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# Technical Education in the Middle Income Trap: Building Coalitions for Skill Formation

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**ABSTRACT** *This article analyses variations in the provision (breadth and depth) of skill formation through technical and vocational education (TVE) in secondary education in middle-income countries. A growing consensus blames productivity stagnation for the middle-income trap and advocates more human capital to boost productivity. Building on the extensive political economy literature of skill formation in developed economies, the article emphasises the importance of a more demand-side analysis of skill formation. Fragmentation of social groups in middle-income countries discourages the sorts of coalitions that pushed strong public investment in TVE in earlier developers. Brief analyses of exceptional TVE expansion in Chile, Turkey, and Malaysia suggest the importance of a more top-down dynamic led by strong parties and stable governments that compensated for weaker coalitions.*

*If you do not change the demand for good education,  
it is very difficult to do anything about the supply*

Andreas Schleicher  
Director for Education and Skills, OECD<sup>1</sup>

*Education is the only way to escape the middle income trap*  
Nicolas Eyzaguirre, Minister of Education, Chile, 2014–16<sup>2</sup>

## 1. Introduction

In early 2017, the National Confederation of Industry (CNI) in Brazil sent a seven-page email to its list serve outlining the major policy goals for the year. Of nine different policy areas, education came dead last and included a few minor, generic proposals, after longer, more detailed items relating to trade, infrastructure, environment, taxes, labour law, and other policy areas. This bottom ranking by one of Brazil's leading business associations, despite the poor performance of its educational system (Busso et al., 2017), is emblematic of a general challenge facing middle-income countries: how to put together lasting coalitions to support educational upgrading and skill formation.

Discussions of coalitions are largely absent from writings on economic development in middle-income (MI) countries that emphasise skills shortages and skills mismatches (for example ILO, 2014). These skills gaps are all the more important because low or insufficient skill levels are central to the productivity slowdowns inherent in the middle-income trap (Doner & Schneider, 2016). But while much of literature on the middle-income trap stresses the need for skills development, it is typically written by economists, focuses on best practices, and is largely aspirational in tone. As such,

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it provides little guidance on the question of why effective skill formation is in such short supply in most middle-income countries.

Addressing this question requires first of all recognising the obstacles – the market failures and imperfections – to building skills faced by (all but the largest) individual firms, especially in middle-income countries. Firms in need of skilled personnel often refrain from training their employees for fear of losing newly trained workers to competitors (poaching by other firms), and labour markets generally suffer from information asymmetries, friction, and market failures (for example Acemoglu & Pischke, 1999). In light of these difficulties, solutions to skill shortages have traditionally been collective (Culpepper, 2003). These collective solutions require coordination of multiple actors (firms, providers, related programmes such as apprenticeships, incentives for in-house training, training for the unemployed); they necessitate obtaining and sharing specific and shifting types of information; and they take time to implement (Doner, 2009).<sup>3</sup>

But how do such collective arrangements arise? What would motivate key actors to coordinate? Who are the likely coalition partners? The existing literature pays minimal attention to these questions. One finds little if any discussion of active demand for TVE by relevant actors such as firms, workers, and other groups (Schneider, 2013). Instead, the implicit assumption in much of the economics-inspired literature is that the need for skills development is both evident to key actors and a sufficient stimulus for these actors to come together to demand collective solutions.<sup>4</sup>

Addressing this important gap – clarifying this demand-side question of coalitional pressure for TVE – is the central concern of the present article. Our argument is that demand for skills is anaemic because many large firms in middle-income countries either have low-skilled workers or find individual rather than collective solutions for their skill needs. MNCs – now far more prominent in middle-income countries than in twentieth century developers – often train in-house or they can simply move to other countries that offer the skills they need (Doner & Schneider, 2016). Large local firms are concentrated in natural resources and non-tradeables where skill requirements are often low. Those local firms most in need of skilled workers – typically smaller or medium-sized manufacturers – often fail to provide in-house training owing to a lack of resources or fear of poaching. Further, since SMEs face big barriers to collective action, they are poorly equipped to push for sector-wide programmes. Finally, pressure for training by labour is undermined by divisions between formal workers and the growing informal workforce as well, in some cases between indigenous and migrant workers.<sup>5</sup>

Theoretically, this coalitional question is complex for TVE because it is simultaneously: 1) an input into production (and therefore a potential benefit for, and subsidy to, business), 2) a public good with positive externalities for the economy as a whole (and therefore of interest to policy-makers more generally), 3) a ‘co-produced’ good requiring input from both providers and consumers (Schrank, 2011), and 4) a social investment and crucial means for upward social mobility and reduced inequality, and therefore a concern of poorer groups and social policy-makers (for example Stallings, 2016). This combination of features, further discussed in [Section 2](#) in reference to theoretical debates in developed countries, highlights the potential for mobilising a broad range of potential beneficiaries of skill formation, but it also underscores the collective action challenge of coordinating these multiple and diverse potential beneficiaries and supporters.

Such demand-side issues are central to this article. Our first main contention is that coalitions in support of TVE are weak in middle-income countries and that this situation is rooted in the political economies of these countries. More specifically, politics in middle-income countries in the twenty-first century – reflected in fragmented relations within and among key societal actors, especially business and labour – are less amenable to building the consensus and support for TVE than were politics in other stages or trajectories of development.

Although demand and support coalitions for TVE are generally weak across developing countries, some upper-middle-income countries – Chile, Turkey, and Malaysia – have bucked this trend and have higher levels of TVE. We dig deeper into these cases to explain why they are exceptions. The short answer is that government actors, backed by strong parties with long periods in power, managed to overcome weak societal demand and put together strong programmes, mostly top down. While these

exceptions give some grounds for optimism for countries trying to escape the middle-income trap, the conditions for success – political stability and strong parties – are also in short supply in developing countries. Therefore, the default weak coalitions and demand may continue to impede progress on TVE in most middle-income countries.

The rest of the article proceeds as follows. [Section 2](#) provides basic data on enrolments and public investment in TVE and the wide gaps between high- and middle-income countries. [Section 3](#) explores relevant social science literature on coalitions in skill formation in middle-income countries in comparison with their high-income counterparts. [Section 4](#) turns to three exceptional cases – Turkey, Chile, and Malaysia’s Penang state – to show both the weakness of European-style coalitions and coordination and countervailing strength of political parties and stable government in more effective TVE.

## 2. Cross-national variations in quantity and quality of TVE

Overall, skill formation or the skills regime comprises technical and vocational education at the secondary and tertiary levels (technical and community colleges), apprenticeship programmes, active labour market policies (ALMP) devoted to retraining, and in-house or on-the-job training in firms. We focus mainly (but not exclusively) on TVE in secondary education for several reasons. High levels of secondary TVE were central to twentieth century developers in Europe and East Asia, and represent a large public investment in skills. And secondary TVE is easier to measure cross-nationally than other dimensions of skill regimes, though where possible we add in evidence on these other dimensions.

With lower levels of enrolment in vocational education ([Table 1](#)), overall human capital levels in today’s middle-income countries are not only lower than in the OECD countries and in recent graduates to high income, but also well below what would be expected for their income levels ([Doner & Schneider, 2016](#)). General, as well as more sector-specific technical skills, are consequently in short supply. The result is a low-skill equilibrium in which firms pursue capital-intensive or price-

**Table 1.** Per cent of secondary enrolment in vocational programmes and average PISA and TIMSS scores

	1990	2000	2013	Pisa Math	TIMSS
European Union	27	24	27		
OECD	18	16	17	490	
United Kingdom	11	20	32 <sup>a</sup>	492	518 <sup>c</sup>
Japan	13	13	12	532	586
Korea				524	606
Middle Income	10	9	11		
Upper Middle Income	15	12	17		
Lower Middle Income	5	5	5		
Latin America	16	9	10		
Argentina		16	14	456 <sup>b</sup>	
Brazil		2	4	377	
Chile	23	27	21	423	427
Mexico	13	15	17	408	
Turkey	23	20	22	420	458
Thailand	16	15	16	415	431
Malaysia	5	6	9		465

Sources: World Bank for enrolment data,; <http://databank.worldbank.org/data/reports.aspx?source=Education%20Statistics#>; Pisa data for 2015 (OECD, 2016); TIMSS scores for 2015 (Mullis, Martin, & Loveless, 2016).<sup>6</sup>

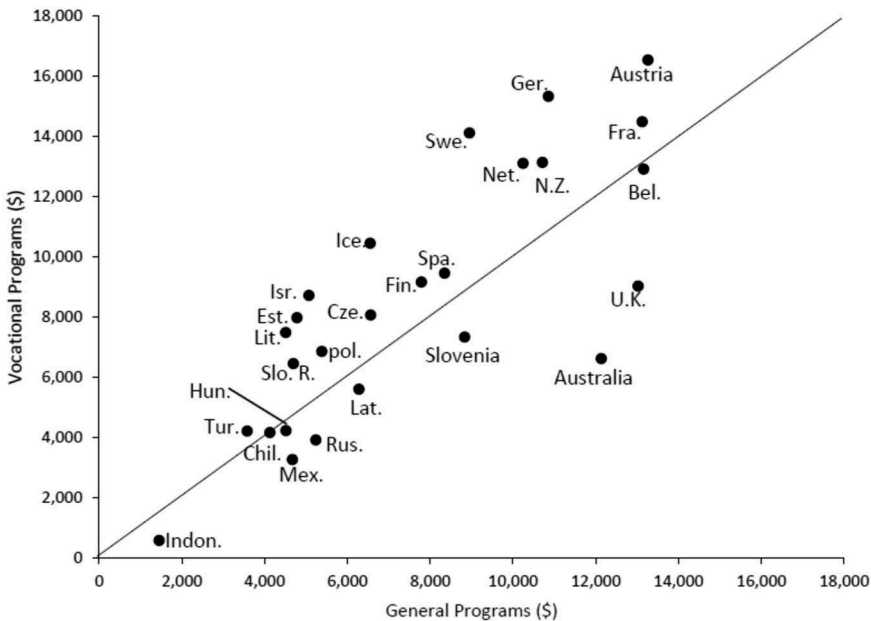
Notes: No enrolment data are available for the United States and Australia. For enrolment data, 1990, 2000, and 2013, or closest year up to two years before or after. <sup>a</sup>The previous year it was 10 per cent, so methods for calculating the proportion may have changed; <sup>b</sup>For the city of Buenos Aires only; <sup>c</sup>For England only.

based, low-skill production strategies for lack of skilled personnel, while workers abstain from investing in skills development because such skills are not valued by employers (Schneider, 2013).

In secondary enrolments, Europe is a global leader in technical education with, since the late twentieth century, around one-quarter of enrolments in TVE. Rates are lower in rich countries outside Europe like Japan (12%) and liberal Anglophone countries, and so too, therefore, is the average for the OECD overall (17%).<sup>7</sup> For all middle-income countries, the average enrolment has been low and flat at around 10 per cent. Enrolment rates are higher and increasing among upper-middle-income countries. However, these averages mask significant variations across upper-middle-income countries. Rates in Latin America have stagnated around 10 per cent and rates in countries like Brazil are really low (4% in 2013). Some richer middle-income countries like Turkey and Chile (actually recently graduated to high income) have enrolment rates over 20 per cent, above the OECD average (though Malaysia trails along at much lower rates) (Section 4 takes a closer look at these three countries).

Enrolments are of course not the only dimension of interest; the quality of instruction matters too. Pisa math and Timss scores in Table 1 give a proxy for performance and quality in the overall education system in the more technical areas of math and science. Pisa scores in the low 400s or below (as in Brazil, Mexico, and Thailand) mean students at 15 years old are about two years behind students in OECD countries.

TVE students in five countries of Latin America scored higher on PISA assessments than students in general education, while in all OECD countries students in general education fared better than those in vocational education (Altinok, 2012; Avendano, 2017). In Latin America, the differences in student scores between vocational and general education were greatest for poorer students. In general, in OECD countries, better performing students are pushed onto the academic or general track. In Latin America, few countries do national tracking, and enrolment in vocational education depends more on family and student choice (Fariás & Sevilla, 2015). And, in Latin America, student



**Figure 1.** Expenditure per pupil in general and vocational education.  
Country n = 28.

Notes: Excludes the outliers Switzerland and Luxembourg. Line is 45 degrees.

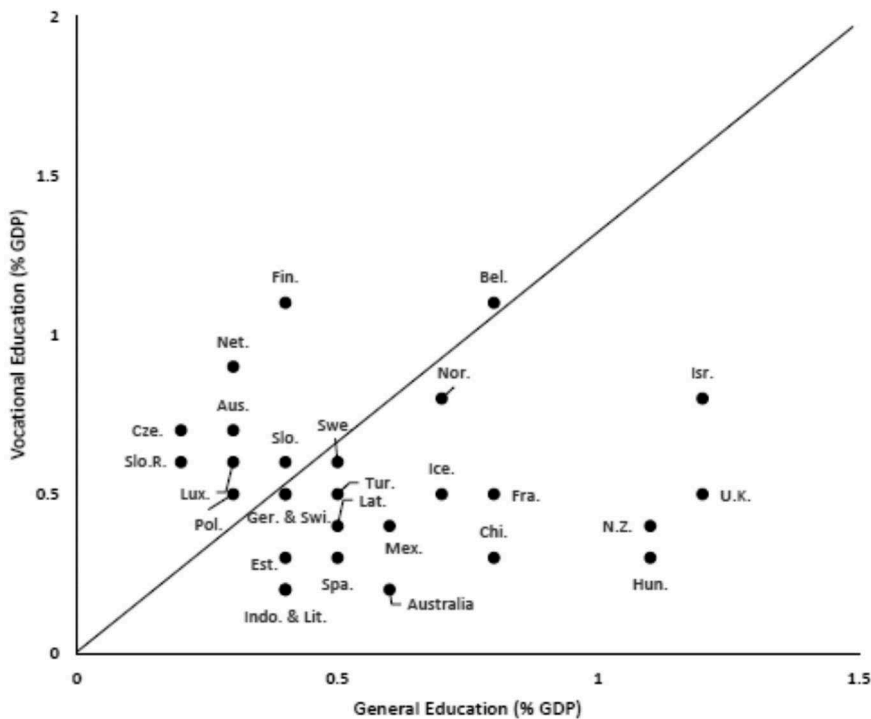
Sources: Education at a glance 2016. OECD publishing. [https://www.oecd-ilibrary.org/education/education-at-a-glance-2016\\_eag-2016-en](https://www.oecd-ilibrary.org/education/education-at-a-glance-2016_eag-2016-en).

motivation to learn (as measured in Pisa surveys) is higher in vocational education and associated with better test performance.<sup>8</sup>

Beyond enrolments, another way to gauge priorities in public education is to compare per pupil spending on students in general and vocational education (Figure 1). Among the countries that spend more per pupil on TVE (countries above the 45-degree line), high-skill systems like Germany and Sweden stand out among high spenders and East European countries at lower levels of spending. Among other large middle-income countries, only Turkey spends marginally more per pupil in TVE. Significantly, liberal Anglophone countries like Australia and the United Kingdom are the countries that spend the least, proportionally, on TVE. Anecdotally, in other countries of Latin America, TVE schools often have better facilities, better qualified teachers, and longer school days than average non-technical secondary schools.<sup>9</sup> Another proxy for relative spending is the student–teacher ratio. For example, in Brazil, the ratio is 26:1 in general upper secondary (more than double the OECD average of 12:1) compared to 12:1 in vocational education (below the OECD average of 14:1) (OECD, 2017).<sup>10</sup>

Another measure of how countries divide resources between TVE and general education is the amounts spent on each as a percentage of GDP (Figure 2). As in Figure 1, the liberal, Anglophone countries and the middle-income countries in the OECD (such as Chile, Mexico, and Turkey) spend more on general education compared to most European and coordinated market economies that spend more on vocational education.

In sum, rates of enrolment in secondary TVE vary across countries with higher rates in northern Europe and lower rates in liberal economies and middle-income countries (with some exceptions like Chile and Turkey). Other measures on spending and Pisa scores provide some indications of



**Figure 2.** Spending on general and vocational education as a per cent of GDP.

Country  $n = 28$ .

Note: Line is 45 degrees.

Sources: OECD/UIS/Eurostat (2017) (<https://dx.doi.org/10.1787/888933560149>).

government priorities and quality differences between general and technical education. The indicators for middle-income countries in Latin America show fairly high spending per pupil and higher Pisa scores in TVE, so TVE should be an attractive alternative for families. The next section examines more closely possible demand coalitions.

### 3. Coalitions and coordination in high- and middle-income countries

The factors underlying coalitions for skill formation in rich countries include the nature of producer group interests and preferences; the ways in which these preferences are articulated by economic institutions (like labour unions and business associations) and aggregated by political parties, and the nature and benefits of trade openness. We consider each of these factors in turn, with an eye to understanding potential obstacles to pro-TVE coalitions in middle-income countries.

#### 3.1. *Business and labour preferences*

Among businesses, many analyses of skill systems in developed countries highlight divergent preferences for training between larger and smaller firms. Large firms prefer in-house training that they can control directly, and SMEs (small and medium-sized enterprises) prefer publicly provided TVE because they cannot afford the cost of training and face a greater risk of poaching (Thelen & Busemeyer, 2012). Among workers, insiders (with stable, formal sector, unionised jobs) are likely to side with their large employers and oppose efforts to provide widespread TVE to train people who might end up competing in labour markets. Public, large-scale TVE, as well as active labour market policies, appeal mostly to smaller firms and to labour market outsiders – those in precarious or informal work or unemployed. In Japan and in liberal market economies (LMEs) like the United States, the large firm/insider coalition prevailed.

In contrast, in coordinated market economies (CMEs) with the most effective TVE systems, big business and their unions favour public provision and are organised enough to shift the costs of training to the public sector while still retaining significant control (through apprenticeships) and reducing poaching (through wage negotiations). Furthermore, to varying degrees and despite differences between them, small and medium-sized firms, especially in Austria, Switzerland, Denmark, and Germany, have been part of this coalition.<sup>11</sup>

Much of the political analysis of skills and TVE in Europe focuses on explaining differences among CMEs and follows Esping-Anderson's classic distinction between Scandinavian social democracy and continental European Christian democracy, especially Germany (Busemeyer, 2015; Iversen & Stephens, 2008). Greater labour power in Scandinavia allows the state to assume greater control over TVE. Business there preferred greater influence, but nonetheless supported TVE. In contrast, in Germany Christian Democracy is a cross-class coalition and favours more business control of skill formation, especially in its apprenticeship system. However, for our purposes, such fine-grained distinctions are less important than the common support coalition – well-organised business associations, labour unions, and allied parties – across all CME cases.

Turning to middle-income countries, the potential for similar pro-TVE coalitions and coordination is fainter because big business is split between foreign and domestic firms, and workers are divided between organised insiders (a much smaller group than insiders in Europe, especially in the late twentieth century) and a larger mass of informal workers.<sup>12</sup> Among firms, many of the largest producers of manufactured goods in the developing world are MNCs moving toward greater capital intensity (for example increased reliance on robotics). Further, the need for flexibility in the face of shifting demand within global value chains resulted in MNCs operating with a small percentage of permanent, relatively skilled workers backed up by a larger proportion of unskilled, contingent workers. And what demand for skills does exist can be satisfied by firm-specific programmes. MNCs, then, are not likely to be active promoters of collective solutions for skill needs.<sup>13</sup>

Nor is there reason to believe that large *local* firms in middle-income countries will offset this flagging demand for TVE as signaled by the opening anecdote from Brazil's confederation of industry. In many middle-income countries, the largest local enterprises are diversified business

groups whose focus on natural resources, services, and related non-tradeables may not stimulate demand for investments in skill. What training does occur is likely to be less sector-wide than highly specialised and in-house for a relatively small number of employees (Bassi, Busso, Urzúa, & Vargas, 2012). The overall result may be low effective demand for skill-formation programmes and even, in some cases, as reportedly in Malaysia, an ‘increase in supply of skilled workers’ but a ‘decline in the overall share of high-skill employment in the economy’ and a rising share of low-skill jobs (Jun, 2016).

Further, small and medium-sized firms – those most in need of collective TVE programmes – are unlikely to be effective advocates for skill formation measures. Preliminary analysis suggests that SME-targeted TVE programmes are less present and effective in developing countries than in the industrialised world, with the revealing exceptions of Turkey and particular sectors in Malaysia (discussed in Section 4). This is presumably due in part to the collective action challenges plaguing large numbers of smaller firms and difficulties posed by the dominant economic positions of MNCs and local business groups.

Labour’s role in skill formation in middle-income countries is also weak. The insider-outsider divisions noted in Europe (Rueda, 2005) seem even more relevant for the middle-income countries owing to de-industrialisation, low levels of unionisation, and the increasing role of contingent, informal sector workers (Schneider & Karcher, 2010). Longer job tenure leads formal sector workers to favour on-the-job training and security of contract. By contrast, constant job shifting leads those in the informal sector to prefer more general training and active labour market programmes, such as public employment centers and subsidised employment (Wietzke, 2015, p. 112).<sup>14</sup>

### *3.2. Interest articulation*

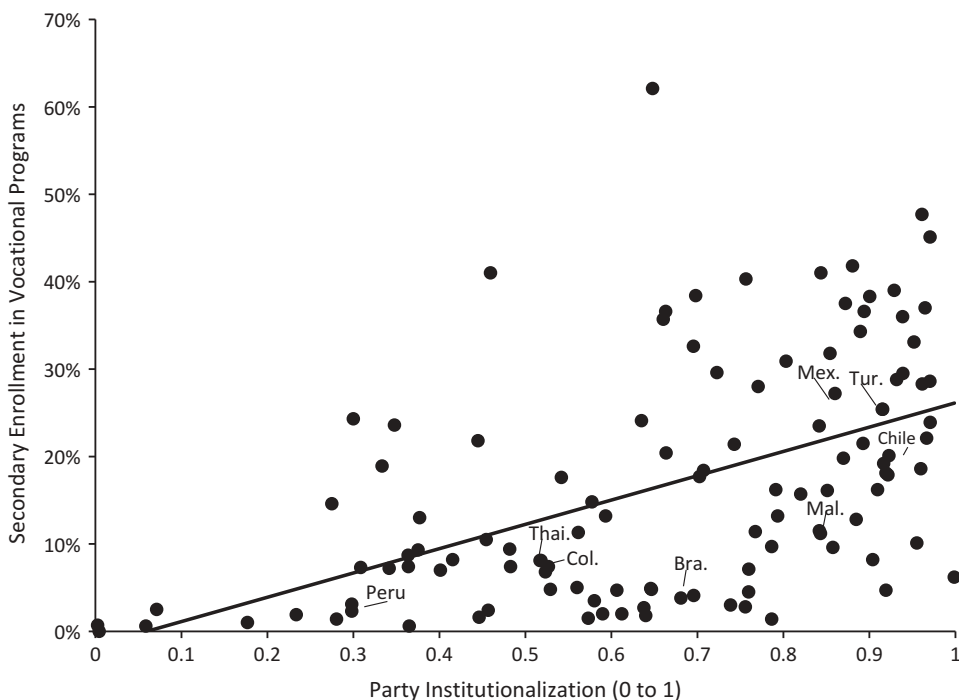
Scholarship on the industrialised countries emphasised the interaction between training regimes and other labour market institutions, especially business associations, unions, and collective bargaining arrangements (Culpepper, 2003). Effective industry-specific training has often been associated with strong, encompassing employers’ groups that not only advocated for training but in some cases played a ‘parapublic’ role in administering and organising training (Culpepper & Thelen, 2008). Similarly, scholars have cited well-organised unions, as reflected in union density and contract coverage, as central to skill formation. Especially in highly open economies, unions facilitated competitiveness through cooperation in training, often through tripartite councils, and wage restraints (Ornston, 2012).

Similar looking corporatist or semi-corporatist arrangements exist in some middle-income countries (in Turkey as discussed later). In Brazil, for example, laws from the 1940s set aside 1 per cent of firms’ payroll expenses to fund national training institutes, like Senai in industry, that is administered directly by business associations (Schneider, 2013). Other countries of Latin America copied this payroll deduction model but governance is usually shared among representatives from business, unions, and government. This adult TVE is often the component of the skill formation system that works the best and connects most closely with businesses and their skill needs. However, business participation is mandated by law, and business interest does not necessarily carry over to supporting the overall TVE system. The Brazilian industry confederation managed Senai, but as noted in the opening anecdote did not otherwise make education a high priority. In Malaysia, despite the expansion of TVE programmes following the 1997 Asian Financial Crisis, industry’s overall engagement with the public sector in these efforts remained largely superficial; workers, for their part, had ‘no voice in this process’ (Cheong, Kuppusamy, Lee, & Abdillah, 2013).<sup>15</sup>

### *3.3. Political parties*

In most middle-income countries, political parties – the institutions theoretically designed to ‘aggregate’ interests – are weaker and less programmatic than the Social Democratic and Christian Democratic parties in Western Europe that provided lasting support for TVE.<sup>16</sup> In Thailand, for example, despite political conflict and massive demonstrations of the past decade and a half, civil





**Figure 3.** Secondary enrolment in vocational programmes and party institutionalisation (2015).

*Note:* Country  $n = 114$ .

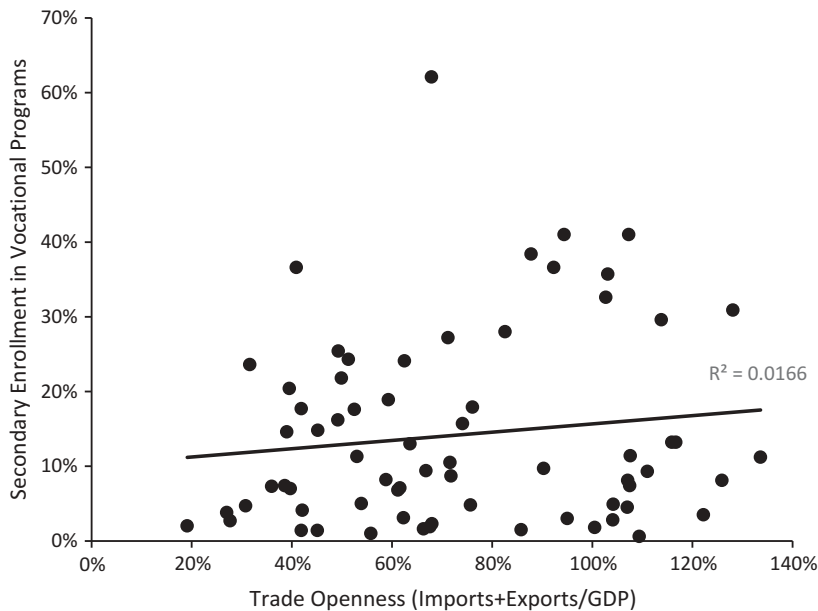
*Sources:* World Bank and Bizzarro et al., 2018 (<https://doi.org/10.1017/S0043887117000375>).

society is disorganised and largely without ties to political parties (Unger & Mahakanjana, 2016). The cases reviewed in Section 4 – Chile, Turkey, and Malaysia – are exceptions in part because their parties were stronger and more enduring than in other large middle-income countries.<sup>17</sup> Figure 3 shows a rough correlation overall between TVE enrolment and a composite measure of party institutionalisation. Chile, Turkey, and Malaysia are all on the high end for party strength.

### 3.4. Trade openness

Although not focused exclusively on TVE or Europe, some scholars argue that trade openness generates demand for education. Birdsall, Pinckney, and Sabot (2001) stress the ‘virtuous circle’ in which pressure for manufactured exports induces investments in appropriate skills. In this market-driven perspective, export-oriented manufacturing in late-developing East Asian countries such as South Korea and Taiwan stimulated initial demand for unskilled workers. Expanding production led to rising wages that, in the context of the need to compete internationally, prompted demand by exporting businesses for more skilled workers and technical training. Conversely, the argument goes, more inward-looking, import-substitution strategies in Latin America lessened pressure for efficiency and stifled demand for skilled labour (Paus, 2016).

Along similar lines, Ben Ansell argues that ‘globalization forces up demand for skills because it facilitates technology transfer. Hence would-be students in developing nations have the most to gain from global integration’ (Ansell 2010, p. 71). In closed economies, by contrast, middle classes oppose mass education because it floods labour markets with skilled workers thereby lowering the skill premia usually reserved for children of the middle class. With trade liberalisation, skill premia are set globally and can remain high even if masses of skilled workers enter the labour force. An important albeit implicit assumption here is a Lewis-turning-point dynamic in which expanding



**Figure 4.** Secondary enrolment in vocational programmes and trade openness for low- and middle-income countries (2015).

*Notes:* Country  $n = 68$ , excluding outliers Singapore, Hong Kong, and Luxembourg. The  $r^2$  for a plot including high-income countries is somewhat higher but still low.

*Sources:* *The World Bank*. Vocational enrolment as in Table 1; trade openness: <https://data.worldbank.org/indicator/NE.TRD.GNFS.ZS?end=2015&start=2014>; and income classification, <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>.

production and growth in the domestic economy drives wages up, in turn prompting employers to demand and promote the supply of more skilled workers.

But the relationship between trade openness and skill formation, as measured by secondary TVE enrolment, is weak (Figure 4). Indeed, on their own, competitive pressures from trade openness have so far been insufficient to stimulate effective demand for TVE in middle-income countries. First, as noted, some combination of robust economic and political institutions (associations, unions, parties) are required to articulate and aggregate potential demand. Second, unlike for the East Asian cases, two factors – the growth of ‘non-standard’ employment layered on to existing informality (Whittaker, Zhu, Sturgeon, Tsai, & Okita, 2010), and extensive influx of migrant workers in the Southeast Asian middle-income cases (Thailand and Malaysia) – have delayed Lewis Turning Point pressures on employers to offset rising wages through investments in technical training.<sup>18</sup>

Third, unlike earlier industrialisers, export success for today’s middle-income countries, especially in manufacturing, typically means navigating global value chains (GVCs). GVCs offer opportunities for firms in developing countries, but these opportunities can become traps if producers get stuck in lower value-added segments of the chain (Pipkin & Fuentes, 2017; Whittaker et al., 2010). Without significant investments in human capital and the institutions that facilitate such investments, few indigenous firms can compete with large, established, often multinational producers capable of meeting GVCs’ rapid product cycles and demanding quality, price, and delivery requirements. Indeed, a recent World Bank report concluded that the ‘economic complexity and institutional sophistication required to upgrade into higher value-added tasks and products over time – in the context [...] of globally integrated lead firms – are lacking in many middle-income countries’ (2017, p. 120). Firms stuck on the low end of the value chain are unlikely to possess sufficient resources to press governments for greater investments in skills. Moreover, the disaggregated nature of GVCs, including their geographic mosaic of specialisation and intermediate goods flows, undermines the

robust domestic linkages among upstream and downstream producers – and thus the potential political leverage of indigenous firms – that facilitated the emergence of pro-TVE coalitions in earlier developers.<sup>19</sup>

In sum, because TVE is institution- and coordination- intensive, strong coalitions are essential to lasting investment in high quality skill formation. However, in middle-income countries, a range of cleavages (across types of firms and workers), as well as weak political parties, impede the kinds of coalition building that drove TVE in earlier developers. And, while trade openness may have spurred business demand for skills in the twentieth century, there is less evidence for such a connection in the twenty-first. Yet, some exceptions exist.

#### **4. Political parties and exceptional TVE in Chile, Turkey, and Malaysia**

Among middle-income countries, Turkey and Malaysia are close to the threshold for graduation to high income, and Chile is just above. As seen earlier, Turkey and Chile have higher levels of technical enrolments and better PISA scores than other middle-income countries (see [Table 1](#)).<sup>20</sup> Although Malaysia is more in line with middle-income country averages for TVE enrolments and educational performance, it had a sophisticated system for skill formation in its core electronics and electrical sector (which accounts for a third of exports). Unusual politics – stable, broad political parties under domestic pressure – in each of these cases makes them more exceptions that prove the rule of generally low demand and weak coalitions for TVE upgrading. As shown in [Figure 3](#), Chile, Turkey, and Malaysia score higher on party institutionalisation than other large middle-income countries. It should be noted, however, that TVE in each of these cases, while better than the middle-income average, still remains of lower quality or more geographically uneven than in Europe.

##### *4.1. Chile: education revolution*

In Latin America, Chile has one of the largest and most developed systems of TVE in secondary education (Bogliaccini & Madariaga, 2017; Sevilla, 2017).<sup>21</sup> Enrolments have expanded steadily from 27 per cent of high school students in 1981 to 45 per cent in 2007, almost doubling in absolute numbers from a little over 200,000 students in 1990 to 400,000 in 2007.<sup>22</sup> Families choose whether to send their children to academic or vocational secondary school, and two-thirds of families in the poorest quintile choose vocation while only 10 per cent of the richest quintile choose vocational education (Iruarizaga, 2009, 7, p. 14). Over 90 per cent of TVE students come from the poorest two quintiles in the income distribution. By the 2010s, 55 per cent of TVE secondary students were in private voucher schools, suggesting strong market demand for technical education (CEPPE, 2013, p. 3). This heavy investment in secondary TVE is mostly school-based without close connections to business (as in European apprenticeship programmes [Fariás & Sevilla, 2015]), and this investment in secondary TVE is not matched by efforts in training of adult or unemployed workers (Sehnbruch, 2006).

Through the late 2000s, the expansion of Chilean technical and general education was largely a story of top-down reform undertaken by a strong and lasting center-left coalition of parties called Concertación (Mizala & Schneider, 2014). For two decades, from 1990 to 2010, voters consistently elected presidents from the Concertación coalition. As one of the few middle-income countries with strong, programmatic parties, Chile's education trajectory fits well in Busemeyer's (2015) partisan and welfare state model of skill formation since the Concertación drew more support from poorer voters. However, unlike social democrats in Europe, Concertación governments plowed resources into all levels of education, including higher education. Enrolments rose (especially in higher education), and Chile outscored the rest of Latin America in PISA league tables.<sup>23</sup>

Tellingly, business was on the sidelines (as was organised labour) through the three-decade transformation of Chilean education. As everywhere, the business association made generic statements in favor of education, but they rarely mobilised (as they did against other policies like tax increases) (Fairfield, 2015). Throughout 2014–2016, during the highly contentious and costly reforms to secondary education, business hardly appeared in the press (Mizala & Schneider, 2017).<sup>24</sup>

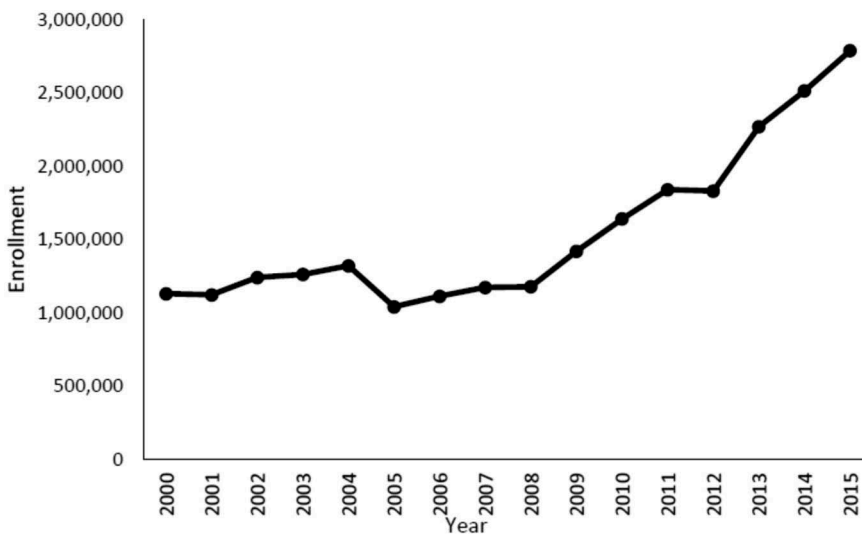
The relative absence of business from the upgrading coalition is likely due in large part to the fact that big business either does not rely on skilled labour or has devised private solutions (Schneider, 2013). The Chilean economy is based heavily on natural resources (copper, agriculture, forestry), sectors where firms either employ few people (mining) or do not require much training (agriculture). Manufacturing is small and does not export much. So, firms in these sectors are not under pressure to upgrade education. Business was also not engaged in expanding ongoing on-the-job training which remained superficial and not well funded. Firms could deduct the cost of training (up to 1% of payroll) but usually used the benefit for short courses for white-collar workers (the average length of training courses was 29 hours). Through the 1990s, only one quarter of available tax credits were being used (Sehnbruch, 2006).

In sum, the push for secondary TVE in Chile came from a long-lasting center-left coalition of parties. This strong party coalition (in part the result of the binomial electoral system imposed by the previous dictatorship) superseded and substituted for bottom-up pressure from business and labour. The divisions noted at the outset in business (local firms and MNCs) and labour (formal and informal) were offset by the cohesion and stability in the Concertación coalition.<sup>25</sup> And, in contrast to European skill systems, organised business and labour were less engaged in coordinating TVE implementation.

#### 4.2. Turkey and the SME alliance

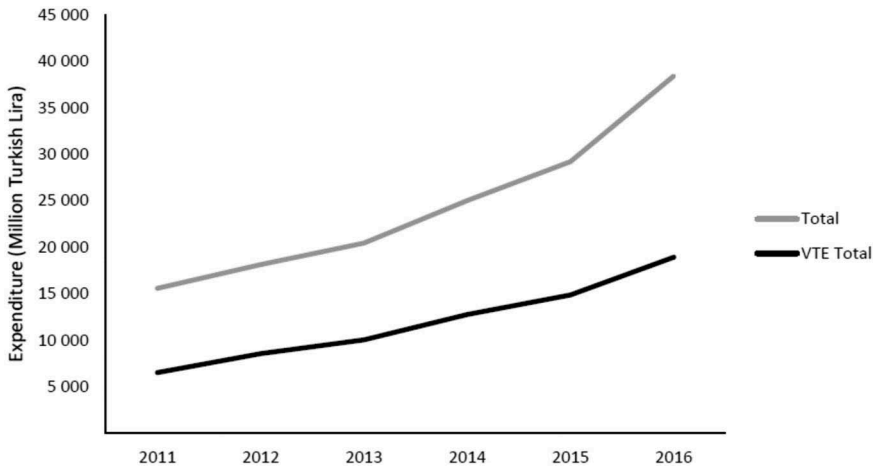
Since 2000, Turkey has expanded enrolments in, and spending on, technical education (Figures 5 and 6). As seen earlier in Figure 1, Turkey was one of the few middle-income countries to spend more per pupil on technical (versus general) education. However, some discounting of the enrolment figures before 2013 is in order because the government classified religious education as TVE (as in training for a religious career, about 10 per cent of TVE enrolments), so the total numbers are not strictly comparable to other education systems (Günlü, 2008). In most middle-income countries, big business dominates relations with governments and SMEs have little influence. However, in Turkey, SMEs were centrally involved in expanding and upgrading technical education after 2000.<sup>26</sup>

Over the course of the 2000s, Prime Minister Erdogan and the AKP (Justice and Development Party) increasingly alienated big business. As in other middle-income countries, big business in Turkey was



**Figure 5.** Secondary enrolment in TVE in Turkey, 2000–2015.

Source: <https://databank.worldbank.org/data/reports.aspx?source=education-statistics~all-indicators>.



**Figure 6.** Spending on upper secondary education, 2011–2016.  
 Source: [https://www.turkstat.gov.tr/Pre Tablo.do?alt\\_id=1018](https://www.turkstat.gov.tr/PreTablo.do?alt_id=1018).

dominated by family-owned, diversified business groups and MNCs (Colpan, 2010; Colpan, Hikino, & Lincoln, 2010) that were well represented in an exclusive association for big business, Tusiad. Big business was generally secular and internationalist and did not actively support Erdogan’s nationalism, Islamism, or ultimately authoritarianism (Özel, 2018).

As relations with big business soured, Erdogan courted associations of Muslim business (Musiad) and other associations with more SMEs. As part of this courtship, the Erdogan government increased funding for technical education and vocational training (Figure 6) and put representatives from business associations on boards to oversee TVE programmes. Although large firms, represented by the association TUSIAD, did have a voice in workforce development efforts, the key private sector intermediary was the semi-public association, TOBB (Union of Chambers and Commodity Exchanges of Turkey, a federation of 365 local chambers). Given that most firms are small, SMEs have a stronger voice in the compulsory TOBB than other voluntary associations (Sancak, 2017). TOBB’s leverage, reflected in its position as a pivotal member in the government’s tri-partite arrangements, is based on its presence in all major Turkish cities, a factor that complements the AKP’s desire to reach citizens throughout the country.<sup>27</sup>

As discussed earlier, in most countries, the common trend is for big business to dominate relations with the government (and big business often solves its skills needs in-house) at the same time SMEs (that have skill needs requiring public solutions) face barriers to collective action and access to political leaders. In Turkey, strained relations between big business and the AKP reduced the influence of big business and opened up opportunities for closer government collaboration with SMEs. However, these exceptional politics help to highlight how hard it is generally – in the absence of special organisation and influence by small business – to construct coalitions that are more attentive to the skill needs of SMEs.

#### 4.3. Malaysia and subnational variation

At first glance, TVE in Malaysia has been relatively neglected. Technical secondary enrolments have been stuck for many years around 10 per cent (Table 1); and as noted earlier, the broader TVE system suffers from limited stakeholder involvement and poor policy coordination. But this national picture masks important sectoral and geographical differences. Here we focus specifically on the electronics industry which, as Raj-Reichert notes in this issue, has been a cornerstone of the country’s structural transformation from an agricultural to industrial exporter, accounting (in 2014) for a third of Malaysian exports, almost a quarter of all jobs, and the majority of manufacturing jobs (see also

Yusuf & Nabeshima, 2009). But as Raj-Reichert also notes, Malaysia's electronics industry has not been an unqualified success. Spillovers to local producers from the MNCs who dominate the industry have disappointed; and the operations of foreign firms, especially the contract manufacturers who employ the majority of electronics workers, have remained largely in low-skill assembly, relying on the country's large and flexible supply of migrant workers.

While accurate as an *overall* view of the electronics sector, this assessment neglects significant instances of upgrading in the state of Penang and the importance of strong TVE in this process; the engagement of the private sector in this sub-national, state-led upgrading process; and the importance of political motivations for this sub-national state leadership.<sup>28</sup>

Penang's workforce includes not only an impressive number of scientists and engineers (several times the national proportion), but also a large number of workers trained in the Penang Skills Development Centre (PSDC), an institution widely acknowledged to have been one of, if not the, most successful source of skills development in the country (Hutchinson, 2014, p. 90; Yusuf & Nabeshima, 2009). Established in 1989 as a public-private partnership, the PSDC initially offered 32 courses for roughly 500 students. By mid-2015, it offered 375 courses for 7,000 students, having graduated over 200,000 participants. The private sector has been key to the PSDC from the beginning. Over 80 member companies have been involved in encouraging resource sharing among members, overseeing training needs analysis, and evaluating course effectiveness (Best & Rasiah, 2003). Industry has 16 members of the PSDC's governing tripartite council (along with six from government and two from educational institutions).

This dense institutional ecology initially emerged in the 1970s and 1980s out of the political sensitivity of the Penang state government (or rather of the ethnic Chinese party that dominated the state), 'to the needs of small and medium-sized firms' (Rasiah, 2001). That sensitivity reflected the coalitional bases and lack of easy access to resource revenues of Penang state elites. Whereas elsewhere in Malaysia, Chinese ethnicity was largely separated from and subordinate to (ethnic majority) Malay political power, Penang exhibited a convergence between local, ethnic Chinese-owned machine-tool firms and the state's political leadership, mediated by the dominant, largely ethnic Chinese political party. Indeed, the leading party's dominance depended on relatively broad-based support within the local Chinese community. Moreover, the party-led state operated under hard budget constraints after the state lost its position as the country's major port. Penang's political leadership thus lacked the resources to subsidize or bailout local firms. This was, then, a coalition based on local producers, but one developed top-down by a party lacking easy revenues to address an active constituency and operating within the institutional space afforded by Malaysia's federal system. Although other parties and elites have followed in Penang government, they have maintained the institutions like PSDC that have continued to provide extensive TVE training.

Rather than a type of bottom-up coalition based on the explicit needs and organisation of business and labour seen in Western Europe, the Penang story is closer to the initially state-promoted coalitions seen in Korea, Taiwan, and Singapore, each of which involved a stable political party responsive to broad constituency pressures (although initially under authoritarian auspices) and few easily accessible revenues with which to satisfy these pressures.

However, the impact of the Penang experience on the rest of Malaysia remains limited. The same federal system that afforded party-led governments significant autonomy has constrained spillovers to the two other major electronics cluster in the states of Selangor and Johor where ethnic (pro-Malay) goals take precedence over skills and competitiveness (Hutchinson, 2014). Nor has the PSDC had much impact on TVE at the secondary level. This is in part due to the fact that the PSDC's close ties to industry encourage a post-secondary focus.<sup>29</sup> But it also reflects the ways in which the highly centralised nature of primary and secondary education has precluded input from local institutions such as the PSDC (Clark, 2014).

These brief country vignettes are not meant to provide policy or coalitional templates for solving the obstacles to education upgrading in middle-income countries. Rather, they show some of the exceptional circumstances that have allowed some countries to find solutions. Despite their

differences, the presence of strong, that is institutionalised, parties is a common feature of these cases (as seen in [Figure 5](#)). The Chilean and Turkish cases show the benefits of both lasting government coalitions (though with increasingly authoritarian features in Turkey) and strong partisan commitment by center-left parties in Chile and the SME connected AKP in Turkey. The story in Malaysia shows that subnational and sectoral politics, again involving active parties, can be more conducive to coalition building for TVE even when national politics are not.

## 5. Conclusions

We have argued that the provision of high-quality TVE is institution-intensive and that supportive coalitions have been traditionally necessary for the construction of such institutions. We have also argued that, in middle-income countries, business demand for these institutions is in short supply. The core divide between large and small firms seems just as, if not more, crucial for skills in the twenty-first century as it was in the twentieth century, largely for the same reasons that SMEs lack the resources to train their workers (as larger firms, especially MNCs, can) and so are more likely to press for collective solutions to their skill needs.

What then can we learn from the three exceptional cases of Chile, Turkey, and Malaysia/Penang where greater investment in skills *has* taken place? Perhaps the most important common element has been the crucial role of political parties. In principle, strong, institutionalised parties can facilitate pro-TVE coalitions by 1) lengthening the time horizons of politicians who can think about longer-term programmes; and 2) by putting together policy coalitions that would not necessarily form in the absence of parties as seen in both Turkey and Malaysia (Bizzarro et al., 2018, p. 280). When smaller firms are more valuable in electoral terms, parties may be more solicitous in seeking SME support, and increased investment in TVE can be an excellent way to court them.

Yet even with stable parties attempting to address political pressures, efforts to fashion pro-TVE must address challenges noted earlier. To start, the ‘compressed’ nature of today’s global production limits local firms’ opportunities to learn by working through cumulative stages of development. The stringent market requirements and integrated nature of GVCs have strengthened the role of large, foreign producers in mid- and up-stream segments and reduced opportunities for linkages between final producers (often MNCs) with indigenous suppliers, thus further limiting the potential for pro-TVE coalitions of local firms. The pressure to automate in the face of tough market demands resulted in firms absorbing fewer workers, and engaging in practices that ‘upskill a minority but “flexibilize” the majority’ (Whittaker et al., 2010). Low job tenure rates and movement in and out of large informal sectors both weaken any labour component of a pro-TVE coalition and complicate planning for skill acquisition. All of this leaves even the relatively strong parties of our three exceptions without the kinds of robust, organised social bases seen in the advanced coordinated market economies and, correspondingly, weaker TVE. Finally, even where conditions facilitate strong subnational and/or sector-specific TVE, the challenges of diffusing such achievements to other regions and sectors are significant. Improving our understanding of the conditions facilitating such ‘pockets of excellence’ and the obstacles to scaling them up and out constitutes an important next step in analysing skill formation in middle-income countries.

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## Disclosure statement

No potential conflict of interest was reported by the authors.

## Notes

1. Rothman blog interview. <http://ncee.org/2017/09/after-the-shock-the-german-education-system-in-2017/>, accessed 24/6/18.
2. <http://www.elmercurio.com/blogs/2014/07/20/23672/Eyzaguirre-devela-el-misterio.aspx>, accessed 4 June 2015.
3. From the European experience, these collective solutions do not emerge out of some spontaneous process of inter-firm cooperation but rather result from economic institutions, such as business associations, public-private consultative councils, and company-union councils, capable of promoting collective action through effective consultation, monitoring, and credibility in rewarding and sanctioning members (Busemeyer & Trampusch, 2012; Crouch, Finegold, & Sako, 1999).
4. For example, 'political leaders can build effective proreform alliances of business leaders and civil society through communications campaigns that paint a compelling picture of the current failures of the education system and the importance of better education for economic competitiveness.' (Bruns & Luque, 2015, p. 48).
5. Our emphasis here is on the role of business. For more on labour, see Doner and Schneider (2016).
6. Sevilla (2017) provides different calculations for Latin America for the proportion of upper secondary enrolments in 2013 in technical, professional education: Argentina 16 per cent; Brazil 8 per cent; Chile 40 per cent; and Mexico 38 per cent. Although the magnitudes differ, the order of the countries is the same as the World Bank data. We use the World Bank data here and in subsequent figures to facilitate comparisons with other regions.
7. Despite its low levels of technical enrolment, Japan has a highly skilled workforce in manufacturing. This is due to the skilling done by companies in the context, historically, of lifetime employment. Liberal economies like the United States provide little technical training at the secondary level, in part because they rely more on general skills (Estevez-Abe, Iversen, & Soskice, 2001).
8. In Thailand, students from well-to-do families are more likely to undertake vocational education and enjoy higher earnings than is the case for general education (Moenjak & Worswick, 2003).
9. Interview with Santiago de la Barrera, coordinator for the national council for technical education in Argentina, 10 August 2016.
10. Since teacher salaries account for most education spending, the much lower student-teacher ratio in TVE in Brazil implies a much higher spending per pupil than in general education or somewhere well above the 45 degree line in Figure 1.
11. This should not be taken to minimise large versus small firm differences. Culpepper and Thelen (2008) note that in the quintessential CME, Germany, market and technological developments have raised the costs of training, which small and medium-sized firms find increasingly onerous. Indeed, Culpepper (Culpepper, 2007) explores *differences among CMEs* by highlighting the tendency for larger employers to favour higher skill levels, as reflected in support for 'tertiary vocational training' (similar to American community colleges) versus smaller firms' tendency to discourage such tertiary training to protect cheap labour procured through apprenticeships.
12. Doner and Schneider (2016) provide a more extended discussion of these cleavages in middle-income countries and their relative absence in developed countries.
13. In Mexico, in one perverse instance, the entry of MNCs led to a reduction in skills as students left school early to take unskilled jobs (Atkin, 2016).
14. However, the informal-formal distinction is blurred on other issues as workers often shift between formal and informal employment (Baker & Velasco-Guachalla, 2018; Perry, 2007).
15. Other weaknesses include poor policy coordination; unstable funding allocation; lack of clarity on funding criteria; and a lack of accountability owing to poor access to data (Cheong & Lee, 2016; see also Felker, 2017). In Thailand, heightened concerns about competition from lower wage competitors, such as Vietnam, has triggered an extensive number of public-private sector initiatives designed to strengthen the technical workforce (for example Chalassatien, 2016). The results of these efforts are not yet clear.
16. Following Bizzarro et al (2018, p. 286), we understand party strength to be a function of permanent national (or regional) party organisation, permanent local party branches, centralised candidate selection, legislative cohesion, minimal party switching, and programmatic rather than clientelist linkages to key social bases.
17. The Malaysian and Turkish exceptions are, furthermore, consistent with the argument that proportional representation (PR) systems are more effective than majoritarian electoral systems in facilitating the kinds of long-term collective action and negotiation among key interests required for effective TVE (Hall & Soskice, 2001; Iversen & Stephens, 2008).
18. See Raj-Reicher, this volume. A 2013 World Bank analysis warned that even as Malaysia's continued reliance on foreign workers for low-skill work can help ease labour shortages, in the long-run, it 1) perpetuates 'a low labour-cost model that impedes production upgrading through technology,' and 2) 'breeds a mentality of reliance on this model and a lack of incentive to drive productivity growth' (Cheong et al., 2013). Reliance on low-skill migrants was intensified with an acceleration of *out-migration* by skilled workers during the 1990s, just as the economy began its drive toward upper-middle and high-income status (Felker, 2017). On similar problems in Thailand see Voravid (2013).
19. The above-noted (2017, p. 123) World Bank report pushes the trade openness argument further by stressing the benefits of export *diversification*. While diversification may be a necessary condition for escaping the trap, the case of Thailand, a country with a highly diversified export basket, runs counter to the idea that diversification is anywhere near a sufficient condition.
20. Turkey and Chile are also exceptions as the first two of the three countries. Indonesia is the third poorer country to participate in 2014 in Piac (Program for the International Assessment of Adult Competencies). By 2016, Mexico,



- Hungary, Ecuador, and other poor countries joined. Piacc measures basic literacy, numeracy, and problem-solving skills among the entire adult population. Although Chile and Turkey ranked below richer countries, the fact that they were eager to join the survey demonstrates a government concern with skills. <https://oecdskillsandwork.wordpress.com/2016/06/28/the-survey-of-adult-skills-nine-more-countries-added-on/>, accessed 18 August 2018.
21. Moreover, 44 per cent of tertiary enrolments are in TVE (Bernesconi and Sevilla, 2017). These authors note massive increases in scholarship funding for TVE in the 2000s despite the ‘negligible’ ‘political clout of the sector’ (p. 144).
  22. These numbers use different calculations from those used by the World Bank in Table 1. We use these different estimates here because they capture more over time variation.
  23. In the 2010s, however, education politics on many issues shifted to more bottom-up pressures; massive, sustained student protests with strong backing in public opinion surveys helped a new center-left coalition elected in 2013 to push through a whopping tax increase of 3 per cent of GDP and shift these new resources directly into education (Mizala & Schneider, 2017). However, the main policy initiatives after 2014 focused on reforming the voucher system, teacher careers, and financing higher education. TVE was not a central issue.
  24. The pre-1990 dictatorship had transferred some technical schools to business associations and had devised a tax scheme that put business in charge of ongoing training. However, the business-run technical schools were a small proportion of all technical enrolments.
  25. Also worth mentioning is the support from the private sector owners of schools and as providers of TVE (55% of secondary level and almost 100% at the tertiary level).
  26. This discussion of Turkey comes from Sancak (2017) and Sancak & Özel (2016) who also emphasise the support for Turkish TVE that came from the European Union. Also, from personal communication from Merve Sancak (16 January 2018).
  27. Coordination over skills also varied regionally within Turkey. Apaydin (2012) finds better coordination in Bursa than Istanbul (and also better than in Córdoba, Argentina).
  28. Unless otherwise noted, the following discussion draws on Felker (2017, p. 23–25) and on author interviews, conducted in November, 2017 with Greg Felker, in Penang with managers from Motorola, Intel, Clarion, Symmid, Oram, as well as with officials of the Penang Skills Development Corporation (PSDC) and the Collaborative Research in Engineering, Science and Technology (CREST).
  29. Personal communication from CEO of PSDC, 8 January 2018.

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