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Thomas F. Remington & Israel Marques II

To cite this article: Thomas F. Remington & Israel Marques II (2020) The Reform of Skill Formation in Russia: Regional Responses, *Europe-Asia Studies*, 72:7, 1125-1152, DOI: [10.1080/09668136.2020.1717447](https://doi.org/10.1080/09668136.2020.1717447)

To link to this article: <https://doi.org/10.1080/09668136.2020.1717447>



Published online: 13 Feb 2020.



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# The Reform of Skill Formation in Russia: Regional Responses

THOMAS F. REMINGTON & ISRAEL MARQUES II

## *Abstract*

Effective systems of vocational education are crucial to economic and social development. However, the coordination of labour market demand and the supply of skill requires either well-functioning labour market institutions or institutionally embedded strategic partnerships among government, labour and employers. In particular, the transplantation of German-style dual education methods to a different environment poses significant institutional dilemmas. Russia presents a useful case for examining the conditions under which such arrangements can be established. Based on a series of interviews in six Russian regions and a set of case histories, we seek to draw testable hypotheses that can be applied to other settings.

IT IS WIDELY RECOGNISED THAT EFFECTIVE SYSTEMS OF vocational education are crucial to economic and social development (Busemeyer 2015; Doner & Schneider 2016). However, the coordination of labour market demand and the supply of skill requires either well-functioning labour market institutions or institutionally embedded strategic partnerships among government, labour and employers. Models of apprenticeship-style technical and vocational education and training (TVET), such as those in place in Germany, Switzerland and other European countries, have attracted growing attention on the part of policymakers around the world. However, the transplantation of German-style dual education methods to other countries poses significant institutional dilemmas. In this article, we examine recent efforts to adapt dual education methods to Russia. Russia presents a useful case for investigating the conditions under which such arrangements can be established. To do so, we make use of extensive interviews with business managers, government officials, educators and industry representatives in six Russian regions, and a set of case histories drawing on an extensive review of Russian media, government and industry reports. Our article represents an exploratory analysis of current efforts to implement dual education systems in Russia through partnership arrangements among educational institutions, businesses, industry associations and government. Based on this

This article was prepared within the framework of the Basic Research Program at the National Research University Higher School of Economics (HSE) and was supported within the framework of a subsidy by the Russian Academic Excellence Project '5-100'. The authors also acknowledge support from a grant from the Russian Science Foundation (Project No. 161810425).

evidence, we draw inductive inferences about the conditions under which partnerships for skills development can form in other settings. From these we generate hypotheses about the importance of a favourable central government policy environment and complementary incentives for regional-level initiatives, the key role of local, non-market institutions in coordinating partnerships and the importance of initiatives by local executives to establish cooperation.

Throughout the world, governments and businesses are increasingly concerned about mismatches between the types of skills employers need in order to compete in modern markets and those actually supplied by educational institutions. For businesses in the BRICS countries (Brazil, Russia, India, China and South Africa), for example, a recent Price Waterhouse Cooper survey suggests that 71% of respondents are concerned about a lack of skilled labour.<sup>1</sup> Worldwide surveys conducted annually by the recruitment company ManpowerGroup suggest this is a universal problem.<sup>2</sup> For governments, skill mismatch is worrisome due to its potentially deleterious effects on economic growth. Scholars who study the ‘middle income trap’ argue that skills shortages are a frequent cause of the difficulty such states face in reaching higher levels of development (Doner & Schneider 2016). Even in the United States, however, policymakers regularly express worry about the shortage of workers possessing the skills—hard and soft—that are required in the twenty-first century (Fuller *et al.* 2014). While undoubtedly many employer complaints about skills shortages reflect a desire for subsidies (Capelli 2014), economists generally accept that skill mismatches are serious impediments to productivity growth at the macro-level and therefore a key brake on development (McGuinness *et al.* 2017).

Although the problem of skill mismatches is universal, in this article we focus on recent attempts to resolve the problem in the Russian Federation. Numerous recent surveys of Russian businesses have found that these businesses consider the shortage of sufficiently skilled labour to be a major impediment, to themselves and to the economy as a whole.<sup>3</sup> In Russia, as elsewhere, resolving mismatches between the supply and demand for certain skills is difficult, because they are generally thought to arise from three separate but related forms of market failure: between employers and workers; among employers; and between employers and the state (Culpepper 2000; Thelen 2004; Martin & Swank 2012). Economists observe that employers avoid investing in training on the grounds that rivals can cut costs by poaching employees once they are fully trained (Acemoglu & Pischke 1998). Business and bureaucratic interests may press for government subsidies to inefficient state TVET institutions, diluting the pool of qualified workers with poorly

<sup>1</sup>‘Rost bez uskoreniya, Rossiiskii vypusk 17-go Ezhegodnogo oprosa rukovoditelei krupneishikh kompanii mira 2014 god’, PWC, 2014.

<sup>2</sup>‘2016–2017 Talent Shortage Survey’, ManpowerGroup, 2016, available at: <http://www.manpowergroup.com/talent-shortage-2016>, accessed 15 August 2016.

<sup>3</sup>‘Indeks OPORY-2012: defitsit kadrov dlya malogo biznesa-na pervom meste’, 5 December, *Opora Rossii*, 2012, available at: <http://opora.ru/news/opora/61230>, accessed 15 August 2016; ‘Doklad o sostoyanii delovogo klimata v Rossii v 2010–2013 godakh’, Rossiiskii soyuz predprinimatelei i promyshlennikov, 2014, available at: <http://rspp.ru/document/1/0/5/052e120269d00aa294ee8c2aa1c311df.pdf>, accessed 7 December 2019; ‘Rost bez uskoreniya, Rossiiskii vypusk 17-go Ezhegodnogo oprosa rukovoditelei krupneishikh kompanii mira 2014 god’, PWC, 2014.

trained ones (Busemeyer & Trampusch 2012). Finally, in the absence of well-developed institutions for protecting the value of their skill investment, both employers and employees may avoid investing in highly industry-specific skills (Iversen & Soskice 2001). Thus, the market failures that lead to mismatches in the supply of and demand for skills are underpinned by more fundamental commitment problems, which must be addressed to improve the match between skills taught in schools and those demanded by employers.

Typically, the relevant literature argues that the problem of skill formation—that is, the process by which society provides the workforce with the skills needed by the labour market—is resolved in one of two ways: institutional coordination among labour, capital and the state, or the ‘invisible hand’ of the market.<sup>4</sup> Institutional coordination emerges when actors are able to coordinate their participation in complex systems of training, compensation and social protection designed to encourage the development of high-quality skills. The classic model for this is the German-style apprenticeship system, often called ‘dual education’, in which schools and businesses work hand-in-hand to link classroom-based instruction with on-the-job practical training. In such systems, coordination in TVET is typically achieved through intermediary organisations, such as sectoral associations, business chambers, labour unions and tripartite commissions in which employers, labour and government bargain over comprehensive wage, benefit and price agreements. These organisations enable actors to forge long-term strategic partnerships to balance the costs and benefits from investment in skill formation (Culpepper 2000; Estevez-Abe *et al.* 2001; Hall & Soskice 2001). Crucially, however, these relationships are embedded in a national system of institutions that have evolved to complement one another and without which the incentives of businesses, workers, schools and policymakers are not sufficiently aligned to enable coordination (Martin 2000; Jackson & Deeg 2008; Martin & Swank 2012). They also require strong civil society groups to harness the collective power of business and labour in order to monitor other actors and defend their interests.

Markets, by contrast, balance supply and demand for skills with signals such as wage levels, which induce individuals to invest in needed skills. Here, the smooth clearing of demand and supply of skill on labour markets in market-oriented, liberal systems rests on frictionless flows of information about the labour market and the cross-territorial mobility of labour and capital. If information about labour market conditions is poorly supplied or if the mobility of labour is impeded, severe pockets of unemployment may coincide in some regions with severe labour shortages in others (Austin *et al.* 2018).

Russia presents a challenge to this established literature, however. In Russia, the central government has delegated responsibility for TVET to regional governments, resulting in notable variation in TVET organisation across the Russian territory. Whereas in most regions, authorities have devoted little attention to the reform of TVET, a few regional governments have succeeded in encouraging commitment by businesses and schools to engage in costly co-investment in skill formation. In particular, some of these regions are

<sup>4</sup>For a review of the literature on the origins of skill formation regimes in the European context, see Busemeyer (2015).

attempting to adopt German-style dual education, with its emphasis on business–school linkages. These linkages represent systematic, region-wide attempts to build extensive cooperative skill training regimes in coordinated market economies (CMEs). Notably, however, such linkages have emerged despite the fact that the prerequisites for efficient solutions to skills gaps—strong civil society, a constellation of institutions that enable coordination or transparent, efficient markets—are absent due to the legacies of the Soviet command economy, the incomplete nature of the transition to market capitalism and the low levels of interregional mobility. At the same time, existing theories about the emergence of these prerequisites are unsuited to understanding how such coordination comes about in certain Russian regions. Again, these theories rely on specific components—free and fair democratic competition, classical left–right party systems, and strong civil society groups—that simply do not exist in Russia. Consequently, understanding the Russian case demands the development of new theory that is not embedded in the advanced, industrialised democracies.

In this article, we propose that there may be some functional substitutes for the prerequisites of cooperation highlighted in existing works, particularly in cases where state actors take the initiative in solving the coordination dilemmas inherent in matching the supply of and demand for different types of skill. To this end, we use an inductive method to generate hypotheses about what these functional substitutes are, how they shape the organisation of skill formation regimes, and how they come into being in the first place. We first draw on over 50 interviews with managers and officials in vocational educational institutions, businesses and government agencies in six regions to demonstrate what these functional substitutes are and how they are organised. Based on the identification of basic patterns and variations in organisational relationships among businesses, business associations, vocational education institutions and governmental actors, we seek to generate broader hypotheses about the conditions under which strategic partnerships in TVET emerge. We then combine insights from our interviews with three additional regional case studies to attempt to generate hypotheses about how and when these substitutes can emerge. In our analysis, we make use of a structured review of Russian press materials dealing with TVET reform in these three regions, along with the websites of federal and regional government agencies participating in reform efforts and a site visit to one of the regions where a pilot programme in dual education is being conducted. This work allows us to understand the sequencing of various TVET reforms in these regions, which would be difficult to identify precisely from interview data, as well as to triangulate some of the insights from the interviews.

Taken together, our interviews and case studies enable us to identify commonalities in the configuration of businesses, business associations, schools and government from which we can draw inferences about the conditions under which successful cooperation can be established. In addition to patterns common to all of the regions, we also noted variations in organisational relations, for example, in the scope of cross-business and cross-school cooperation and the identity of the intermediary bodies set up to coordinate business–school partnerships. From this basic information we then draw hypotheses about the necessary and sufficient conditions for business–school–government partnerships, which we present in the concluding section of the article. Our hope is that this set of hypotheses can serve as the basis for future systematic tests in other settings.

In the next section, we present a theoretical framework for comparing systems of business–school relationships in TVET across national and subnational settings. In the

third section, we discuss Russian federal policy with respect to TVET reform to provide context for our analysis. In the fourth and fifth sections we present the findings of our interviews and case studies, respectively. The final section concludes with a set of theoretical hypotheses drawn from the analysis.

#### *Variation in systems of vocational education*

Technical and vocational education and training (TVET) is customarily distinguished from general, or academic, education in two respects. First, it is intended to equip an individual with a set of skills or competencies suited for a more or less specific occupation; these may be highly tailored to the needs of a particular occupation in a particular business, or more generally useful throughout an industry. Second, the specificity of the training comes at the expense of a broader education. Broader education here refers to ‘general’ education, such as is provided in primary, middle and upper secondary grades or in a higher educational setting. In some settings, TVET is an alternative to ‘academic’ education, which is not typically oriented toward preparing a person for a particular trade.

TVET systems can vary along several dimensions, the most important of which relates to the depth and breadth of cooperation among schools and employers. In the canonical German model, individual businesses engage in deep and costly forms of cooperation with their partner schools. Such partnerships are characterised by extensive interaction between businesses and schools in the design of curricula, day-to-day training of students, and accreditation and examination procedures. Businesses are also expected to bring students into the firm for on-the-job training under the tutelage of specially trained employees of the business and to hire a certain number of graduates each year. Such practices are extremely costly to businesses in terms of time and resources, while also requiring schools to make substantial efforts to harmonise their instruction with the needs of their partners and changing markets (Thelen 2004; Busemeyer & Trampusch 2012; Busemeyer 2015). By contrast, in ‘liberal’ systems such as the United States, businesses and schools generally interact *via* purely market mechanisms. Generally, employers simply screen school graduates for those best suited to their needs and provide limited in-house training. Where they require specific skill sets which they cannot teach new employees themselves, businesses may instead contract with educational institutions to provide training in specific tasks. Schools that provide outsourced training in this way often take upon themselves the full costs of designing curricula, acquiring equipment and updating their programmes to provide relevant skills (Martin 2000; Martin & Swank 2012). Between the two ends of the spectrum lies a great deal of variation.

Another source of variation stems from the extent to which businesses are willing to cooperate with other businesses in vocational education, the axis we term ‘breadth’. At one end, businesses work together along sectoral or industry lines in order to align the skills provided by schools with their common needs.<sup>5</sup> Such cooperative arrangements are useful to businesses given the large economies of scale in training, which can be split

<sup>5</sup>This can be nationally, in the case of small countries, or regionally, in the case of large countries with regional labour markets.

among multiple businesses. They also enable businesses to agree not to poach employees from one another. Students benefit from guarantees of employment upon graduation.

Systems featuring both high coordination among businesses and deep joint investment in training between businesses and schools are typical of what are known in the literature as CMEs, such as in Germany, and depend on a number of interlocking political and labour market institutions to function (Streeck 1992; Culpepper 2000; Thelen 2004). On the low end of the 'breadth' spectrum, businesses forge bilateral arrangements with schools that cater narrowly to their own needs, forgoing any potential gains to cooperation in order to retain full control over the content of training. If businesses cooperate with other businesses in their industry to define the occupational standards that technical colleges and high schools are expected to meet through their curriculum, we say that cooperation is broad but not necessarily deep: businesses do not invest extensively in coordinating on-site training with schools. However, they do cooperate to the extent that they work to align their needs for skilled labour with the supply of skills produced by local educational institutions.

Partnerships between businesses and schools often suffer from a number of coordination problems stemming from a mismatch between the incentives and goals of businesses and schools. Businesses are primarily interested in developing high-quality human capital that can help them fulfil their labour market needs. Schools, by contrast, are concerned with factors beyond the labour market prospects of their graduates, often bearing responsibility for providing education consistent with state guidelines aimed at providing students with a broad, general education. Public education is, moreover, in often direct competition with other policy areas for funding. Therefore, as a number of studies have demonstrated, the effectiveness and sustainability over time of business-school partnerships for TVET depend heavily on the quality of intermediary organisations. Intermediary organisations can resolve cooperation problems by serving as a neutral third party that can help coordinate the exchange of commitments among the partners, extend planning horizons and adjudicate disputes between partners. As such, intermediary organisations should be considered a linchpin of successful TVET policies (Thelen 2004; Bussemeyer & Trampusch 2012; Hoffman & Schwartz 2015, 2017).

In the German system, tripartite bodies consisting of representatives of the state (on behalf of schools), employers' associations and labour unions have served as the primary intermediary in the vocational education system (Thelen 2004). Employers' associations are responsible for aggregating the labour market needs of their memberships into concrete plans governing the nature and content of TVET, negotiating on their behalf with labour unions and the state, and monitoring their compliance with agreements to contribute materially to the TVET system and minimise poaching. At the same time, employers' associations monitor the extent to which labour unions comply with their end of TVET agreements. Labour unions serve an analogous purpose for employees, and the state oversees the system and adjudicates disputes between and within employer and employee groups (Streeck 1992; Culpepper 2000; Bussemeyer & Trampusch 2012; Bussemeyer 2015). In developing states today, and communist planned economies in the past, centralised state ministries often take upon themselves the function of intermediary and set the terms of cooperation between employers and schools, the content of TVET,

and quotas for specialists (Ashton & Sung 1997; Ashton *et al.* 2002; Doner *et al.* 2005; Park 2007).

This discussion raises the question of how broad and deep TVET partnerships can arise in a country such as Russia and in other developing and transitional societies where well-organised employers' and labour associations are lacking (Crowley 1997; Ashwin & Clarke 2003; Duvanova 2013). Under such circumstances, existing work would predict that meaningful cooperation is hard to sustain.

### *Reforming the Russian system of skill formation: the federal role*

Beginning in the mid-2000s, the Russian federal government began to call for the modernisation of TVET. The government's interest in TVET reform was driven by several goals. First, the government sought to attract foreign investment in order to encourage economic development, which required significant upgrading of skills. Second, the government substantially increased spending on industries of strategic importance to the state. High-tech and high-quality production was essential to the government's modernisation plans, making a skilled workforce critically important (Stanovov 2013). Finally, as many enterprises were expanding production after a long period of recession, many industry leaders expressed concern over the imminent retirement of the older, Soviet-era generation of workers coupled with the low prestige attached to manual labour as new opportunities in business and law opened up for school graduates. A new generation of young workers needed to be recruited and provided with new skill sets.

As part of the government's effort to upgrade TVET, it encouraged businesses to collaborate closely with schools in providing opportunities for hands-on practical training. As many participants noted, this meant reviving and adapting some traditional Soviet practices, including *shestvo* (a business's patronage of a school) and *nastavnichestvo* (the practice of assigning an experienced worker from the enterprise to oversee the practical training of a new recruit). It also meant that businesses were to take active part in shaping the training curriculum and to coordinate classroom and on-the-job training.

The federal government made extensive use of incentive programmes to encourage regions to upgrade skill formation. It launched multiple federal tenders to promote particular regional models of TVET and to develop best practices. The first, in 2006, was designed to create regional multi-business training centres with federal co-financing and to re-forged links between businesses and schools.<sup>6</sup> The second, launched five years later, offered federal co-funding for initiatives designed to foster public-private partnerships between schools and businesses.<sup>7</sup> In 2012, a new federal law on education delegated administrative and financial responsibility for vocational schools to regional governments.<sup>8</sup>

<sup>6</sup>For details, see 'O federal'noi tselevoi programme razvitiya obrazovaniya na 2006–2010 gody (s izmeneniyami na 11 marta 2011 goda) (fakticheski utratilo silu v svyazi s istecheniem sroka deistviya)', 11 May 2011, available at: <http://docs.cntd.ru/document/901965035>, accessed 6 December 2019.

<sup>7</sup>Postanovlenie Pravitelstva RF ot 7 fevralya 2011 g. N 61 "O Federal'noi tselevoi programme razvitiya obrazovaniya na 2011–2015 gody" (s izmeneniyami i dopol'neniyami)', *Garant*, 25 December 2015, available at: <https://base.garant.ru/55170694/>, accessed 6 December 2019.

<sup>8</sup>Federal'nyi zakon "ob obrazovanii v Rossiiskoi Federatsii", *ConsultantPlyus*, 29 December 2012, available at: [http://www.consultant.ru/document/cons\\_doc\\_LAW\\_140174/](http://www.consultant.ru/document/cons_doc_LAW_140174/), accessed 2 December 2019.

This law further provided incentives for regional governments to engage with enterprises more directly in funding and shaping vocational education in order to save costs.

In 2013 the government announced a new competition specifically intended to encourage dual education programmes,<sup>9</sup> assigning responsibility for running it to the Agency for Strategic Initiatives (*Agentstvo Strategicheskikh Initsiativ*—ASI).<sup>10</sup> The ASI's task was to coordinate contact by the regions with the relevant federal ministries and large state-owned enterprises (ASI 2015, 2016a, 2016b).<sup>11</sup> By unifying federal stakeholders' efforts, the central government signalled that it would put its support and resources behind TVET reform efforts. Strikingly, although most of the programme competitions have offered federal co-funding, in the case of the 2013 ASI project, the federal government offered only administrative support.

If funding was not at stake, why was this competition a positive inducement? We would argue that many regions participated to attract favourable attention from high-level federal officials, particularly Dmitrii Medvedev and Vladimir Putin. Medvedev was known as a harsh critic of the existing system of TVET and a champion of modernisation. As deputy prime minister, Medvedev had criticised TVET institutions for their excessive rigidity and uniformity, poor preparation of graduates for the market, and lack of independent assessments.<sup>12</sup> He therefore directed the launch of the federal competitions discussed above to promote reform and resolve these issues, beginning in 2006. President Putin also took interest, commenting at a meeting of ASI's oversight board in 2013, 'I know that you have concrete proposals to develop this education, people call it by different names, the so-called dual education ... . If dual education envisions instruction and practical work, then of course that is what we have to do' (Putin 2013). In his presidential message to parliament in 2015, Putin declared that the work of reforming TVET 'must of course be built on a fundamentally new, contemporary, basis with the participation of business and higher educational institutions and universities' (Putin 2015). Thus, regions that took the lead in responding to the federal initiatives could hope that the president and prime minister would take note, to the benefit of their careers.

The favourable policy climate at the top was not sufficient to induce reform in all regions, however. As previous work on Russian secondary vocational education has shown, there is wide variation across regions in the extent to which businesses and schools have formed close partnerships with each other (Marques 2017; Remington 2017). Mere policy declarations by the central government do not solve the commitment problems between businesses and the state that are inherent in TVET partnerships. For businesses to be willing to co-invest with the state, regional governments also had to prove that they could enforce the cooperative

<sup>9</sup>Podgotovka rabochikh kadrov, sootvetstvuyushchikh trebovaniyam vysoko-tehnologichnykh otraslei promyshlennosti, na osnove dual'nogo obrazovaniya', approved by a decision of the Observer Council chaired by President Vladimir Putin, 14 November 2013. For details, see ASI (2014).

<sup>10</sup>ASI is a specialised inter-agency body created by Putin in 2011 to promote economic development and create a favourable business climate (see Freinkman & Yakovlev 2014). For details on the programme, see ASI (2014).

<sup>11</sup>Also in an interview with Tat'iana Stanislavovna Golovina, Director of the 'Young Professionals' Programme for the Agentstvo Strategicheskikh Initsiativ, Moscow, 24 June 2016.

<sup>12</sup>'Novosti', Natsional'nii Fond Podgotovki Kadrov, 2015, available at: [proftech.ntf.ru/node/97](http://proftech.ntf.ru/node/97), accessed 11 June 2015.

commitments undertaken by schools and businesses. Therefore, in selecting winning regions for the dual education pilot programme, the government chose regions with the capacity to enforce collective agreements. These tended to be regions with higher-than-average administrative capacity, who had the high-quality bureaucracy necessary to both monitor the activities of firms and schools for compliance and to punish deviations from agreements (Marques *et al.* 2016; Remington 2017).

The advantage of taking part in federal TVET reform programmes for regions lay less in any material benefit than in the twin signals that participation sent to prospective investors. On the one hand, it demonstrated that the centre was paying attention, thus assuring businesses that regional officials would prioritise success. On the other hand, it also indicated to businesses that the regions could monitor schools' fulfilment of their commitments. Illustrating the importance of this interaction is a comment made by a Russian official in charge of the dual education programme:

The value of our experiment lies in the fact that its realisation is supported by the top leaders of the winning regions and is under the constant supervision of the ASI and three federal ministries: the Ministry of Economic Development, the Ministry of Education and Science and the Ministry of Labour. Such attention to the course of the adoption of elements of the dual system of education allows us to hope that winning regions will raise their investment attractiveness for foreign enterprises. (Quoted in ASI 2014)

Federal attention therefore helped to reassure all sides that commitments would be fulfilled. It is important to note, however, that encouragement by the federal government cannot fully explain the reform of vocational education in Russia's regions and the adoption of 'dual education'. Any understanding of the impetus for reform also requires a deeper exploration of why certain regions have been able to overcome the coordination dilemmas inherent in skill formation and respond to federal inducements to adopt dual education. In the remainder of the article, we characterise this variation and explore the factors that underpin it.

### *Research design*

In order to explore the variation in dual education practices in Russia, as well as the factors that led to this variation, we apply two complementary research strategies. First, we explore variation in dual education practices in Russia using a series of 54 interviews in six Russian regions—Samara *Oblast'*, Sverdlovsk *Oblast'*, Ulyanovsk *Oblast'* and Tambov *Oblast'*, and Krasnoyarsk and Perm' *krai*—with government officials, school directors, business association officials and enterprise managers. To form our sample of regions for interviews, we deployed an 'extreme case' design, in which cases are selected because their value on the dependent variable is higher or lower than other observations in the distribution. This methodology is particularly suited for studies such as ours, which is an open-ended exploration of the potential causes of outcomes (Seawright & Gerring 2008). We thus deliberately selected on the dependent variable, which here is the extent to which regions choose to engage in reforms of their TVET systems. We pursue this strategy because we are interested in identifying commonalities in organisational patterns from

which we can draw inferences about the prerequisites for and origins of successful partnerships. In our case, the six regions we choose therefore represent extreme cases of vocational education reform, because they were selected by the ASI to conduct pilot projects to implement dual education. These six regions were already regarded as leaders in vocational education reform prior to the beginning of the federal programme (Remington 2017). The interviews were semi-structured and aimed to understand how TVET worked in practice, which actors were involved, and how the system originated. In our analysis, we paid careful attention to triangulating responses across multiple respondents within regions, particularly those from different categories (that is, business compared to regional government, school administrators compared to their partner businesses). These interviews were conducted in the autumn of 2016 in the regions themselves. Additional details and a comprehensive list of interviews can be found in Appendix 1.

To triangulate the results of our interviews, as well as to better understand the timeline of reforms, we collected supplementary data to construct three regional case histories: Perm' *Krai*, Belgorod *Oblast'* and Kaluga *Oblast'*. Case selection was initially based on a comprehensive review of materials on Russian TVET, as made available on the websites of the ASI<sup>13</sup> and the Ministry of Education<sup>14</sup> to identify candidate regions. We then conducted an in-depth analysis of national and regional press reports on the candidate regions to further refine our list. We provide details on these procedures in Appendix 2.

Based on our review of all Russian regions in which dual education is being attempted, we chose Perm', Belgorod and Kaluga primarily for three reasons: the history of the development of their dual education programmes is particularly well documented; they are regularly cited in the national press as exemplary, as indicated, for example, by our survey of the Integrum media dataset. They also represent distinct pathways to linking businesses and schools.<sup>15</sup> Indeed, all three regions were winners of the 2013 ASI competition, and one of them—Perm'—was also a region in which we conducted interviews. As the case studies enable process-tracing, they allow us to draw inferences about the contingent organisational relations that facilitate the establishment of reasonably successful models of dual education and the sequencing of their development in the regions in question. On this basis, we can develop testable hypotheses about those features of the institutional environment that may be necessary and sufficient for developing strategic partnerships in TVET environments. We can also triangulate the insights gleaned from our interviews with these data.

We construct our case histories using a combination of materials from federal and regional websites and reports, the regional and national press, scholarly publications, reports from think tanks and business associations, reports from regional TVET schools, and a site visit to Kaluga. This corpus was collected through a careful analysis of the websites of regional ministries to identify key government actors and collect materials from their sites coupled with a structured search of the Russian Integrum database (again, see Appendix 2 for

<sup>13</sup>Available at: <https://asi.ru/>, accessed 7 December 2019.

<sup>14</sup>Available at: <http://минобрнауки.рф/>, accessed 7 December 2019.

<sup>15</sup>Details of the case selection procedure can be found in Appendix 2.

details and keywords used), which includes periodicals and publications from thousands of sources spanning all of Russia's regions.

*Dual education in practice: evidence from interviews*

Our interviews indicated that there was a good deal of variation in the organisation of dual education in the Russian regions, but common to all was formally shared responsibility between one or more educational institutions and one or more enterprises for the provision of training in specified occupations. As in the German model, dual education is organised around a division of labour between classroom-based 'theoretical' instruction and applied practical training overseen by the enterprise. In some cases, practice-based training takes place at a dedicated training facility located either at an educational facility (a vocational school or a stand-alone training centre) or on the premises of an enterprise. Some large enterprises have vocational schools on site, which they use to train personnel for their own needs and, in some cases, for other enterprises in the region. For example, the Severskii pipe plant, located in the town of Polevskoi in Sverdlovsk, has a technical college (*tekhnikum*) on its premises with a training centre used by multiple technical colleges in the town. The training centre was created through a three-way agreement between the technical college, the regional ministry of education and the giant TNK oil company that owns the pipe plant.<sup>16</sup>

In the case of the Samara Machine-Building Technical College, the college operates its own training centre for instruction in mechatronics. The college has partnerships with a number of the big aerospace businesses located in Samara, all of which use its training facilities. The facility was built through a cooperative agreement between the regional government, the regional machine-building association and major businesses in the industry. The key role played by the governor in facilitating this cooperation is illustrated by the fact that the head of the technical college made a proposal to build it at a meeting of the industry association at which the regional governor was present. The governor offered to defray half the cost of the project if the enterprises would finance the other half. In our interview, the director said that everyone agreed and that there had been no political pressure exerted by the governor. Pressure or not, the governor's initiative helped to solve the commitment dilemma inherent in an expensive joint investment in training.<sup>17</sup> We saw similar instances of gubernatorial initiative in nearly every region we studied.

Often, colleges and businesses lack the resources to invest deeply in shared training facilities. The more common form taken by dual education, therefore, is for vocational schools to seek enterprise partners to provide on-the-job training directly. For example, schools that serve the personnel needs of medium and small enterprises must work to find partners willing to provide on-the-job training as part of a dual education programme. According to our interviews, such businesses are often short of skilled workers and take on training responsibilities as a way to screen trainees who meet their needs.

<sup>16</sup>Interview with the Head of the Administration for Development and Personnel Recruitment, Severskii trubnyi zavod, Sverdlovsk *Oblast'*, 23 November 2016.

<sup>17</sup>Interview with the Director of the Samara Technical College for Machine-Building, 1 November 2016.

Thus, we found considerable variation in the depth and breadth of business–school cooperation. Large businesses could afford to invest more heavily in training because they had longer time horizons (for example, multi-year procurement orders from the federal government). For them, it was cheaper to invest directly in the school-based and practical aspects of the training than to pay for the retraining and post-training workplace orientation of new recruits. Similarly, large vocational colleges that had partnerships with multiple enterprises could sometimes form partnerships with government and industry to create dedicated practical training facilities that could be used by multiple enterprises and colleges. In all cases that we studied, these high-cost forms of business–school partnership were facilitated by, and sometimes initiated by, the regional government, and were financed through grants and in-kind contributions from federal and regional budgets and enterprise resources. However, as one college director commented, material resources were often less critical to the success of the partnership than the investment of time and effort.<sup>18</sup>

Recall that joint cooperative investment in skill formation poses commitment dilemmas on the part of businesses and schools. Therefore successful TVET partnerships require intermediary institutions that coordinate relations and enforce obligations among the partners. In line with the literature on employer–school partnerships in other contexts (Hoffman 2011; Hoffman & Schwartz 2015, 2017), we found several kinds of bodies serving as intermediaries. For example, in Perm’ the key intermediary organisation was an encompassing employers’ association (for example, one with broad membership) that helped to set specific TVET policies related to training, curricula and resource allocations. As in Germany, in Perm’ the regional Trade-Industrial Chamber (*Torgovo-Promyshlennaya Palata*—TPP) was the main structure helping to link schools and businesses and played a large role in allocating resources between different sectors and TVET institutions. However, Perm’ was the only region we studied in which a regional employers’ chamber (as opposed to a sectoral association) played the role of intermediary. It was also unique in that the Perm’ TPP took responsibility for collecting and collating information on the recruitment and training needs of all the region’s major businesses. It then used this information to negotiate with the regional government over annual quotas for funded places for students in given specialisations.

An alternative form of intermediary organisation is a coordinating council under the supervision of the regional governor or regional ministry of education, which usually includes representatives of both businesses and regional government departments. Although governor-led coordinating councils tend to perform functions similar to those that the TPP performs in Perm’, our interviews suggested that they tend to be less comprehensive in their approach. For example, most regions collect labour market data on only a subset of major businesses. Small and medium-sized enterprises generally find it more difficult to project their hiring needs several years out so tend to be at a disadvantage in such arrangements.

In four of our regions—Samara, Sverdlovsk, Krasnoyarsk, and Perm’—such regional-level coordinating organisations also included sectoral associations. These were

<sup>18</sup>Interview with the Director of the Urals College of Technology and Entrepreneurship, Ekaterinburg, 23 November 2016.

responsible for tasks such as recruiting employers and linking them with specific schools or gathering information on the needs of their members. Such bodies sometimes also worked to create training centres open to multiple employers, and to persuade businesses of the value of dual education and to induce them to participate. For example, in Krasnoyarsk, the Machine-Builders Association (*Soyuz mashinostroitelei*) was the initiator and enforcer of the dual education programme. One interview respondent there told us that the association had to ‘bludgeon’ the enterprises to participate.<sup>19</sup> In another region—Tambov—employer associations played a smaller role. Instead, the majority of local coordination occurred under the aegis of sector ‘cluster’ councils that gathered together participating employers in a given sector and related school.<sup>20</sup> Within each cluster of industries, these councils were responsible for setting specific vocational education policies.

Despite variation in the identity of intermediaries across and within regions, however, all of our interviews suggested that regional intermediaries faced similar challenges stemming from the fact that schools and businesses initially ‘speak different languages’ reflecting their differing priorities. A common thread among many of our respondents—government officials, school administrators and employers—emphasised that the success of dual education depended upon both sides’ willingness to coordinate their efforts such that schools incorporated training in the competencies that industry wanted and industry provided real hands-on training opportunities. These respondents considered three practical issues crucial to bridging the divide. The first was harmonising occupational proficiency standards (*profstandarty*) with ‘educational standards’ (*obrazovatel’nye standarty*), particularly the variable portion of the Federal State Educational Standards (*Federal’no-gosudarstvennye obrazovatel’nye standarty*—FGOS).<sup>21</sup> Second was the willingness and ability of the business to provide both instructional and production practice at the enterprise. The third issue was a business’s willingness to hire graduates of the educational programme. Intermediaries therefore helped schools and businesses to reach mutually acceptable solutions to these issues that reconciled the legal requirements of schools with the labour market needs and cost constraints of businesses.

Our interviews also suggested a great deal of variation in the six case study regions with respect to the breadth of cooperation. In some regions, we observed individual schools with agreements to work together with multiple businesses in a manner comparable to the German system. Examples include the Tambov Service Industry College (*Kolledzh torgovli, obshchestvennogo pitaniya i servisa*), which works with multiple small companies, such as restaurants. In the service sector, firms tend to be small in scale, so it is typical for a particular school to collaborate with multiple businesses for practical training. In other cases, we observed that individual businesses signed agreements with multiple educational institutions to provide skilled graduates. For example, the large ISS enterprise in Samara,

<sup>19</sup>Interview with Deputy Chair of Krasnoyarsk Regional Branch of the Union of Machine-Builders of Russia, 30 November 2016.

<sup>20</sup>These are defined broadly: manufacturing; agro-industry; transportation; IT; social services; construction.

<sup>21</sup>The federal government specifies defined curricular requirements for granting degrees in each specific defined occupation. These are divided into mandatory and elective components. The latter allow schools to work with businesses and sector organisations in incorporating on-the-job training and industry-specific modules into the curriculum.

which produces satellites, has agreements with 16 higher educational institutions around the country to provide highly trained engineers. Likewise, we also observed cases in which multiple schools and multiple businesses worked together. For example, the aviation industry cluster in Ulyanovsk works with multiple schools. In a few cases, a large holding company in the defence or agro-industrial sector may manage partnerships with a large number of technical colleges and universities.

Perhaps one of the most striking features of variation in the breadth of TVET, however, was the fact that breadth tended to vary more within regions than across them. Indeed, many of our interlocutors focused on factors specific to businesses or sectors that made cooperation across multiple businesses more attractive. For instance, many pointed to TVET arrangements in the service sector, particularly public catering, where schools would often attempt to work with multiple partners in order to both ensure sufficient resources to carry out training and sufficient vacancies for their graduates. Alternatively, very large businesses, particularly those that were ‘city-forming’ (that is, serving as the dominant source of employment and income for the city) and dominated their local economy or had multiple subsidiary businesses operating in related fields, were most likely to work together with multiple school partners and to coordinate training across them. Another key factor in the breadth of arrangements was the presence of a cluster of related, independent businesses working in closely related fields, which we found in Tambov and Ulyanovsk. Such clusters were most likely to link together multiple businesses and schools under the aegis of coordinating councils and ensure broad cooperation between members.

Our interviews indicated that the use of the institutionally intensive method of ‘dual education’ was confined to a relatively small number of businesses in any given region, but that those making use of it considered it beneficial. None of our interviews suggested that business–school TVET partnerships were motivated by a concern for innovation, although many noted that as enterprises upgraded their technology, they needed more highly skilled labour. Rather, business representatives praised the dual education method for shortening the ‘adaptation’ period for a newly hired recruit. Respondents consistently emphasised that new employees should fit well into the enterprise’s work culture, become familiar with all aspects of the work environment, exercise work discipline, cooperate with other workers, and demonstrate dedication to their jobs. We heard repeatedly that enterprises wanted to hire people who were motivated to work at the enterprise and knew what to expect when they arrived. One manager in Samara commented on the difference between those coming through the dual education programme compared with those hired directly from the local machine-building vocational college, Samara State Technology University: the former were ready to start work, whereas the latter were ‘absolutely not motivated or focused’.<sup>22</sup> Another respondent from Sverdlovsk region commented that ‘social skills’ (*sotsial’nye navyki*) are important: an employee should ‘look out for himself, be useful to the organisation, and be socially responsible’.<sup>23</sup> A manager at Aviastar

<sup>22</sup>Interview with Head of Department of Personnel Development, Instrument Bearings Factory, Samara, 27 October 2016.

<sup>23</sup>Interview with Director of Urals College of Technology and Entrepreneurship, Ekaterinburg, 23 November 2016.

emphasised the importance of collective problem-solving by the team brigade (*brigada*), which includes junior and more senior workers. However, he noted ‘we try to minimise the number of non-standard [non-repetitive] tasks’.<sup>24</sup> These comments suggest that the greatest benefits to businesses of close partnerships with schools have to do with what are commonly known as ‘soft skills’ (team work, adaptation and fit to the workplace, communication and so forth), even if the respondents did not use that specific term.

We draw three conclusions from our interviews. First, they confirmed our premise that cooperation between businesses and schools is institutionally demanding, as it requires some level of investment on the part of both sides in curriculum development, instruction and practical training, the provision of equipment, the evaluation of performance, and funding for students and instructors. For that reason, the businesses that invested most deeply tended to be large, with deep pockets and long-time horizons. Most businesses do not participate in dual education programmes. Those that do, however, receive a positive return, less in the formation of technical skill than in the transmission of the social and behavioural skills that ease the transition from school to the workplace. Second, we also found that partnerships require intermediary organisations to coordinate the activity of the participants, including the regional government. Although these took various forms—sectoral associations, coordinating councils under the governor, local business chambers—all served as platforms where businesses and schools could ‘find a common language’ around which to harmonise educational and occupational skill standards. Finally, while the broad impetus for creating new institutions for business–school partnerships under TVET came from a combination of contextual factors, among them the shift in funding responsibility in 2012 from the federal to the regional level and the higher demand for technological skill prompted by industrial and strategic modernisation, in each case the initiative for dual education came from the regional government, whether directly or (as in the case of Perm’) indirectly. We return to these points in the conclusions.

### *Origins of dual education: evidence from case histories*

#### *Belgorod—vocational education reform as a signature project*

In Belgorod *Oblast*, a major impetus for the development of TVET was the formation, in 2007, of Agro-Belgor’*e*, a giant agricultural holding company.<sup>25</sup> Agro-Belgor’*e* quickly found its demand for skilled labour outstripping supply. To meet its needs, the company signed a three-way agreement with the regional government and the administration of a local vocational school in August 2011, under which Agro-Belgor’*e* would assume responsibility for the school.<sup>26</sup> The company also committed the business to providing systematic in-house instruction to complement school training, upgrading equipment,

<sup>24</sup>Interview with Director of Personnel, AviaStar SP, Ulyanovsk, 30 September 2016.

<sup>25</sup>‘Istoriya Gruppy Kompanii “Agro-Belgor’*e*”, available at: <http://www.agrobel.ru/>, accessed 7 December 2019.

<sup>26</sup>‘Gruppy Kompanii “Agro-Belgor’*e*” budet gotovit’ sebe kadry samostoyatel’no’, 2 September 2011, available at: [http://www.agrobel.ru/presscenter/smi\\_o\\_nas/1945](http://www.agrobel.ru/presscenter/smi_o_nas/1945), accessed 15 August 2016.

providing monetary support for students and hiring them upon graduation (Soboleva 2013). Agro-Belgor'ë reformed the curriculum by adding new specialties and dropping outdated ones. Under the agreement, the school's teaching staff were to undergo retraining at the company and a pilot programme was launched shortly after the agreement was signed.<sup>27</sup> Thus, in one company we see examples of each of the types of intensive ties we highlighted from the school report data.

It is clear that extensive preparatory work preceded this agreement, thus providing insight into why Agro-Belgor'ë was willing to trust the state and co-invest. One month after the official announcement of the federal government's first TVET competition in June 2011, the Belgorod regional government published a comprehensive four-year plan for reform. Two weeks later it created a quasi-government agency, the Institute of Regional Cadre Policy, to serve as intermediary between businesses, schools and government on training issues. No more than two weeks after that, the government, Agro-Belgor'ë and the vocational school signed their three-way agreement. Governor Evgenii Savchenko used the agreement as a model, demanding that all TVET schools be absorbed into large 'anchor' companies (that is, large firms that would provide leadership and resources to the partnerships), engaged in activities similar to that of Agro-Belgor'ë.<sup>28</sup> The regional policy encouraged tight links between businesses and schools reminiscent of the Soviet model, but with a greater emphasis on simultaneous in-school and in-plant training along the lines of the German dual education model. It was cooperative because the anchor business would determine the school's curriculum content and provide material assistance, such as equipment and stipends for students.<sup>29</sup>

From this sequence of events, we could infer that the governor and director of Agro-Belgor'ë cooperated to take advantage of the federal programme. Regional and federal funding would help the holding company to transform local TVET to serve its needs. In turn, the governor could hold up the example of Agro-Belgor'ë as a model of reform for the region. The small amount of federal funding relative to local funding makes it doubtful that federal money was the main impetus. It is more likely that federal attention served as an institutional guarantee that aligned the incentives of regional actors—businesses and government—to pursue extensive co-investment in TVET.

Indeed, the model of enterprise takeovers of schools, accompanied by a thorough overhaul of curricula and equipment, became a centrepiece of Savchenko's strategy for regional

<sup>27</sup>'Agro-Belgor'ë vzialos' za svoe uchilishche', *Bel.ru*, 28 September 2011, available at: <http://www.bel.ru/news/education/57678.html>, accessed 15 August 2016.

<sup>28</sup>'Agro-Belgor'ë vzialos' za svoe uchilishche', *Bel.ru*, 28 September 2011, available at: <http://www.bel.ru/news/education/57678.html>, accessed 15 August 2016.

<sup>29</sup>'Gruppa Kompanii "Agro-Belgor'ë" budet gotovit' sebe kadry samostoyatel'no', 2 September 2011, available at: [http://www.agrobel.ru/presscenter/smi\\_o\\_nas/1945](http://www.agrobel.ru/presscenter/smi_o_nas/1945), accessed 15 August 2016; 'Uchebnoe Zavedenie', Agro-belgor'ë, available at: [agrobel.ru/h/vocational-school/institution](http://agrobel.ru/h/vocational-school/institution), accessed 15 August 2015; 'O Dolgosrochnoi Tselevoi Programme "Razvitie Professional'novo Obrazovaniya Belgorodskoi Oblasti Na 2011–2015 Gody"', Pravitel'stvo Belgorodskoi Oblast', 20 July 2011, available at: [docs.cntd.ru/document/469024702](http://docs.cntd.ru/document/469024702), accessed 15 August 2016; 'Ob Institute', Oblastnoe Avtonomnoe Uchrezhdenie 'Institut Regional'noi Kadrovoi Politiki', available at: [irkp31.ru/institute/about/](http://irkp31.ru/institute/about/), accessed 15 August 2016.

development. As he has regularly observed, businesses benefit from taking responsibility for vocational education by developing a stream of skilled labour (Filippov 2013; Zhukova 2015).<sup>30</sup> Vocational schools benefit by finding ‘anchor’ businesses to provide material and curriculum support and employ graduates. Under continuous pressure from the governor, businesses and schools have established extensive bilateral ties. By mid-2013, two thirds of the region’s specialised secondary schools had found sponsoring businesses (Soboleva 2013). In many cases, the government signed three-way partnership agreements with schools and employers in which regional government provided basic financing to the schools, while businesses supplied equipment, evaluated outputs and took on administrative functions. Students signed contracts with the government (or business) under which they were obliged to repay the cost of their education if they did not take the offered job upon graduation.<sup>31</sup> Promoting this model, and TVET reform more broadly, has become a signature element of Savchenko’s leadership.<sup>32</sup>

Savchenko’s model appears to be centred on multiple deep partnerships between major, ‘anchor’ businesses and individual affiliated schools. The breadth of the arrangement is less clear. On the one hand, Savchenko created regional employer councils to aggregate business forecasts for labour and generate region-wide orders for schools. In 2013 the regional personnel department created a non-commercial agency to develop independent assessment and skill certification systems that included representatives of business on its board.<sup>33</sup> As yet, there is no clear evidence as to their effectiveness in promoting cross-business cooperation.

#### *Kaluga and the automotive cluster*

Kaluga’s main contributions to Russian TVET are largely represented by the efforts of one of the region’s major employers—Volkswagen—and a small number of businesses in the automotive sector.<sup>34</sup> The regional government regards TVET reform as critical to attracting investment. In 2006, the governor, Anatolii Artamonov, drafted a ‘cluster’ development plan designed to exploit the existing skill base in the region.<sup>35</sup> Soon

<sup>30</sup>See also, ‘Gubernator Evgenii Savchenko provel soveshchanie po voprosam modernizatsii professional’nogo obrazovaniya v regione’, 21 February 2018, available at: <https://belregion.ru/press/news/index.php?ID=23086>, accessed 4 December 2019.

<sup>31</sup>‘Gruppa Kompanii “Agro-Belgor’e” budet gotovit’ sebe kadry samostoyatel’no’, 2 September 2011, available at: [http://www.agrobel.ru/presscenter/smi\\_o\\_nas/1945](http://www.agrobel.ru/presscenter/smi_o_nas/1945), accessed 15 August 2016.

<sup>32</sup>‘Gubernator Evgenii Savchenko provel soveshchanie po voprosam modernizatsii professional’nogo obrazovaniya v regione’, 21 February 2018, available at: <https://belregion.ru/press/news/index.php?ID=23086>, accessed 4 December 2019.

<sup>33</sup>‘Otchet o vypolnenii gosudarstvennogo zadaniya avtonomnoy nekommercheskoi organizatsii “Regional’noe agentstvo razvitiya kvalifikatsii”, utverzhdenного rasporyazheniem pervogo zamestitelya Gubernatora Belgorodskoi oblasti—nachal’nika departamenta vnutrennei i kadrovoi politiki oblasti ot 20 yanvarya 2014, No 3, za 1 kvartal 2014 goda’, RARKBO, 4 April 2014, available at: <http://rark31.ru/wp-content/uploads/2014/05/otchet-po-gos zadaniyu-1-kvartal-2014.pdf>, accessed 7 December 2019.

<sup>34</sup>Interview with Alexei Nikitin, Director of Education Centre of Autoconstruction, Kaluga, 23 June 2016.

<sup>35</sup>‘Kaluga: vklad truda i kapitala’, *Zavtra*, 20 February 2018, available at: <http://zavtra.ru/blogs/2007-02-2121>, accessed 4 December 2019.

afterwards, Volkswagen made assistance to set up training facilities a key condition during negotiations to invest in Kaluga, prompting authorities to modify the plan to suit it.<sup>36</sup> The regional government converted existing schools to Volkswagen's needs, while stipulating that these schools must also serve other regional industries. Volkswagen in turn agreed to pay stipends for students and supplements for instructors, set the curriculum, donate equipment and issue certificates to graduates. At the Kaluga centre, as in Germany, about half of a trainee's instructional time is spent at the school and the other half at the VW plant. In contrast to Germany, there are no peak associations (that is, broad, encompassing employers' and workers' associations) to coordinate between the business and school, supervise exams and provide logistical services. Volkswagen adapted dual education to the Russian environment largely by taking on many of these functions itself.<sup>37</sup> This additional investment reflected the company's confidence in the regional authorities.

The sequence of events behind these developments is again revealing. Although Volkswagen's investment was the proximate impetus for reforming TVET, the opportunity to win federal target funding preceded it. Kaluga was one of the first regions to apply to the federal government's 2006 competition to co-finance training centres.<sup>38</sup> Kaluga submitted its application within a month of the competition's announcement and before Volkswagen decided to invest in Kaluga. While it is clear that Artamonov took advantage of federal funding for a reform that complemented his plan for territorial industrial clusters, it is also likely that this application was made as an additional inducement for Volkswagen. By applying for federal competitions, the region tied its own hands, providing a strong commitment to Volkswagen that it would expend resources to ensure that partner schools were well-funded and met Volkswagen's needs (Artamonov 2013). Volkswagen's investment in turn catalysed the emergence of an automotive cluster in Kaluga, which attracted foreign businesses such as Peugeot-Citroen, Volvo and Mitsubishi in part due to the quality of TVET.<sup>39</sup>

Encouraged by the success of the automotive cluster, the regional government pursued other industrial clusters. In each case, the government emphasised the comparative advantage of a qualified, skilled workforce, pursuing vocational education reform by merging some vocational schools, tying others to local businesses and converting still others to serve as training centres (Artemov 2012). As with the automotive cluster, related businesses were encouraged to work together to sponsor schools, achieving critical economies of scale. In these facilities, the government continued to push the German dual education model, under which students received stipends while undergoing training that led to official certification and were guaranteed jobs upon graduation.<sup>40</sup> By 2016, these

<sup>36</sup>Interview with Alexei Romanenko, Head of Personnel Development to Volkswagen Russia, Kaluga, 23 June 2016. Interview with Alexei Nikitin, Director of Uchebnyi tsentr avtomobil'egostroenie, Kaluga, 23 June 2016.

<sup>37</sup>Interviews with VW official in Kaluga, Russian Federation, 23 June 2016, and Wolfsburg, Germany, 21 June 2017.

<sup>38</sup>'*Novosti*', *Natsional'nii Fond Podgotovki Kadrov*, 2015, available at: [proftech.ntf.ru/node/97](http://proftech.ntf.ru/node/97), accessed 11 June 2015.

<sup>39</sup>Later, following the economic crisis of 2008, these businesses largely ceased their operations in Kaluga.

<sup>40</sup>Interview with Alexei Romanenko, Head of Personnel Development to Volkswagen Russia, 23 June 2016, Kaluga, Russia; interview with Regional Ministry of Education official, 23 June 2016, Kaluga, Russia.

reforms had made Kaluga a nationally recognised leader in the implementation of dual education (ASI 2014).

These reforms have also raised Governor Artamonov's profile with the federal government. Artamonov often appears at national fora to call attention to training as a means of improving labour productivity in the country.<sup>41</sup> At the same time, he actively promotes Kaluga's cluster model of development and its TVET system to visiting regional and federal officials. His efforts have borne fruit, as other major regions such as Tatarstan and Primorsk have created their own training centres along the lines of Kaluga's. Artamonov's desire to associate himself closely with TVET initiatives at the federal level indicates that he considers it politically advantageous.

Taken together, Kaluga's vocational education system reflects strong links between the state and particular businesses. In the case of Volkswagen, this relationship is deep but not necessarily broad. Nonetheless, the regional governor has been active in extending the model of cluster development to other sectors such as the construction and pharmaceutical industries. Such strategies always involve a tight linkage between training and industrial production and require deep co-investment between at least one business and one school. As the case of Volkswagen and the automotive cluster indicates, however, achieving broad multi-business cooperation requires significant involvement by the regional authorities.

#### *Perm' Krai: 'turnkey training'*

As noted above, Perm' presents a rather striking contrast with the other two cases discussed thus far. The regional branch of the Perm' TPP (2014) was heavily involved in coordinating the region's TVET system, making this case more similar to the European model. In 2012, a year after the federal government had begun pushing regions to promote business-school cooperation in reforming TVET, Perm's regional TPP developed a plan for dual education called 'turnkey training' (*rabochie kadry 'pod klyuch'*). The programme originated in part from a meeting between the Perm' TPP and the regional chamber of commerce and industry in its German sister-city, Duisberg. Observing that Germany's regional chamber devoted most of its efforts to TVET, and its effectiveness, the association decided to launch a similar effort in Perm' (Kovalenko 2014). To do so, however, required the explicit delegation of authority from the governor and instructions to schools to cooperate. As one school director from a different region told us based on a visit to Perm' 'The governor in Perm' convened the TPP, convened all the ministries and directors and said, "Each enterprise will be assigned an educational institution. And the dual form of instruction is to be used." And they are carrying all that out'.<sup>42</sup> Thus the case of Perm' differed substantially from the typical European model, even though associations played a large role.

<sup>41</sup>'Strategiya Sotsial'no-ekonomicheskogo Razvitiya Kaluzhskoi Oblasti', Ministerstvo Ekonomicheskovo Razvitiya Kaluzhskoi oblasti, available at: [admoblkaluga.ru/sub/econom/Gos\\_prog\\_razv/Strategy/](http://admoblkaluga.ru/sub/econom/Gos_prog_razv/Strategy/), accessed 13 June 2016.

<sup>42</sup>Interview with Director, Dmitrovgradskii College of the Construction Industry, Ulyanovsk Oblast', 30 September 2016.

The turnkey training programme consisted of a set of formal agreements between major enterprises with regional and vocational schools. These required participating students to spend half their time in practical training at the enterprise during the third and fourth years of their programmes, a substantial increase over the traditional system. Students admitted to the programme signed individual contracts with the business and the school under which the state funded the student's education through a voucher system, and the business guaranteed the student a job upon completion of the programme. The business also took responsibility for supplying business-specific training in the plant (Pechenova 2016). Businesses benefitted by reducing the time spent on new-hire orientation; the student had a job waiting upon graduation; and the state was better able to ensure that skill supply matched market demand.

The smooth functioning of the system relied on the TPP, which saw itself as the facilitator, matching skill supply (by schools) to demand (by businesses) *via* annual surveys of businesses' projected medium-term labour needs (ASI 2015). This information allowed the TPP to play a large role in TVET budgetary allocations, as these data were used to draw up aggregate orders for specialists that the regional education ministry used to allocate budget funds to schools. It also took a direct role *via* its seat on the regional Inter-Agency Commission on Vocational Education (*Mezhvedomstvennaya kommissiya po voprosam prof-tekhn obrazovaniya*) that determines funding allocations across schools and occupational skills. Despite the TPP's central role, however, the government remained responsible for the laws and regulations governing vocational education and funding the infrastructure of TVET (ASI 2015). The government also played a much larger role in setting the content and method of instruction in concert with businesses than the TPP and in monitoring compliance by schools. Indeed, the governor made himself personally responsible for the government's ability to fulfil targets and regularly took credit for the system's successes.<sup>43</sup>

In Perm', as a result of the unique role of the TPP, cross-business cooperation in vocational educational was quite broad. Crucially, however, as we note above, the government nonetheless played a key role in the functioning of the system. In contrast to Germany, Russian employer associations are voluntary, making it difficult for associations such as the TPP to convince businesses to join the system. In Perm' the governor's personal attention was indispensable for both ensuring wide participation of firms in the TPP and enforcing effective cooperation between schools and firms.

### *Discussions and conclusions*

We began by asking how cooperative TVET institutions are organised in settings with weak business and labour associations. In coordinated market economies, business-school cooperation rests on strategic partnerships among business associations, labour unions and government. In Russia, the government is frequently predatory, while labour unions are clientelistic and business associations are subordinate to the state. Our interviews revealed

<sup>43</sup>Interview with Director of Department of Professional Development, Trade-Industrial Chamber, Perm' Krai, 21 November 2016.

that both deep and broad forms of business–school linkage exist in Russia. They further suggested that these are organised largely around state bodies and depend on effective intermediary organisations. Our case studies further suggested that cooperative TVET institutions in the Russian regions have arisen largely due to initiatives taken by the state. In two of these cases, regional governments played the principal coordinating role. In Perm', where a business association served as coordinator, it nevertheless worked closely with and depended heavily on the regional government.

We recognise that the regions discussed in this article are not necessarily typical of Russia. By identifying common patterns in business–school–government TVET cooperation in these regions, however, we have sought to build more general hypotheses about the conditions under which actors in other, similar settings can construct deep and broad partnerships for skill development. Because Russia, like many transitional and developing states, lacks well-established employer and labour associations, and efficient labour market-supporting institutions, we specifically looked for institutions that may substitute for the dense bundle of complementary social and political institutions that the literature on TVET in Western Europe has analysed.

First, in each case, regional reform responded to federal initiatives. Federal attention both encouraged the regional government to submit proposals that would meet the needs of regionally significant businesses and provided assurances to those businesses that regional governments would fulfil their promises. Entrepreneurial regional elites were able to build relatively complex institutional agreements among businesses, schools, and regional and federal authorities. Existing traditions of local cross-business and government–business cooperation served as the foundation for the reforms, but the arrangements themselves responded to opportunities generated by federal programmes. This observation suggests that federal initiative was a conducive condition for cooperative business–school co-investment. We would hypothesise, therefore, that when a favourable central government policy environment is combined with complementary incentives for regional-level initiatives, effective coordination of TVET is more likely. The fact that most Russian regions have not pursued the dual education programme indicates, however, that this combination of conditions is not sufficient.

Tripartitism has moreover played no role in TVET reform. In our review of many hundreds of press articles, conference proceedings and official documents, trade unions were conspicuous by their absence. The lengthy Belgorod plan, for example, mentions a number of business and public associations as participants, but never labour unions. Bargaining between labour and employer associations was not the basis for TVET reform in any of the instances covered by our media and document review, although employer associations routinely participated. To the extent that corporatist forms of decision-making are present, they consist of bilateral bargaining between business associations and the government. On the other hand, in all cases an intermediary body worked to align the efforts of the educational institutions, employers and government. In most cases this was a coordinating council under the auspices of the state. Our hypothesis, accordingly, would be that the broader the partnership among businesses and schools, the more likely it is that its success will depend on a non-market institution serving as coordinator; however, this function can be performed by a variety of organisations, among them the governing body

of a technical college, a sectoral association or a coordinating council directly under the authority of the governor.

Third, our interviews and case studies strongly suggest that the initiative of a governor is both necessary and sufficient for the creation of institutions based on dual education. There are three reasons for this conclusion. To begin with, in an environment such as Russia's, with relatively weak civic associations and personalistic government, a governor's initiative is frequently the critical factor in overcoming inertia and providing initiative in forming and carrying out policy. Furthermore, a governor serves as a single source of direction, sparing organisational actors the uncertainties and cross-purposes that would be characteristic of an organisationally fragmented environment. Finally, a governor who establishes a successful model—of TVET or, for that matter, in other domains—represents the region to the central authorities and the centre to the region; an effective executive leader can leverage the resources of the central government to urge agreement to cooperative institutions in his or her region. Likewise, the governor can use the collective efforts of the region as a resource in promoting the region's interests at the centre. For example, all of the regions examined here successfully submitted applications to the ASI and won recognition from it as pioneers in adopting German-style apprenticeship training to Russian conditions. Tellingly, even though ASI's blessing did not bring with it any funding, the governors found it politically expedient to tout their regions' successes in their annual reports and presentations. Governors, therefore, wield a unique combination of levers by which to take the initiative in forging institutionally demanding partnerships.<sup>44</sup> We do not wish to leave the impression that these efforts have radically transformed TVET in Russia. Even in the pilot regions where dual education has been adopted, as stated in a report by ASI, 'Dual education is limited to some trial partnership arrangements'. In those regions where forms of industrial clusters have emerged, 'there is little or no translation of successful practices of cooperation across partnerships of the entire cluster' (ASI 2016a). Even in the trial regions, dual education methods are not yet widespread. Nonetheless, the federal government continues to prioritise TVET reform, with President Putin specifically calling for more partnerships between schools and businesses and more widespread adoption of *nastavnichestvo* in his 2018 address to the Federal Assembly (Putin 2018).

As we have argued, adopting dual education methods is institutionally demanding. TVET partnerships, as with any complex partnership arrangement among actors with divergent goals, require forging and honouring commitments to cooperate by educational institutions, business and government. In the regions we examined, the impetus for TVET reform stemmed from the interaction of the federal government's encouragement and the regions' desire to take advantage of it. The federal initiatives consisted of attention and administrative support, and some funding, in order to stimulate commitments to institutional change on the part of regional governments, schools and businesses. In our conception of state-initiated coordination, we therefore emphasise the relationship between

<sup>44</sup>Note that this point is by no means confined to Russia. In the United States in 2018, no fewer than eight governors, both Republicans and Democrats, specifically referred to the apprenticeship model of TVET in their 'State of the State' addresses as ways to improve workforce development. Still more cited the value of work-based learning (Ross & Hauge 2018).

federal and regional government initiative in overcoming the collective dilemmas associated with skill formation. Given the legacy of Russia's state socialist system and its underdeveloped civil society, it is hard to imagine how institutionally demanding TVET reform could arise except through the state's agency.

We believe that our examination of the Russian case can shed light on the comparative literature relating systems of TVET to the bundles of complementary institutional arrangements governing labour markets and social policy in capitalist economies. Most existing studies of TVET systems focus on the national level and emphasise the ways in which market forces or long-term strategic partnerships link educational institutions with labour and employer associations and government. Our study suggests that there can be considerable local variation in the degree to which social partners form cooperative arrangements for advancing skill development. Various kinds of local or regional intermediary organisations can fill the role played by business chambers and central government regulation. The agency of local political leadership also emerges as a critical factor in forging new institutions that establish and sustain cross-sectoral partnerships.

THOMAS F. REMINGTON, Visiting Professor of Government, Harvard University, Cambridge, MA, USA; Goodrich C. White Professor (Emeritus) of Political Science, Emory University, Atlanta, GA, USA; Senior Research Associate, International Center for the Study of Institutions and Development, National Research University Higher School of Economics, Moscow, Russian Federation. *Email*: tremington@fas.harvard.edu

ISRAEL MARQUES II, Assistant Professor, School of Politics and Governance and International Center for the Study of Institutions and Development, National Research University Higher School of Economics, Moscow, Russian Federation.

*Email*: israel.marques.ii@gmail.com; imarques@hse.ru

 <http://orcid.org/0000-0003-4027-6645>

### References

- Acemoglu, D. & J. Pischke (1998) 'Why Do Firms Train? Theory and Evidence', *The Quarterly Journal of Economics*, 113, 1.
- Artamonov, A. (2013) 'Speech at State Council', 23 December, available at: <http://www.admoblkaluga.ru/sub/governor/speech.php?idsp=49>, accessed 27 June 2014.
- Artemov, I. (2012) 'V Kaluge prokhodit i oblastnoi kadrovyy forum', *FK-Novosti*, No. 3–22, 22 March, available at: <http://dlib.eastview.com/browse/doc/26800565>, accessed 15 August 2016.
- Ashton, D., Green, F., Sung, J. & James, D. (2002) 'The Evolution of Education and Training Strategies in Singapore, Taiwan and S. Korea: A Development Model of Skill Formation', *Journal of Education and Work*, 15, 1.
- Ashton, D. & Sung, J. (1997) 'Education, Skill Formation and Economic Development: the Singaporean Approach', in Halsey, A. H., Lauder, H., Brown, P. & Wells, A. S. (eds) *Education: Culture, Economy and Society* (New York, NY, Oxford University Press).
- Ashwin, S. & Clarke, S. (2003) *Russian Trade Unions and Industrial Relations in Transition* (New York, NY, Palgrave Macmillan).
- ASI (2013) *Opredeleny 10 regionov dlya podgotovki rabochikh kadrov po modeli dual'nogo obrazovaniya v 2014 godu* (Moscow, Agentstvo Strategicheskikh Initsiativ), available at: [http://www.asi.ru/news/14773/?sphrase\\_id=777707](http://www.asi.ru/news/14773/?sphrase_id=777707), accessed 15 August 2015.

- ASI (2014) *Sistemnyi proekt 'Podgotovka rabochikh kadrov, sootvetstvuyushchikh trebovaniyam vysokotekhnologichnykh otraslei promyshlennosti, na osnove dual'nogo obrazovaniya'* (Moscow, Agentstvo Strategicheskikh Initsiativ), available at: <http://asi.ru/upload/medialibrary/1ba/%D0%94%D0%9F.pdf>, accessed 6 December 2019.
- ASI (2015) *Metodicheskie rekomendatsii po realizatsii dual'noi modeli podgotovki vysokokvalifitsirovannykh rabochikh kadrov* (Moscow, Agentstvo Strategicheskikh Initsiativ), available at: <https://docplayer.ru/26260106-Metodicheskie-rekomendacii-po-realizacii-dualnoy-modeli-podgotovki-vysokokvalificirovannyh-rabochih-kadrov.html>, accessed 3 December 2019.
- ASI (2016a) *Regional'nyi standart kadrovogo obespecheniya promyshlennogo rosta* (Moscow, Agentstvo Strategicheskikh Initsiativ), available at: <https://asi.ru/staffing/standard/>, accessed 3 December 2019.
- ASI (2016b) *Metodicheskie rekomendatsii po realizatsii dual'noi modeli podgotovki vysokokvalifitsirovannykh rabochikh kadrov, versiya 2.0* (Moscow, Agentstvo Strategicheskikh Initsiativ), available at: [http://www.wikiregstandard.ru/index.php/%D0%A4%D0%B0%D0%B9%D0%BB:%D0%9C%D0%B5%D1%82%D0%BE%D0%B4%D0%B8%D1%87%D0%B5%D1%81%D0%BA%D0%B8%D0%B5\\_%D1%80%D0%B5%D0%BA%D0%BE%D0%BC%D0%B5%D0%BD%D0%B4%D0%B0%D1%86%D0%B8%D0%B8\\_%D0%BF%D0%BE\\_%D1%80%D0%B5%D0%B0%D0%BB%D0%B8%D0%B7%D0%B0%D1%86%D0%B8%D0%B8\\_%D0%B4%D1%83%D0%B0%D0%BB%D1%8C%D0%BD%D0%BE%D0%B9\\_%D0%BC%D0%BE%D0%B4%D0%B5%D0%BB%D0%B8\\_%D0%BF%D0%BE%D0%B4%D0%B3%D0%BE%D1%82%D0%BE%D0%B2%D0%BA%D0%B8\\_%D0%BA%D0%B0%D0%B4%D1%80%D0%BE%D0%B2\\_2.0.pdf](http://www.wikiregstandard.ru/index.php/%D0%A4%D0%B0%D0%B9%D0%BB:%D0%9C%D0%B5%D1%82%D0%BE%D0%B4%D0%B8%D1%87%D0%B5%D1%81%D0%BA%D0%B8%D0%B5_%D1%80%D0%B5%D0%BA%D0%BE%D0%BC%D0%B5%D0%BD%D0%B4%D0%B0%D1%86%D0%B8%D0%B8_%D0%BF%D0%BE_%D1%80%D0%B5%D0%B0%D0%BB%D0%B8%D0%B7%D0%B0%D1%86%D0%B8%D0%B8_%D0%B4%D1%83%D0%B0%D0%BB%D1%8C%D0%BD%D0%BE%D0%B9_%D0%BC%D0%BE%D0%B4%D0%B5%D0%BB%D0%B8_%D0%BF%D0%BE%D0%B4%D0%B3%D0%BE%D1%82%D0%BE%D0%B2%D0%BA%D0%B8_%D0%BA%D0%B0%D0%B4%D1%80%D0%BE%D0%B2_2.0.pdf), accessed 3 December 2019.
- Austin, B., Glaeser, E. & Summers, L. H. (2018) 'Saving the Heartland: Place-based Policies in 21st Century America', Brookings Papers on Economic Activity, BPEA Conference Drafts, 8–9 March.
- Busemeyer, M. (2015) *Skills and Inequality* (Cambridge, Cambridge University Press).
- Busemeyer, M. & Trampusch, C. (2012) *The Political Economy of Collective Skill Formation* (New York, NY, Oxford University Press).
- Capelli, P. (2014) *Skill Gaps, Skill Shortages and Skill Mismatches: Evidence for the US*, NBER Working Paper 20382, August (Cambridge, MA, National Bureau of Economic Research), available at: <http://www.nber.org/papers/w20382>, accessed 2 September 2019.
- Crowley, S. (1997) *Hot Coal, Cold Steel: Russian and Ukrainian Workers from the End of the Soviet Union to the Post-Communist Transformations* (Ann Arbor, MI, University of Michigan Press).
- Culpepper, P. (2000) 'Can the State Create Cooperation?: Problems of Reforming the Labor Supply in France', *Journal of Public Policy*, 20, 3.
- Doner, R. F., Ritchie, B. K. & Slater, D. (2005) 'Systemic Vulnerability and the Origins of Developmental States: Northeast and Southeast Asia in Comparative Perspective', *International Organization*, 59, 2.
- Doner, R. F. & Schneider, B. R. (2016) 'The Middle-Income Trap: More Politics than Economics', *World Politics*, 68, 4.
- Duvanova, D. (2013) *Building Business in Post-Communist Russia, Eastern Europe, and Eurasia: Collective Goods, Selective Incentives, and Predatory States* (Cambridge, Cambridge University Press).
- Estevez-Abe, M., Iversen, T. & Soskice, D. (2001) 'Social Protection and the Formation of Skills: A Reinterpretation of the Welfare State', in Hall, P. & Soskice, D. (eds) *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage* (New York, NY, Oxford University Press).
- Filippov, E. (2013) 'Po sisteme dual'nogo obrazovaniya', *Belgorodskie izvestii*, 16 October, available at: <https://belgorod.bezformata.com/listnews/po-sisteme-dualnogo-obucheniya/14795908/>, accessed 4 December 2019.
- Freinkman, L. & Yakovlev, A. (2014) 'Agentstvo strategicheskikh initsiativ kak institut razvitiya novogo tipa', *Voprosy ekonomiki*, 6.
- Fuller, J. B., Burrowes, J., Raman, M., Restuccia, D. & Young, A. (2014) *Bridge the Gap: Rebuilding America's Middle Skills*, US Competitiveness Project, November (Cambridge, MA, Harvard Business School), available at: <http://www.hbs.edu/competitiveness/Documents/bridge-the-gap.pdf>, accessed 2 September 2019.
- Hall, P. & Soskice, D. (2001) *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage* (New York, NY, Oxford University Press).
- Hoffman, N. (2011) *Schooling in the Workplace: How Six of the World's Best Vocational Education Systems Prepare Young People for Jobs and Life* (Cambridge, MA, Harvard Education Press).
- Hoffman, N. & Schwartz, R. (2015) 'Gold Standard: the Swiss Vocational Education and Training System', *International Comparative Study of Vocational Education Systems* (Washington, DC, National Center on Education and the Economy).
- Hoffman, N. & Schwartz, R. B. (2017) *Learning for Careers: The Pathways to Prosperity Network* (Cambridge, MA, Harvard Education Press).

- Iversen, T. & Soskice, D. (2001) 'Social Protection and the Formation of Skills: A Reinterpretation of the Welfare State', in Hall, P. & Soskice, D. (eds).
- Jackson, G. & Deeg, R. (2008) 'Comparing Capitalisms: Understanding Institutional Diversity and its Implications for International Business', *Journal of International Business Studies*, 39, 4.
- Kovalenko, A. (2014) 'Ne tot eshche kadr', *Ekspert Ural*, 19 May, available at: <https://expert.ru/ural/2014/21/ne-tot-eshe-kadr/>, accessed 4 December 2019.
- Marques II, I. (2017) 'Professional'noe Obrazovanie i Mekhanizmy Gosudarstvennogo Chastnykh Partnerstvo v Rossiyskikh Regionov', *Zhurnal Novoy Ekonomicheskoy Assotsiatsii*, 4, 36.
- Marques II, I., Remington, T. & Bazavluk, V. (2016) *The Adoption of Costly VET Practices in Russian Regions*, Higher School of Economics Working Paper Series WP1/2016/05 (Moscow, Russian Federation, National Research University Higher School of Economics).
- Martin, C. J. (2000) *Stuck in Neutral: Business and the Politics of Human Capital Investment Policy* (Princeton, NJ, Princeton University Press).
- Martin, C. J. & Swank, D. (2012) *The Political Construction of Business Interests: Coordination, Growth and Equality* (Cambridge, Cambridge University Press).
- McGuinness, S., Pouliakas, K. & Redmond, P. (2017) *How Useful is the Concept of Skills Mismatch?*, April, (Geneva, International Labour Organization), available at: [https://www.ilo.org/wcmsp5/groups/public/—ed\\_emp/—ifp\\_skills/documents/publication/wcms\\_552798.pdf](https://www.ilo.org/wcmsp5/groups/public/—ed_emp/—ifp_skills/documents/publication/wcms_552798.pdf), accessed 7 December 2019.
- Park, I. (2007) 'The Labour Market, Skill Formation and Training in the "Postdevelopmental State": The Example of South Korea', *Journal of Education and Work*, 20, 5.
- Pechenova, M. (2016) 'Vzaimovogodnoe soglashenie', *Bezformata*, 18 July, available at: <http://perm.bezformata.ru/listnews/vzaimovogodnoe-soglashenie/48704424/>, accessed 15 August 2016.
- Putin, V. (2013) 'Remarks at Meeting of Oversight Board of ASI', 14 November, available at: [http://www.umpro.ru/index.php?page\\_id=2&n\\_id\\_1=6277](http://www.umpro.ru/index.php?page_id=2&n_id_1=6277), accessed 15 August 2016.
- Putin, V. (2015) 'Poslanie Federal'nomu Sobraniyu', 3 December, available at: <http://kremlin.ru/acts/bank/40542>, accessed 15 August 2016.
- Putin, V. (2018) 'Poslanie 2018', 1 March, available at: <http://kremlin.ru/events/president/news/56957>, accessed 5 June 2018.
- Remington, T. F. (2017) 'Business–Government Cooperation in VET: A Russian Experiment with Dual Education', *Post-Soviet Affairs*, 33, 4.
- Ross, M. & Hauge, K. (2018) 'States Equip Employers to Drive Apprenticeship', Brookings Institution, 23 April, available at: <https://www.brookings.edu/blog/the-avenue/2018/04/23/states-equip-employers-to-drive-apprenticeship/>, accessed 2 September 2019.
- Seawright, J. & Gerring, J. (2008) 'Case Selection Techniques in Case Study Research: A Menu of Qualitative and Quantitative Options', *Political Research Quarterly*, 61, 2.
- Soboleva, T. (2013) 'Mnogo generalov, a soldat tak malo ...', *Belgorodskaya Pravda*, 26 June, available at: <http://www.belpravda.ru/?q=node/2419>, accessed 15 August 2016.
- Stanovov, I. (2013) 'Oboronka pomozhet nashei ekonomike uiti ot syr'evoi zavisimosti', *Birzha*, 23 July.
- Streeck, W. (1992) *Social Institutions and Economic Performance: Studies of Industrial Relations in Advanced Capitalist Economies* (London, Sage).
- Thelen, K. (2004) *How Institutions Evolve: The Political Economy of Skills in Germany, Britain, the United States, and Japan* (Cambridge, Cambridge University Press).
- TPP (2014) 'Rabochie kadry "pod klyuch"', Permskaya Torgovo-Promyshlennaya Palata, available at: [http://permtpp.ru/projects/podgotovka\\_kadrov/kadry\\_pod\\_klyuch/](http://permtpp.ru/projects/podgotovka_kadrov/kadry_pod_klyuch/), accessed 15 August 2016.
- Zhukova, M. (2015) 'Belgorodskoi oblasti predlozhili prisoedinit'sya k proektu podgotovki rabochikh na osnove dual'nogo obrazovaniya', *Bel.ru*, 5 February, available at: [https://bel.ru/news/science/05-02-2015/belgorodskoy-oblasti-predlozhili-prisoedinit'sya-k-proektu-podgotovki-rabochih-kadrov-na-osnove-dualnogo-obrazovaniya?ind=1&page=1&show\\_dt=1](https://bel.ru/news/science/05-02-2015/belgorodskoy-oblasti-predlozhili-prisoedinit'sya-k-proektu-podgotovki-rabochih-kadrov-na-osnove-dualnogo-obrazovaniya?ind=1&page=1&show_dt=1), accessed 7 December 2019.

*Appendix I. List of interviews*

<i>Position and organisation</i>	<i>Region</i>	<i>Interview date</i>
Director, Ulyanovsk Aviation College	Ulyanovsk	30 September 2016
Specialist for Personnel Training, Centre for Cluster Development, Ulyanovsk <i>Oblast'</i>	Ulyanovsk	30 September 2016
1st Prorektor for Distance and Supplementary Education, Ulyanovsk State Technical University	Ulyanovsk	4 October 2016
Director, Dmitrovskii College of Milk Industry	Ulyanovsk	30 September 2016
Director, Department of Vocational Education and Science, Ministry of Education, Ulyanovsk <i>Oblast'</i>	Ulyanovsk	30 September 2016
Director, Dmitrovgradskii College of Professional Technologies, Ulyanovsk <i>Oblast'</i>	Ulyanovsk	30 September 2016
Chief of Staff and General Director (joint interview), Ulyanovsk Design Bureau for Instrument-Building	Ulyanovsk	30 September 2016
Director, restaurant 'Simbirskie vysotki', Ulyanovsk <i>Oblast'</i>	Ulyanovsk	30 September 2016
Director, Dmitrovgradskii College of the Construction Industry, Ulyanovsk <i>Oblast'</i>	Ulyanovsk	30 September 2016
Director, Human Resources, Aviastar SP, Ulyanovsk <i>Oblast'</i>	Ulyanovsk	30 September 2016
Director, Perm' Construction College	Perm'	22 November 2016
Deputy Director for Science-methods Work, <i>Krai</i> College Chernushka	Perm'	22 November 2016
Deputy Executive Director of Personnel, RAO Proton-PM, Perm' <i>Krai</i>	Perm'	22 November 2016
Head of Administration of Vocational Education, Ministry of Science and Education, Perm' <i>Krai</i>	Perm'	21 November 2016
Director, Perm' Aviation College	Perm'	21 November 2016
Director, Perm' Construction College	Perm'	22 November 2016
Director, Department of Professional Development, Trade-Industrial Chamber, Perm' <i>Krai</i>	Perm'	21 November 2016
Deputy Director of Instruction, Perm' Construction College	Perm'	22 November 2016
Head of Department of Training and Personnel Development, AO Information Sputnikovye sistemy imeni Akademika Reshetnikov, Krasnoyarsk <i>Krai</i>	Krasnoyarsk	1 December 2016
Deputy Director for Instruction-Production Work, Krasnoyarsk College of the Service Sphere and Entrepreneurship, Krasnoyarsk <i>Krai</i>	Krasnoyarsk	2 December 2016
Director, Krasnoyarsk College of the Service Sphere and Entrepreneurship	Krasnoyarsk	2 December 2016
Director, Krasnoyarsk Tekhnikum of Industrial Services	Krasnoyarsk	2 December 2016
Deputy Minister of Education, Krasnoyarsk <i>Krai</i>	Krasnoyarsk	2 December 2016
Deputy Director of Systems of Automated Design, Head of Dual Education, AO NPP Radiosvaz', Krasnoyarsk <i>Krai</i>	Krasnoyarsk	2 December 2016
Head of Bureau for Training Personnel, Deputy Director for Personnel Management, AO Kras mash, Krasnoyarsk <i>Krai</i>	Krasnoyarsk	1 December 2016
Director, Scientific-Production Firm 'Rock Pillars', Krasnoyarsk <i>Krai</i>	Krasnoyarsk	2 December 2016
Deputy Chair, Krasnoyarsk Regional Branch of Union of Machine-Builders in Russia	Krasnoyarsk	30 November 2016
Director, Krasnoyarsk Technological Tekhnikum of the Food Industry	Krasnoyarsk	30 December 2016
Executive Vice-chair, Sverdlovsk Branch of RSPP (Russian Union of Industrialists and Entrepreneurs)	Sverdlovsk	23 November 2016
Director, Urals Polytechnical College—Interregional Centre of Competences, Ekaterinburg	Sverdlovsk	24 November 2016
Director, Polevskii Mnogoprofil'nyi Tekhnikum im. V. I. Nazarov, Ekaterinburg	Sverdlovsk	23 November 2016
Director, Verkhnesaldinskii Tekhnikum, Ekaterinburg	Sverdlovsk	25 November 2016
Director, Urals College of Technologies and Entrepreneurship, Ekaterinburg	Sverdlovsk	23 November 2016
Deputy Director for Human Resources, UGMK Holding, Ekaterinburg	Sverdlovsk	24 November 2016
Head of Administration of Development and Recruitment of Personnel, Severskii Trubnyi Zavod, Ekaterinburg	Sverdlovsk	23 November 2016

*(Continued)*

*Appendix 1. (Continued)*

Position and organisation	Region	Interview date
Head of Centre for Training Personnel, Uralvagonzavod, Ekaterinburg	Sverdlovsk	24 November 2016
Head of Department of Vocational Education and State Assignments, Ministry of Education, Sverdlovsk <i>Oblast'</i>	Sverdlovsk	23 November 2016
Head of Instructional Centre of Technopark, <i>Zhigulevskaya dolina</i> , Samara <i>Oblast'</i>	Samara	28 October 2015
Acting Director, Samara Tekhnikum of Industrial Technologies, Samara <i>Oblast'</i>	Samara	29 October 2016
Director, Povolzhskii State College, Samara <i>Oblast'</i>	Samara	27 October 2016
Director, Samara Technical College for Machine-Building	Samara	1 November 2016
Deputy Head of Instructional Centre, RAO Kuznetsov, Samara <i>Oblast'</i>	Samara	27 October 2016
Head of Department of Personnel Development, Instrument Bearings Factory, Samara <i>Oblast'</i>	Samara	27 October 2016
Head of Department of Training, TKTs Progress	Samara	1 November 2016
Director, Novokuibyshevskii State Humanities-Technological College, Samara <i>Oblast'</i>	Samara	28 October 2016
Deputy Director for Innovation, Industrial Technological College, Michurinsk, Tambov <i>Oblast'</i>	Tambov	14 October 2016
Head of Department of Technical Training and Personnel Development, Michurinskii Factory, 'Progress', Tambov <i>Oblast'</i>	Tambov	13 October 2017
Director of Personnel, Agrofirma 'October', Tambov <i>Oblast'</i>	Tambov	14 October 2016
Head of Department of Vocational Education and Science, Ministry of Education, Tambov <i>Oblast'</i>	Tambov	15 October 2016
Head of Instructional Services and Personnel Development, Komsomolets Factory im. Artemova, Tambov <i>Oblast'</i>	Tambov	12 October 2016
Deputy Director for Science-methods Work, Tambov Agro-industrial College, Kirsanov, Tambov <i>Oblast'</i>	Tambov	15 October 2016
Deputy Director for Instruction, Tambov Agro-industrial College, Kirsanov, Tambov <i>Oblast'</i>	Tambov	15 October 2016
Deputy Director for Instruction-upbringing Work, College of Trade, Public Catering, and Services, Tambov <i>Oblast'</i>	Tambov	15 October 2016
Deputy Director for Science-methods Work, Tambov Instrument Building College	Tambov	12 October 2016
Official at the Regional Ministry of Education, Kaluga <i>Oblast'</i>	Kaluga	23 June 2016
Alexei Nikitin, Director, Kaluga Automotive-Building Technical College, Kaluga <i>Oblast'</i>	Kaluga	23 June 2016
Alexei Romanenko, Head of Personnel Development to Volkswagen Russia, Kaluga <i>Oblast'</i>	Kaluga	23 June 2016
Tat'iana Stanislavovna Golovina, Director, 'Young Professionals' Programme for the <i>Agentsvto Strategicheskikh Initsiativ</i> , Moscow	Federal	24 June 2016

*Appendix 2. Case history methodology*

In selecting cases, we sought to identify regions wherein there were active partnerships between firms and vocational schools to improve the quality of technical and vocational education and training (TVET). We began by closely examining the website of the federal Agency for Strategic Initiatives—Russia’s primary government body responsible for working with regional governments to promote firm–school partnerships and cooperative forms of professional education (see main text). We also consulted the website of the Ministry of Education. Using the analytical reports and press releases on these sites, we were able to identify approximately two dozen regions that could be reasonably regarded as leaders in the push for partnerships between firms and schools. We then examined both national and regional press reports about these regions in order to further refine our list of regions.

This review of the press was done using the Integrum internet archive, which covers over 3,520 different Russian-language sources from print, television and internet-based media. In order to structure our review of the press, we used the following query:

(Region Name) AND ((PTU) OR (*Professional’noe tekhnicheskoe uchilishche*) OR (*Povyshenie kvalifikatsii spetsialistov*) OR (*Professional’naya perepodgotovka*)) AND ((*organizatsiya*) OR (*kompaniya*) OR (*firma*) OR (*kholding*) OR (*korporatsiya*) OR ((*obshchestvo ili tovarishchestvo*) (*‘ogranichennoi otvetstvennosti’* OR *aktsionernyi*)) /c5) OR *agentsvo* OR *fond* OR(*gruppa (finansovaya OR promyshlennaya)*/c5) OR *predpriyatiya* OR *zavod* OR *fabrika* OR *kombinat*) AND ((*sotrudnichestvo* OR ((*sovmestnyi* OR *vmeste* OR *soobshcha*)) /c6 (*proekt* OR *deyatel’nost’* OR *usluga* OR *rabota*)) OR *partnerstvo* OR *al’yans* OR((*partnerskii*):2 (*otnoshenie* OR *deyatel’nost’* OR *rabota* OR *proekt*))) /n2))

The query was designed to collect all articles that refer to the region AND included one of a number of different terms for Russian vocational education facilities AND one of a number of terms for Russian companies AND one of a number of terms referring to partnership or cooperation. Additional operators were inserted to ensure that the results included these terms only if the various components were in close proximity to each other.

After a general review, we narrowed our list to three regions. We chose these on the grounds that the sequence of events leading to the adoption of dual education methods was particularly well-documented. Second, they were regularly cited in the national press as models to be emulated. Third, these regions represented three different pathways to the development of their model of firm–school partnerships. For these regions, we then supplemented the results we obtained from Integrum with additional information collected from the sites of the regional government, the Ministry of Education and any other ministries with responsibility over aspects of TVET. We also obtained a list of schools for each region and consulted their annual reports, which often contained information on the types of firms they partnered with and the content of these partnerships.