relied more heavily on the state. The notion of the Developmental State points to interventionist government, in partnership with business but excluding labour, establishing the

institutional environment that allowed rapid growth and catch-up with the West (Amsden, 1989; Haggard, 1990). In both countries, this period of sustained economic growth was underpinned by low levels of inequality, which remained low even while it began to accelerate elsewhere from the 1970s. They relied heavily on exporting manufactured goods (Haggard, 1990; Hall, 2021); and, as highlighted by Varieties of Capitalism (VoC) theory, their success rested upon considerable non-market coordination relying on a number of 'supportive institutions' which, through institutional complementarity, combined to create an equilibrium supporting macroeconomic performance (Hall & Soskice, 2001, p. 22). One crucial institution was the system of collective skill formation that promoted the vocational skills pivotal in their industrial growth strategies while providing a route into stable employment for (working-class) school-leavers (Cheon, 2014; Thelen, 2014).

In Germany, the so-called dual-training system combining workplace training with school-based vocational education fostered *industry-specific* skills. The 1969 Vocational Training Act standardised nationally defined training occupations, regularly updated through bargaining between employers and unions, and institutionalised collective bargaining agreements for industry-wide apprentice wages, which provided additional incentives for training, especially among SMEs, for whom apprentices became an important source of cheap labour. This period hence established the system of 'beneficial constraints' that kept all stakeholders willing to participate in the system and created the 'high-skills equilibrium' that provided German firms with competitive advantage through an economic model of 'diversified quality production' (Streeck, 1992), while fostering Germany's strong record in education-to-work transitions and low youth unemployment (Thelen, 2014). Indeed, apprenticeships were widely viewed by '[p]arents and young people [...] as good means of gaining access to good jobs' (Bosch, 2010, p. 137f.). With vocational training representing the 'crown jewel' of Germany's political economy (Thelen, 2014), HE was traditionally more marginal and the two sectors were divided by an educational 'schism' with different institutional and regulatory structures. In this context, there was little space for parental interests to impact the system: access to HE was the preserve of those graduating from grammar schools (*Gymnasien*), and universities effectively excluded the working class and large parts of the middle class until the 1970s (Baethge & Wolter, 2015). Nevertheless, the success of the VET system in channelling school-leavers into apprenticeships while satisfying employers' skills needs meant that the system existed in a beneficial equilibrium in terms of both efficiency and inclusion.

Korea's successful late-industrialisation is also commonly seen as having rested on a 'virtuous cycle (...) in which education and growth reinforced each other' (Cheon, 2014, p. 209; see also S.-Y. Park, 2010). VET's role in supplying state-promoted industries with skilled workers was a vital element of the Developmental State's high value-added manufacturing growth strategy from the early 1970s. In addition to increased investment in secondary education with a strong *vocational* orientation, a compulsory *training* system required large employers to provide workplace training beyond their needs; and 'excess' skills were absorbed by SMEs, which had little capacity to provide training. Firms failing to meet government targets had to pay a training levy. Despite 'aspiring' middle-class parents showing great reluctance to put their children on the vocational track, very strict control of enrolment quotas for public and private universities effectively 'forced' students into VET (Ihm, 1999; Kim & Lee, 2006). The Developmental State faced little if any pressure to mediate between stakeholders: objections both from parents and businesses were largely ignored. While large employers received generous state support, designed to foster 'national champions' that could compete internationally, and thus 'consented' (Fleckenstein & Lee, 2019; S.-Y. Park, 2013), trade unions were suppressed, as they were considered potential political opposition (Deyo, 1987). Unlike post-war Germany therefore, the Korean skill formation regime did not rest on a cross-class coalition but on the state's ability to impose its priorities. But these differences in socio-political foundations did not compromise efficiency and inclusion: the government's industrialisation strategy produced both rapid growth and a massive reduction of poverty and decline in social inequality and rested upon a similar equilibrium to Germany (S.-Y. Park, 2010).

However, tensions 'beneath the surface' are typically downplayed in accounts emphasising institutional complementarities reinforcing the stable reproduction of beneficial equilibria (cf. Peters et al., 2005). In 1980s Korea, the Developmental State's authority started crumbling. Growing business conglomerates, which prioritised *firm-specific* skills rather than the *industry-specific* skills pushed by the state, started to more openly demonstrate their discontent with

the compulsory training system. We thus observe an emerging conflict between government and big business: in 1978, less than one third of firms paid the levy, but by 1986 two-thirds did so (Lee, 2005; Ministry of Employment and Labour & KRIVET, 2012). Government responded to business pressure and relaxed the compulsory training system to better accommodate large employers' preference for firm-specific skills (Ministry of Labour, 2006). Attempting to boost its political legitimacy, the state also responded to increasing pressure from middle-class parents. Universities' admission quotas were significantly increased, which translated into a nearly threefold growth in student numbers between 1979 and 1986, the year before Korea's democratisation. Yet, VET continued to dominate skill formation in this period; and despite the state being 'forced' into some mediation and interest accommodation, neither HE expansion nor the decline of collectivism in VET appears to have compromised efficiency. In fact, Korea saw its fastest economic growth in the 1980s (with an average of 9.3%; Lee, 2016, p. 4) while inequality continued to decline (S. Kang, 2001).

In the 1990s, the transition into the knowledge economy intensified the pressures from firms and parents on VET-focused skill formation, and conflict not only 'surfaced' in Korea but also Germany. The importance of firms is well-recognised in skill formation and the political economy more generally (Busemeyer & Trampusch, 2012; Hall & Soskice, 2001); and in both countries, large firms with greater need for high skills and reduced demand for VET have become increasingly influential (Busemeyer, 2012; Durazzi, 2019; Fleckenstein et al., 2023): not only has this changed the dynamics in the business sector, it has also fundamentally altered the institutional environment within which government operates. However, the political economy literature fails to appreciate the pressures that parents and students have placed on this environment. In the context of labour market dualisation and rising inequality, education is increasingly recognised as a *positional good*: more education is insufficient, what matters is one's level of education in relation to others (cf. Adnett & Davies, 2002). This has fuelled a process of 'academic drift', if not an 'arms race', in which parents and students press for greater academic credentials in increasingly competitive labour markets (Fleckenstein & Lee, 2019; Haasler, 2020). Although the drive for university education could be argued to promote the knowledge economy with its greater demands for high skills, Germany and Korea continue to depend heavily on the export of manufacturing goods as their 'engines of growth' (cf. Hassel et al., 2020), meaning that there is still a need for the specific skills produced by the VET system, alongside the high general skills produced by HE. Academic drift thus places particular pressures on both countries, exacerbating tensions in the beneficial equilibrium that characterised their skill formation systems, and produces both efficiency and inclusion challenges that require mediation. We demonstrate that this mediation necessarily encompasses reforms in *both* the 'core' VET systems and the growing HE systems. Indeed, as institutional complementarity implies, reforms in one sector risk fundamentally destabilising complementary systems, unless accompanied by parallel reforms (cf. Hall & Gingerich, 2009).

In the following, we show how education policy responded to the twin pressures from firms and parents, first in Korea and then Germany. In doing so, we demonstrate that the government's ability to mediate between these pressures is the crucial determinant of Germany's relative success. Importantly, challenging partisan theories (cf. Busemeyer & Trampusch, 2011), our analysis does not reveal any significant party effects in VET and HE reform that could account for the considerable differences between Germany and Korea, nor can the role of unions (cf. Thelen, 2014), which play only a marginal role. Though sharing similarities in their trajectories, our analysis points to greater decline in mediating capacity in Korea in comparison to Germany. This is not to argue that German skill formation has not experienced a decline of inclusion, as rightly pointed out by Busemeyer (2012) and Thelen (2014) among others, yet relative to the collapse of VET experienced in Korea, the German system maintains alternate pathways to stable employment outside HE. Also, the blurring of boundaries between VET and HE increased the inclusiveness of HE, whilst maintaining the attractiveness of VET for large employers.

### 3 | EDUCATION AND THE KNOWLEDGE ECONOMY IN SOUTH KOREA

After Korea's democratisation in the late 1980s, the country moved firmly towards general skills formation. Initially, the state sought to 'defend' the Developmental skill formation regime by extending the training levy to smaller

companies and by raising its level, in addition to increasing student numbers in vocational high schools. These policies failed, with both firms and parents giving them the cold shoulder (Ihm, 1999). The scene, however, changed dramatically during the conservative Kim Young-Sam administration (1993–98), which perceived an imperative of liberalisation in the face of globalisation and indeed the knowledge economy. Not only did big business push more strongly for deregulation in democratic Korea, but political elites and economic bureaucrats, in pursuit of efficiency, also arrived at the conclusion that ‘the market’ rather than government should direct economic development. This had profound consequences with government explicitly rejecting the previous focus on VET and expressing a conviction that the country’s transition to the knowledge economy required new education and skills institutions. Deregulating the HE sector and granting universities more autonomy became the mantra to promote greater entrepreneurial spirit (A. Kim & Rhee, 2007; S.-Y. Park, 2013). Most importantly, government removed most admissions quotas and made the establishment of private universities easier. This translated into a remarkable increase in student numbers, from 2.3 million in 1995 to 3.4 million students in 2000 (Green, 2015)—for comparison, this is nearly twice the total number of German students in 2000 (Statistisches Bundesamt, 2022). At the same time, government, responding to mounting pressure from large firms, abolished the training levy, instead establishing a voluntary system, which gave financial support to companies providing training, in addition to privatising public training centres and allowing for-profit training providers (J. H. Yoon & Lee, 2009). In Korean VET, we thus see a segmentalist coalition of business and government emerging (cf. Thelen & Busemeyer, 2012 on segmentalism); with large employers in the driving seat, unlike the previous Developmental coalition, where government had the upper hand. Not only did deregulation intensify academic drift with parents pressing for HE ever more forcefully, these reforms also relieved employers from regulatory constraints in VET; both of which had far-reaching implications for government’s mediating capacity in the aftermath.

These reforms did not achieve greater efficiency: the supply of higher skills from universities outpaced labour market demand, whilst the formation of intermediate, vocational skills collapsed. Considerable skills mismatch and low labour productivity by international standards (especially in SMEs) were the consequence (OECD, 2015); and employers’ associations expressed concerns over graduates’ ‘soft skills’ (like team work and problem-solving) and claimed graduates required considerable on-the-job training (Grubb et al., 2009; Jones, 2013). Concomitantly, labour market deregulation after the 1997 Asian Financial Crisis increased insider/outsider polarisation, reversing the long-term decline in social inequality (Fleckenstein & Lee, 2017) and hampering young people’s education-to-work transition, despite considerable investment in their education (Cheon, 2014).

Government, regardless of party-political orientation, recognised these efficiency and inclusion challenges, and the widely perceived failure of the *liberal* skills and education policies prompted action in both HE and VET policy. In VET, a centre-left government established a programme supporting vocational training consortia for SMEs to promote training partnerships between SMEs and large firms. Subsequent conservative governments attempted to make VET more attractive for parents and young people, particularly high-achieving school-leavers. ‘Meister Schools’, drawing on Germany’s master craftsmen training, aimed to provide high-level industry-specific skills (Y.-B. Park & Chung, 2013), whilst the Dual Work-Study programme, again inspired by Germany’s dual-training system and with the objective of reducing youth unemployment, offered the combination of workplace and school-based learning (S.-H. Yoon et al., 2017). To facilitate greater employer engagement, a conservative government also introduced Industry Skills Councils, building on pilot schemes by a centre-left predecessor, in addition to Regional Skills Councils (Y.-S. Choi, 2006).

However, these initiatives neither reversed the decline in employer engagement, nor did they improve the appeal of VET for parents and students. Large firms have reduced their reliance on vocational skills by extensive automation (with 855 robots per 10,000 employees in manufacturing, compared to 346 in Germany; International Federation of Robotics, 2020), in addition to aggressive sub-contracting in the country’s highly hierarchical production regime (Fleckenstein et al., 2023). By contrast, ‘squeezed’ SMEs, with little capacity to train themselves, continue to rely on vocational training schools, which struggle to recruit high-achieving students and are thought to provide poor skills. Whilst the training consortia for SMEs have seen some growth (Ministry of Employment and

Labour & KRIVET, 2012), they fail to reach the companies that struggle the most with skills (S.-W. Kim et al., 2007). Besides, any possible training efforts are effectively undermined by the threat of their best employees being poached by larger employers (especially, their contractors), with whom SMEs cannot compete in terms of wage, benefits and job security in Korea's heavily dualised labour market. Hence, Korea continues to show the second largest training gap between small and large firms in the OECD world (OECD, 2020). Clearly, the inter-firm cooperation needed for collective skill formation does not exist in Korea; and neither government nor fragmented employers' associations possess the strategic capacity to promote non-exploitative coordination between large firms and SMEs (Fleckenstein et al., 2023).

Though launched with great ambition, Meister Schools and Dual Work-Study training did not prove attractive to parents and students either, especially high-achievers, and therefore failed to reverse the 'academic drift' in Korea. Not only do Meister Schools attract very few students, but also 3 in 4 of their graduates intend to study further at university, suggesting the initiative failed to challenge fundamental preferences for HE (J.-W. Kim et al., 2015; Yu et al., 2020). The Dual Work-Study programme also failed to change the status and perception of VET: more than three quarters of these 'apprenticeships' last only 1 year, and about one third do not complete their programme, indicating that many students question their career prospects after completion. Concerns have been voiced that the programme subsidises labour costs in admittedly hard-pressed SMEs, rather than promoting genuine skills formation (Chun & Lee, 2015; S.-W. Kang, 2016). In the absence of compelling alternatives, parents and young people continue to prioritise tertiary education at any price.

HE also had its *liberal* trajectory questioned with universities seen as failing to supply not only the *right* skills but also the research deemed imperative in the knowledge economy. The Asian Financial Crisis reinforced policy-makers' conviction that a growth strategy relying on low labour costs was no longer feasible in a global market where other low-cost countries increasingly challenged Korea's position. Innovation and technology thus moved centre-stage as drivers of future growth (Shin & Lee, 2015). But unlike the Kim Young-Sam government, successive centre-left and conservative governments showed limited trust in 'the market' for greater efficiency and hence returned to top-down intervention in HE, through programmes such as the Brain Korea 21 (BK21) programme, in which the government selected a small number of universities for generous funding to create 'world-leading' universities (Byun & Kim, 2011). BK21 signified a shift away from the past model of a fairly equal distribution of limited funds across the HE sector towards the concentration of investment for greater efficiency, in addition to attaching strict conditions to state funding. Universities were contractually obliged to undertake educational reforms under the often rather prescriptive direction of the ministry of education. The BK21, with expected spill-over effects across the sector, was thus pointedly described as a 'comprehensive master plan for restructuring Korean universities' (Shin & Lee, 2015, p. 192; see also Byun et al., 2013).

Employers' changing skills needs also fuelled renewed state intervention for more diverse and innovative teaching offerings. The New University for Regional Innovation programme funded regional universities' specialisation, combined with the aspiration to promote new regional industrial clusters to overcome the economic dominance of Greater Seoul (S. Choi & Yeom, 2010). With Leaders in Industry University Cooperation (LINC, 2012-17) and the Programme for Industry Needs-Matched Education (PRIME, from 2017), government pushed strongly for specialisation and for universities to prioritise employability to better meet labour market demands. If selected for PRIME, for instance, universities received funding to expand STEM provision, but were also expected to reduce capacity in social sciences and humanities. Government thereby addressed skills shortages in knowledge-intensive industries by curbing perceived over-supply of graduates in social sciences and humanities (Durazzi, 2019). Importantly, these state-interventionist HE reforms were largely aligned with the preferences of parents and large firms: they supported the former's relentless pursuit of educational credentials, while the latter were able to cherry-pick the best graduates. These reforms allow greater efficiency for big employers but no gains for SMEs. Inclusion is effectively undermined by the country's extremely hierarchical university system and the fierce competition in the highly dualised labour market; tertiary education fails to provide a reliable route into good jobs (Fleckenstein & Lee, 2019).

## 4 | EDUCATION AND THE KNOWLEDGE ECONOMY IN GERMANY

Since the 1990s, changing skills needs on the part of firms and shifting preferences of young people and their parents in favour of university education have also produced efficiency and inclusion pressure points in Germany's skill formation system. Efficiency pressures have developed in the context of the increasing centrality of information and communications technology (ICT) to manufacturing processes, which have fundamentally altered the skills preferences of employers in the advanced manufacturing sector (Durazzi & Benassi, 2020). In particular, the decline of routine tasks has reduced the centrality of intermediate skills, as supplied by much of the VET system, to German manufacturing in favour of higher-level skills provided by HE (Baethge & Wolter, 2015). In this context, firms' commitment to the VET system has been weakened, in part because the costs of training have become harder to bear for many firms in increasingly competitive business environments (Haasler, 2020; Thelen, 2014). These pressures have resulted in larger firms becoming reluctant to train beyond their needs, while the proportion of small firms offering VET has undergone a sharp decline (Eckelt et al., 2020; Mohr et al., 2015). These pressures were evident in large employers' increasing dissatisfaction with the lack of flexibility and specificity embedded in training profiles. Employer demands were numerous but included the need to update and combine skillsets, for example, electronics and mechanics, and the need to incorporate transversal skills, such as handling abstract information, problem-solving, communication and teamwork skills (Voß et al., 2018). However, the pressures also manifested themselves in inclusion problems, evident in the growing disparity between demand and supply of apprenticeships. This was most clearly demonstrated by the large numbers of school-leavers entering the so-called transition system, an umbrella term for a series of government-funded programmes for typically low-achieving school-leavers while they wait for an apprenticeship in the dual-training system, but which provides no formal certification (Busemeyer, 2012).

While employers were increasingly favouring the general skills of HE graduates, since 2000 HE in Germany has undergone a dramatic expansion in demand from students, with the enrolment rate rising from 30% in 2000 to 53.7% in 2019 (Statistisches Bundesamt, 2021, p. 13). Underpinning this expansion is a long-term trend of increased preferences among parents for academic education, clearly manifested in the proportion of pupils attending *Gymnasien*: while less than 5% of school-leavers in the 1950s left with an entitlement to HE, ~50% do so today (Baethge & Wolter, 2015, p. 103). This expansion has dramatically altered the educational horizons for high-achieving working-class children, enabling access to HE on a far larger scale than among previous generations, for whom the VET system was the only option. However, in doing so it created efficiency problems for firms in Germany's core manufacturing sector reliant on the advanced skills produced by the high-skills end of the VET system, with firms concerned that the best students would prefer university education to VET and that the skills produced at university were not sufficiently attuned to the needs of the labour market (Durazzi, 2019; Haasler, 2020).

These pressures became acute in the early 2000s, when the gap between demand and supply for apprenticeships became a full-blown political crisis. Initially, the government's response, similar to the Korean case, was to acquiesce to the demands of large employers in a segmentalist coalition to push through changes which granted firms more flexibility and specificity in VET, including introducing modularisation and 2-year apprenticeships, measures that were opposed by the unions on the basis that they weakened the employability of apprentices. Despite calls from within the governing centre-left coalition for more interventionist policies, such as a training levy or a school-based VET track, government bowed to pressure from employers to instead opt for a more coordinative approach and instigated the first in a series of 'Training Pacts' in 2004. The first pact was an agreement between the state and employers (unions declined to take part) in which employers committed to greater provision of apprenticeships, in addition to new entry qualifications for disadvantaged young people, while government would provide funding. Subsequent pacts in 2007 and 2010 promised further increases in training places. While these pacts were viewed critically, especially by unions, as a continuation of segmentalist trends in VET governance and doubts have been expressed over how meaningful employer commitments have been (see Busemeyer, 2020), over time they have broadened to include a wide range of signatories and have become a means by which government priorities regarding inclusion can be inserted into the self-governing VET system. This has involved leveraging large firms' continuing



need for complex, specific skills produced by the high-end of VET, while using federal funds to support inclusion efforts. In 2014, the Alliance for Initial and Further Training marked a further step in this direction as it included union signatories, who had joined primarily because they were concerned at being excluded from important agreements. The 2014 Alliance contained an explicit commitment to provide a training opportunity to every applicant, preferably in the dual system, and an employer commitment to provide three offers for firm-based training to young people who failed to secure a training place. It also contained new policy instruments, such as the 'assisted apprenticeship' scheme, dedicated to improving integration of disadvantaged young people into the VET system and measures to better include refugees (Busemeyer, 2012, 2020). In the context of an apparent erosion of 'beneficial constraints', this new governance mode of 'orchestration' combines elements of past corporatist management with government priorities, such as greater inclusion (Busemeyer et al., 2022).

The Higher Education Pact, launched in 2007 jointly by federal and *Länder* governments, increased HE funding to cater for the large increases of demand. While at first the Pact did not focus on the kind of skills produced by HE institutions, employers began an intense process of lobbying to ensure that state resources were channelled towards producing the high-skilled workers that were considered critical to the German economy. In response to this, in the face of opposition from Germany's traditional HE sector, the state opted to push funding towards universities of applied sciences (*Fachhochschulen*) and particularly towards STEM subjects, which had been identified by employers as being in short supply in the late-2000s (Durazzi, 2019). Further, a trend of de-standardisation has been evident, blurring the boundaries between HE and VET. This has included opening-up possibilities for students to move between the two systems, which has led to growing numbers of HE students who already possess VET qualifications (Ertl, 2020). Some funding in the HE Pact was earmarked for dual-study programmes, in which firms and HE institutions (usually the more labour market adjacent *Fachhochschulen*) partner to offer programmes which provide both HE and VET qualifications in an attempt to retain the highest-achieving students in the VET system (Graf, 2017). De-standardisation, however, has also led to a rapid increase in dual-study programmes which do not offer VET qualifications but still involve industry placements as part of an HE qualification; these are largely found in private *Fachhochschulen* and are dominated by students undertaking business studies. Indeed, there has been a disproportionate growth in private HE institutions, which are responsible for 29% of the overall increase in HE enrolments since 1995 (Statistisches Bundesamt, 2022).

This coordinative role on the part of the state has led to significant successes, particularly in terms of efficiency problems: by the mid-2010s firms were self-congratulatory about solving the problem of skills shortages (Durazzi & Benassi, 2020), while VET has retained some appeal, particularly among high-achieving students: the proportion of dual-training entrants with an HE entitlement has been growing, reaching 29.6% in 2019, and is much higher among high-skill training occupations (Autorengruppe Bildungsberichterstattung, 2020, p. 161; Haasler, 2020). For the needs of the advanced manufacturing sector therefore, the dual-training system continues to function well. From an inclusion perspective, reducing the barriers between HE and VET has opened up the former to students who were previously excluded, or who may have viewed attending university too much of a risk in a competitive labour market, especially working-class school-leavers (Ertl, 2020). The incorporation of HE actors into the VET training pacts indicates that further blurring of the traditional schism between the two sectors is likely. Moreover, the comparison with the Korean case demonstrates that the transition system, though not without problems and on-going challenges (e.g., Thelen, 2014), has meant that the 17% of young people who fail to find an apprenticeship are not 'abandoned' to unskilled employment or unemployment (Autorengruppe Bildungsberichterstattung, 2020, p. 152). This figure and the growing number of apprenticeships remaining unfilled, do however reveal efficiency problems at the bottom-end of VET: in 2019, 9.4% of places were unfilled, up from 3.7% in 2010 (Bundesinstitut für Berufsbildung, 2020, p. 16). Stratification is a long-standing feature of the VET system, especially in the context of increasing dualisation associated with the knowledge economy; it remains to be seen whether government orchestration in VET can do more than merely mitigate the worst effects.

## 5 | DISCUSSION AND CONCLUSIONS

Education and skills policies in Germany and Korea have seen far-reaching changes. In both countries, VET experienced segmentalism—with big business in Korea withdrawing from collective skill formation and aggressively pushing for deregulation, and with large employers in Germany also successfully challenging the status quo. The former moved firmly towards liberal skill formation in VET, but policy-makers quickly recognised the flaws of their new system. While de-standardisation in Germany helped retain the commitment of large firms to the training system, the Korean state lost the capacity to engage both large employers and SMEs, and also failed to improve the status of VET among parents and young people. Koreans continue to express very strong preferences for HE, whereas the blurring of boundaries between VET and HE in Germany allowed the attractiveness of VET for high-achievers to be maintained. Germany, however, increasingly encounters problems with the inclusion of low-achieving school-leavers, with the transition system only partially mitigating the problem. Notably however, there is no equivalent to training pacts in Korea, where the lack of corporatist legacy has resulted in government engagement with business conglomerates that rather resembles ‘breakfast meetings’ under UK Labour’s New Deals (cf. Martin & Swank, 2012, p. 202), and thus low-achieving school-leavers in Korea have little prospect of escaping the margins of the Korean labour market.

In HE, both countries saw a massive expansion of student numbers; first in Korea and then Germany, reflecting the increasing importance of parental behaviour. In Korea, deregulation moved HE, at first, firmly towards a liberal regime, but it again failed to deliver both efficiency and inclusion. Universities struggled to supply the labour market with the skills that were deemed imperative for the knowledge economy, and the state—rediscovering its ‘Developmental’ past—returned to government intervention to restructure the sector in a rather prescriptive manner. Labour market requirements in Germany were not fundamentally different, but instead of restructuring, existing structures were exploited (i.e., the expansion of *Fachhochschulen* in particular), in addition to the blurring of boundaries between the VET and HE sectors. The latter made HE more inclusive for less privileged but well-performing school-leavers who in the past struggled to access universities. More recently though, private HE has grown considerably, including ‘dual-study’ programmes which do not include a meaningful vocational qualification.

The preceding analysis highlights the dual pressures from parents and firms on skill formation systems in the shifts to the knowledge economy. As well as the increasing power of firms, which led to segmentalist reforms that fundamentally altered the ‘supportive institutions’ that provided the basis for VET, pressure from parents also pushed skill formation systems towards a greater emphasis on HE, evident in massive expansion in student numbers. However, the fundamental difference in the two cases was the governments’ capacity to mediate these changes, and the interrelationship between reforms and the twin pressures.

The analysis of the Korean case suggests that the decline of the Developmental State and the ‘last nail’ of deregulation removed the ‘supportive institutions’ needed for effective coordination in vocational skill formation. State-led coordination in the country’s successful industrialisation failed to produce ‘beneficial constraints’ that could have allowed continuous employer engagement, instead producing a hierarchical production regime that overwhelmingly privileged large businesses. We thus find endogenous change that shifted the power balance in the political economy, and deprived government of mediating capacity: government was unable to continue to compel large employers to continue to participate in VET, instead opting for liberalisation of the system, with disastrous effects for the VET system, especially in the context of Korea’s highly dualised labour market. Without the participation of large firms, which provide most insider employment, VET became even less attractive to parents. By contrast, government retained capacity in HE, allowing government to reject liberalisation, and top-down governance returned. This provided *better* high skills for the knowledge-intensive sectors of the economy, but it did little to stem the ‘holing out’ of intermediate skills with detrimental impact on SMEs. Also, excessive graduate competition for insider employment in Korea’s extremely dualised labour market translated into one of the highest NEET rates in the OECD (only exceeded by Turkey, Italy, Colombia, and Mexico), despite consistently presenting one of the lowest

unemployment rates. Inclusion—previously a hallmark of Korean economic development and educational progress—has become the victim of the country's hierarchical production regime.

By contrast, established institutional structures provided opportunities for political mediation in Germany, and large firms, though sceptical, remained committed to VET. Admittedly, segmentalism is also evident: the system has been oriented towards the interests of large employers, especially in the advanced manufacturing sector. Obviously, past 'beneficial constraints' can no longer be assumed, but critically they have not totally disappeared; and de-standardisation encouraged firms' continued attachment to VET. Crucially, the government and firms have cooperated to maintain the attractiveness of VET to parents, primarily by blurring the boundaries between VET and HE. Thus, maintaining firms' attachment to VET has impacted on parental behaviour, and we do not witness the overwhelming rush to HE evident in Korea. The notion of 'orchestration' is a recognition of government's reduced strategic capacity, but mediation is still possible (Busemeyer et al., 2022). So, paradoxically, Germany's 'semi-sovereign state' (cf. Katzenstein, 1987) retained greater mediating capacity in the knowledge economy than the strong state that is typically associated with Korea's developmentalism.

With both Korea and Germany having experienced, most critically, a decline in inclusion, to what extent do the two countries present genuinely different trajectories, or merely differences in timing with the latter following the former? In VET, our analysis points to fundamentally different paths, both in terms of the swiftness with which the previous institutional equilibrium crumbled and the respective governments' abilities to maintain a VET system in the knowledge economy. Particularly, the Korean case illustrates the catastrophic consequences of failing to keep large employers on board. Korea's experimenting with liberalisation and its economic concentration undermined the government's capacity, and *disjointed* reforms in VET and HE fuelled further academic drift and destabilised the education and skill formation regime (cf. Hall & Gingerich, 2009 on destabilising complementary systems). By contrast, German mediation, drawing on the institutional legacy of corporatism, has seen successful channelling of resources towards labour-market relevant HE programmes and a blurring of the boundaries between HE and VET, to the benefit of *both* systems. In HE, we see liberalisation in both systems, although the extent is much greater in Korea. German stakeholders have been largely congratulatory; yet, an increasingly de-standardised HE sector is not without risk, which is understated in current literature (although see Ertl, 2020). The rapid growth in private HE institutions in Germany, which in 2020 made up 14% of enrolments, up from 2% in 2000, might pose future problems to the capacity of the state to continue mediating the sector. Moreover, the English experience suggests that 'free' skills from the HE sector can undermine employer commitment to more costly high-quality VET (Fleckenstein & Lee, 2018), and also Korea's private HE expansion, discussed in the article, shows that 'the market' does not necessarily produce the skills needed in the economy. Thus, while the German government's greater mediation capacity has enabled a more successful addressing of efficiency and inclusion pressures in the skill formation system than in Korea, whether this will remain evident is an open question given rapidly evolving institutional and economic conditions, which the Korean case has shown can quickly lead to deterioration of government capacity.

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