

The Employer's Dilemma: Employer engagement and progress in vocational education and training reforms

Employer engagement and progress in vocational
education and training reforms

Working Paper

Author(s):

Caves, Katherine Marie ; Renold, Ursula 

Publication date:

2016-12

Permanent link:

<https://doi.org/10.3929/ethz-a-010799048>

Rights / license:

In Copyright - Non-Commercial Use Permitted

Originally published in:

KOF Working Papers 423

KOF Swiss Economic Institute

The Employer's Dilemma

Employer engagement and progress in
vocational education and training reforms

Katherine Caves and Ursula Renold

KOF Working Papers, No. 423, December 2016

KOF

ETH Zurich
KOF Swiss Economic Institute
LEE G 116
Leonhardstrasse 21
8092 Zurich, Switzerland

Phone +41 44 632 42 39
Fax +41 44 632 12 18
www.kof.ethz.ch
kof@kof.ethz.ch

The Employer's Dilemma

Employer engagement and progress in vocational education and training reforms

Katherine Caves

Ursula Renold

Author Note

Katherine Caves*, KOF Swiss Economic Institute, ETH Zurich, Switzerland

Leonhardstrasse 21, 8092 Zurich, Switzerland.

+41 44 632 68 12; caves@kof.ethz.ch

**Corresponding author*

Ursula Renold, KOF Swiss Economic Institute, ETH Zurich, Switzerland

Leonhardstrasse 21, 8092 Zurich, Switzerland.

+41 44 632 53 29; ursula.renold@kof.ethz.ch

Content

Abstract	3
1. Introduction	4
2. Theory	7
2.1 Operationalizing employer engagement.....	10
3. Literature	12
4. Method	13
4.1 Data	14
4.1.1 Employer engagement scores	15
4.1.2 Outcome scores.....	18
5. Results	19
6. Conclusions	20
References.....	23

Abstract

Employer engagement is a critical part of vocational education and training (VET). However, we know little about forms of employer engagement in the implementation of VET reforms. Employers can be advisors, or can be given roles and responsibilities throughout the cycle of VET processes: helping design curricula, providing workplace training during VET application, and providing feedback or initiating updates. The latter approach asks much more, but the former creates a prisoner's dilemma where participating firms risk losing their investment to poaching from refraining firms. In the higher-engagement model, employers coordinate with other companies in their sectors and invest, then have the opportunity to earn returns—often during the training period. We follow eight international VET reforms through their first year. We find that cases where employers are highly engaged make more progress, excepting powerful top-down reforms. High employer engagement seems riskier because of the greater investment by firms, but the returns it generates lets high-engagement reforms sidestep the prisoner's dilemma and improve implementation progress.

Keywords: vocational education and training, education reform, implementation, employer engagement

1. Introduction

In most countries outside of the Germanic and Nordic countries (Hoffman, 2012), the education system is the supplier of skills into the labor market and employers act only as consumers. In this one-way model, the education system is responsible for the entire process of vocational education and training (VET) and firms simply take the skills available to them. However, given alarming rates of skills mismatch and youth unemployment (Pusterla, 2016; Livingstone, 2009), many countries, states, and municipalities are planning to or are in the process of reforming VET to meet employers' skills demands (Symonds, Schwartz, & Ferguson, 2011; Lerman, 2013). These reforms acknowledge meeting employers'¹ demand for skills as part of the skill-building purpose of education (Sung, Raddon, & Ashton, 2006).

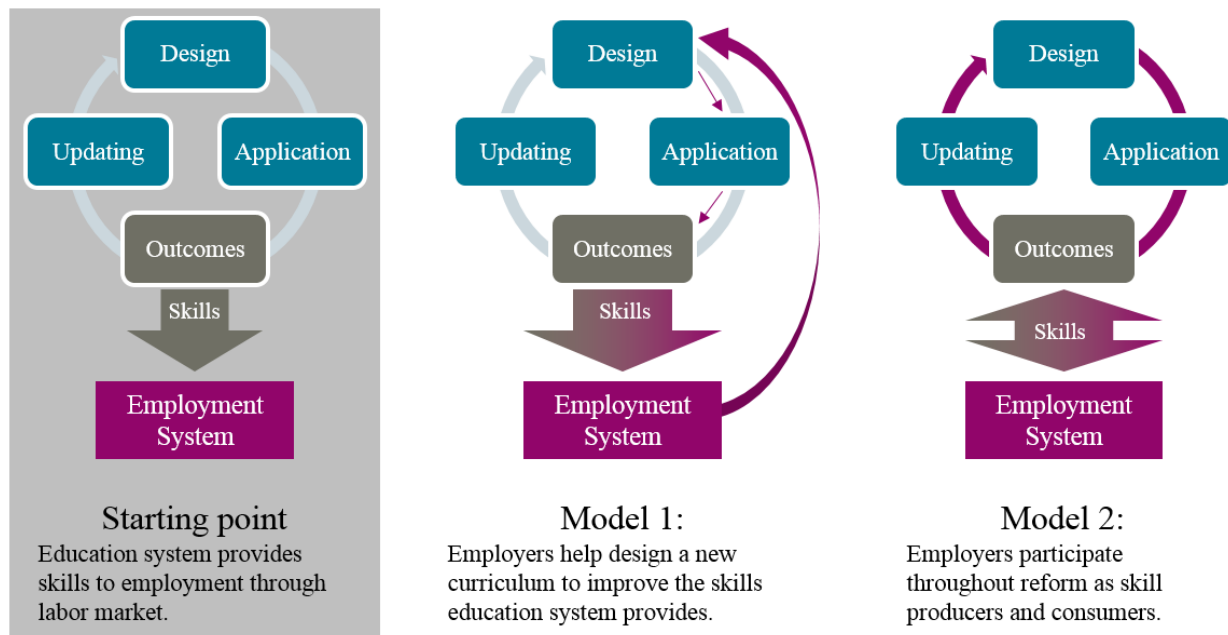
VET-oriented reforms broadly take one of two forms, shown in Figure 1. In the first, employers are asked to participate only in the curriculum design phase as formal or informal advisors on curriculum content. The curriculum they help design is then applied, and the idea is that the resulting graduates should have skills that better match the needs of the labor market. In contrast, the second model asks employers to participate throughout the cycle in the design, application, and updating of the VET curriculum. In this model, employers not only help design the curriculum but also help teach it and ensure that it remains up to date. The commitment for employers is much larger, and their role shifts from consumers of skills to both producers and consumers of skills (Cunningham & Villaseñor, 2016; Billett & Smith, 2003).

The commitment and level of change for employers is higher in the second model, but we argue that the first model of reform—in which employer retain their role as consumers of skills and participate only in the curriculum design phase—creates a prisoner's dilemma that makes it irrational for any company to participate sustainably. If a firm invests its time and expertise in a curriculum redesign and its competitor chooses not to, the investing firm will lose some graduates to its competitor who gains from their enhanced skills without investing (Pilz, 2013; Acemoglu & Pischke, 1996). Therefore, no rational firm

¹ The demand side for VET can also include other entities, see Billett (2000)

should participate at all or with sufficient investment of people or time to create a quality program. If employers choose to reduce instead of eliminating their investments, though, the resulting low-quality program is unlikely to solve the problem the reform sets out to solve and at risk of being dropped (as in Lehmann, Taylor, & Wright, 2014).

Figure 1: Two models of VET system reform



Employer engagement is a known component of strong VET programs. Education-employment linkage—the level of power sharing between actors from the two systems—in a single VET program is positively related to youth labor market outcomes on a national level (Renold et al., 2016), and VET programs in which employers are fully engaged throughout all processes are more cost effective (Wolter, 2016). Dual VET is more effective overall than school-based VET (Eichhorst et al., 2015), since it improves learning, skills matching, and the transition of youth into employment (Bolli & Renold, 2015; Hoffman, 2011).

While there is evidence supporting employer engagement in VET generally, we know much less about the role of employers in reform implementation. According to Sung, Raddon, and Ashton (2006), VET studies tend to focus on students and ignore employers, privilege the supply of skills into the labor market from education over the demand side of skills from the labor market by employers, and fail to

clarify the complex relationships among actors or system features. General education reform implementation literature is scarce but suggests that changes should be made at the system level whenever possible, and points out the risks of misaligned incentives (Fullan, 2016). It is not enough to provide a curriculum, a good reform also includes the materials, resources, and infrastructure that will be necessary to teach it and keep it up to date (ibid). The same literature also cautions against the tendency to over-plan an educational reform, best exemplified by Reeves' (2009) well phrased statement that "the size and the prettiness of the plan is inversely related to the quality of subsequent action and its impact on student learning" (p. 81). This paper addresses the information gap around implementing VET reforms.

In this paper, we follow eight VET reforms through the first year of their projects to investigate whether employer engagement in the reform matters for its progress. The eight case studies come from countries, states, and municipalities in the United States, Europe, Asia, and Australia. The starting VET context of the reforms ranges from nonexistent college-for-all models to elaborated VET systems with stackable credentials and at least some crosswalks among career and educational pathways. All eight projects stated goals to engage employers in their reforms when they finalized their plans at the start of this research project, and went on to take different approaches to employer engagement in the reform process itself and the plan for the VET system that should result from the reform. We hypothesize that reforms where employers are fully engaged throughout design, application, and updating will progress more in their first years than those in which employers play a role in curriculum design only. We find this to be true, unless a strong top-down government is driving the reform.

This paper does not address the quality of the reforms or their impacts on students—the projects are too young and the research is ongoing. However, in order to have an effect of any kind on students, youth labor markets, or employers' access to necessary skills, the reforms must first occur. We explore employer engagement in VET reforms to better understand the principles and pitfalls of implementation and reform for VET.

2. Theory

The prisoner's dilemma is a familiar concept from game theory. It describes a situation in which both parties benefit most from choosing a collaborative option but also stand the greatest risk by choosing that option if the other party does not. As a result, the equilibrium outcome of these problems is that both parties should choose the less-beneficial but also less risky individualistic choice (Osborne, 2004; Kreps, Milgrom, Roberts, & Wilson, 1982).

In terms of this research, the game is played when a VET reform asks for employers' participation in the curriculum design phase of a reform. The players are two (or more) firms, Firm A and Firm B. Each has the option to participate or refrain from the reform, either investing time, personnel, and expertise or refusing to do so. When both firms participate, they both stand to earn the highest positive return in the form of skilled graduates. When both refrain, they are neutral and the status quo remains. However, if one firm participates and the other does not, then the investing firm loses at least part of its investment and the refraining firm gains at least some skilled workers or workers whose skills are at least partly relevant, and does so for free. This situation is a loss for the participating firm and a gain for its refraining competitor, so the firm will either foresee this, refusing to invest initially, or immediately revoke its investment when the situation becomes clear. As a result, the reform is either a non-starter or quickly collapses. This situation is illustrated in Figure 2.

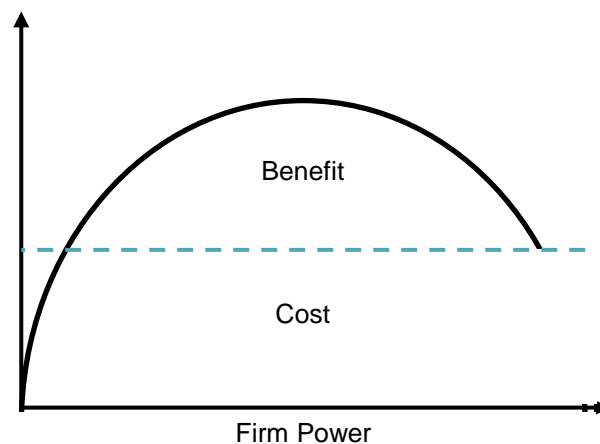
Figure 2: Prisoner's dilemma in design phase-only reforms

		Firm A	
		Participate	Refrain
Firm B	Participate	+, +	-, +
	Refrain	+, -	0,0

There is a special case when only one firm exists in a given geographical area, or when there is only one firm in its industry in the same area. This case of monopsony—a single consumer, the mirror image of a monopoly's single producer—changes the game somewhat. In this case, the employer does not need to worry about the actions of its nonexistent competitor but rather about how much power it will

have in the curriculum design process. If the firm has absolute power, its situation will simply be the status quo and it will neither gain nor lose. If the education system retains all power during the curriculum design process and ignores the firm's suggestions, then problems arise: the firm loses whatever investment it made in assisting curriculum design and gains no skilled graduates later on. Somewhere in the middle, where power is shared between education and the advising firm, there is a potential benefit for the firm. Its suggestions will be taken into account, and graduates will have skills that better match its needs as a result. This relationship, depicted in Figure 3, is similar to Renold et al.'s (2016) concept of education-employment linkage as power sharing between the education and employment systems.

Figure 3: Firm's returns relative to power in the monopsony case



However, while the firm is likely to benefit, the government—through the education system—will be investing in firm-specific human capital instead of general, which is not necessarily its role (Becker, 1962). Even with a more generous view of skills as inherently general, the weighted bundle of skills provided to students will be specialized to a specific firm (Lazear, 2009). Governments invest in education to provide general more than specific human capital (Becker, 1962), so the education system may start to question its participation in this situation.

In the second model of reform—the one in which firms are asked to participate throughout the reform process—the game is very different. The critical change is that firms are able to earn back their costs or even a return on their investments during the training period when they participate in training apprentices. Wolter, Muehleman, and Schweri (2006) show that firms in successful VET systems participate because they at least break even on training and choose not to participate when they cannot

do so. The costs of training—curriculum design participation, trainers' time and salaries, machinery, tools, equipment, and apprentices' salaries—are balanced or exceeded by its benefits: apprentices' skilled work and unskilled work during training, and reduced hiring and recruiting costs later on. From a theoretical point of view, this echoes the argument that firms should only agree to train general or transferrable skills when they can earn back the non-firm-specific training investment (Acemoglu & Pischke, 1996; Wolter & Ryan, 2011). Given all that, firms stand to at least break even and possibly gain regardless of what their competition chooses to do.

Figure 4: Game of participation in employer-engaged reforms

		Firm A	
		Participate	Refrain
Firm B	Participate	+, +	+, -
	Refrain	-, +	-, -

In this game, reformers ask employers to participate throughout the design, application, and updating of reforms instead of only in curriculum design. Therefore, the participating firm benefits or at least breaks even regardless of the other firm's choice. This game—shown in Figure 4—is very simple, and its equilibrium state is one in which all firms who are able to earn a return on training choose to participate. This matches the real-world findings that Swiss firms train when it is profitable for them to do so, and those whose industry, idiosyncrasies, or location somehow prevent them from earning returns choose not to train (Wolter, Muehleemann, & Schweri, 2006; Wolter & Muehleemann, 2015). By inviting employers to be engaged throughout the new system, reforms that engage them throughout the process of VET are giving them the opportunity to reap much greater benefits and achieve a net neutral or positive return in the process.

2.1 Operationalizing employer engagement

We hypothesize that employer-engaged reforms—those in which employers will be involved throughout new programs' design, application, and updating—will progress more in their first years than reforms where employers participate only in design or as consultants. To test this, we need to define and operationalize the processes that make up VET and measurements for employers' engagement therein. We begin by briefly describing the Curriculum Value Chain (CVC; see Renold et al., 2016) then derive our measurements for employers' engagement in the reform.

The CVC models educational processes into a cyclical value chain of curriculum design, curriculum application, and curriculum feedback/updating (Renold et al., 2015). During the curriculum design phase, actors plan and create content that students will learn. Its features are the actors involved in designing and setting qualification standards, how and by whom those standards are measured, and by whom they are recognized. The curriculum application phase is program delivery: every action where students are involved is part of this phase. Its features are the learning places, teacher training and provision, examinations and accountability, workplace regulations, and quality assurance. After the application phase, we can see the outcomes of the educational processes that came before: students graduate and move into work or further education and training. In the feedback and updating phase, information on their success and the relevance of their skills for employment is gathered and assessed and the curriculum is updated when necessary. This phase also involves deciding what triggers an update—for example technological changes or renewed qualification profiles—and the cycle begins again. Each phase entails certain specific functions that must be carried out in order for the curriculum process as a whole to be successful.

Changes made at any point in the CVC affect the other links in the chain. If a reform affects only one or a few of the processes, functions, or phases in the CVC, it can disrupt the rest of the chain and create misaligned incentives, internal conflict, and confusion. Fullan (2016) echoes this sentiment by arguing for 'whole-system reform' (p.17) as a critical element of successful change in education. This is especially relevant for VET reforms, as they require the education system to pull in external actors from employment, build new infrastructure, and create new coordination mechanisms. We use the processes

in each phase of the CVC to describe the role of employers in these reforms following the rubric shown in Table 1.

Table 1: Employer engagement rubric

	1	2	3	4
Design	No engagement in design phase	Ad hoc or informal engagement	Formal engagement without power	Formal engagement with power
Application	No engagement in application phase	Irregular non-productive workplace learning without curriculum (i.e. job shadow, career days)	Productive workplace learning without curriculum (i.e. internships)	Productive workplace learning with curriculum
Updating	No engagement in updating phase	Employers provide ad hoc feedback, no role in initiating updates	Employers provide formal feedback, no formal role in initiating updates	Employers provide formal feedback, have formal role in initiating updates

The rubric is quite general, and since the start of this project we have developed more detailed measures of employers’ roles in VET programs (Renold et al., 2016). At the time of data collection and for the purposes of this project, the rubric above is sufficient to qualitatively understand how and how much employers are included in a given reform project. We show projects’ scores and elaborate on their project qualitatively in the methodological sections of this paper.

An important limitation of this paper is that it focuses on the program level², not the system level. The CVC analysis applies to a specific program, and to scale up to the system level we would combine the analyses for all individual programs. Each of the reforms described here begins on the individual program level, either by modifying an existing program or developing an initial pilot project. In further research we look forward to investigating the effects of these changes on the VET systems of each case.

² In the context of upper secondary II education we have to identify the appropriate program that will be the object of our investigation. Therefore we make a distinction between the following terms: “VET Pathway: All education programs that prepare students specifically for the labor market instead of only higher education. Programs: Different ways VET is organized within the pathway, such as apprenticeships, school-based VET, or career preparation. These contain multiple curricula. Curricula: Individual courses of study within each program that prepare students for jobs or occupations. These can range from modules to entire qualifications.” (Renold, et al. 2016, p. III).

Systemic factors in each case's context do affect the individual programs described here, for example especially strong or weak career guidance, permeability and progression routes through further and academic education, or reputation and social status of VET programs generally (Bolli & Rageth, 2016). Those factors are not captured in this study, but will need to be included in future full-systems analyses.

3. Literature

Employer engagement in VET is a critical element of its success, for the theoretical reasons just described and as demonstrated by empirical research. Employer engagement reduces the 'silo' problem in which non-aligned schools, firms, and sectors create artificially thin labor markets (Ferrier, Dumbrell, & Burke, 2008). Training students in the workplace makes use of that location's comparative advantage as a place to learn 'soft' or transferrable skills (Bolli & Renold, 2015; Billett & Choy, 2013; Trilling & Fadel, 2009).

Information asymmetries between employment and the education system mean employers must be participants in VET in order for it to improve skills matching and work efficiently (Sung, 2010). Employers know what skills they need, and education providers know about student ability and existing skills. Resource asymmetries also play a role: employers can contribute training time on their existing state-of-the-art equipment much more cheaply than schools could purchase, maintain, and update the same. Furthermore, employers have many more possibilities to expose VET students to unfamiliar and unexpected situations, which helps to improve their soft skills as well as their occupational skills (Billett & Choy, 2013). Education providers are prepared for curriculum development and teaching, and have the knowledge and community resources to work with young people (Renold et al., 2016). Separating into silos compounds problems, and cooperation can solve those (Rose, 2012). If VET is to provide skills that match employer needs and to do so efficiently, employers need to be engaged alongside education providers.

In the small empirical literature that exists, evidence suggests that VET reforms without employer engagement tend to struggle. For example, Sri Lanka dramatically expanded its VET program in the 1970s in response to an ILO Mission (1971, in Alailima, 1992) that criticized the skills mismatch between education's supply and employer's demand on the labor market. However, the government-led reform

failed to engage employers and reduce unemployment among the young (Alailima, 1992). The silo-bound VET system was far from the only reason for Sri Lanka's ongoing unemployment problems, but a supply-led expansion of VET failed to help. Indeed, after a rash of similarly unsuccessful and similarly supply-side-driven reforms in the developing world during the 1970s and 1980s, the World Bank ceased all funding to supply-driven VET reforms. The projects, which relied on employer advice only in the design phase, very often failed to reach implementation and—when they were implemented—failed to deliver improvement (Bennell & Segerstrom, 1998). Multiple policies in developing African countries in more recent decades have also failed to implement, partly due to the disengagement of employers and lack of education-employment linkage (UNESCO, 2015; Afeti & Adubra, 2012). Finally, even established VET programs can struggle when employer engagement disappears: Finegold and Soskice (1988) account the failure of the UK's education and training system to its one-way relationship with employers. Causality is difficult to state unequivocally in every case, but employer engagement is clearly critical to VET.

Empirical evidence from general education reforms in the data-rich United States agrees that interventions that address only one phase of the CVC are often unsuccessful, and can provide examples for all three phases. The Common Core State Standards' excellent planning but struggles with pedagogical application are an example of a program that invested heavily in design but failed because the rest of the CVC was all but ignored (Kendall, 2011). The same is true for the application phase: Fullan (2016) points out that externally developed programs adopted without modification or internal development lead to teachers and school leaders struggling to make meaning of the reform and apply it in an in-depth manner. Finally, recent accountability reforms like No Child Left Behind are major examples of feedback/updating interventions that fail to meaningfully improve education because they come with no strategy for how scores should be raised (Fullan, 2016). Employers need to be engaged in VET for it to be successful, so we turn to their role in reforming VET.

4. Method

We use case studies of eight ongoing reforms begun or modified in July of 2015 and examine their implementation progress relative to their employer engagement in the reform. The case study format allows us to integrate diverse data sources and types (Yin, 2014), as well as a variety of analytical

methods moving forward. Case studies are also ideal for theory-building studies such as this one, and those with small samples of carefully selected cases like these (ibid). All eight cases applied to, were accepted into, and attended the 2015 summer institute at the Center on the Economics and Management of Education and Training Systems (CEMETS³), where they studied VET best practices and the underlying economics that enable firms to participate for business and not unsustainable philanthropic reasons. The institute is designed as a research instrument that allows us to identify promising cases and collect data.

Cases A, B, C, and D come from major cities and states in the United States. Cases IA and IB are international cases, coming from Australia and Asia, respectively. The last two cases, NA and NB, are termed non-traditional cases because they are both non-government institutions working in the VET space of a European country and the United States, respectively. The American cases are replications of one another, as all are dealing with similar—though not identical because education is mostly a state-level issue in the United States—contexts, legal frameworks, and problems. The international cases are generalization cases that allow us to see when the findings from our replication cases hold and when they do not. Finally, the non-standard cases serve a testing role and let us examine special cases. All cases share the goal of improving VET in their own contexts by strengthening employer engagement.

4.1 Data

We have multiple data sources for each reform at a number of points in time. Before June 2015, we collected reform plans and background data on the issues and goals in each case. We also identified the team members involved in each reform. During the institute in July, participants presented their cases, heard all of the other cases, and participated in structured problem-based learning (Hung, Jonassen, & Liu, 2008) discussion sessions that deeply explored the underlying problems in each case and potential solutions to those problems. These interviews were coded using rubrics by two coders and disagreements were resolved by averaging. We also conducted structured interviews of each team on the background of their current system. At the end of the institute, teams presented their final revised plans to

³ <http://www.cemets.ethz.ch/>

the group—notably, every plan called for increased employer engagement as a top-level goal. At three months and one year after the institute, participants send in progress reports that detailed their accomplishments, struggles, success factors, and barriers relative to the final plan they had made. These updates also included their own assessments of their progress in simple qualitative terms. Finally, we used extensive document analysis, background research, and personal contact to stay up to date with the progress of each reform.

4.1.1 Employer engagement scores

Based on the rubric shown in Table 1 in the theoretical section, we scored each reform on its employer engagement in the design, application, and updating phases of the CVC. Two researchers scored the reforms and infrequent disagreements were resolved through discussion. The scores are shown in Table 2, and we discuss each case's scores to add depth. Scores range between one point (no employer engagement in a given phase) and four points (employers fully engaged in a given phase).

Table 2: Employer engagement scores

	A	B	C	D	IA	IB	NA	NB
Design	4	4	1	4	3	1	2	3
Application	4	3	1	4	3	1	3	2
Updating	4	3	1	3	2	1	2	1
Average	4	3.33	1	3.67	2.67	1	2.33	2

Case A has the highest overall scores, and indeed perfect scores in all three CVC phases. In the design phase, Case A has employers integrated into and leading its core reform team. The reform team works out of the offices of a team member's firm, and multiple employers from throughout the Case A jurisdiction are intimately involved in its conception. The team is constantly recruiting other employers' feedback and formal participation in curriculum and system design. In the application phase, Case A is pursuing employer engagement through a dual model of workplace training with a curriculum complemented by school-based education and training under the same condition. Again employer recruitment and even leadership is a high priority. Finally, in the updating phase, Case A is the only top score because it is already endeavoring to establish structures under which employers have the power and means to initiate updates to the curriculum when it does not reflect the state of the art. It is very

difficult for a reform project to consider updating their own project in the future, so this is especially commendable.

Case B also has strong employer engagement in its reform. That engagement is strongest in the design phase, especially since this project originates in a Chamber of Commerce and has strong employer participation in creating the curricula students will learn. Case B scores three points in the application phase, as it is currently operating on more of an internship model than an apprenticeship model. In the updating phase, Case B is creating formal feedback opportunities for employers but does not yet offer them the opportunity to initiate an update.

Case C is tied for the least employer-engaged case we evaluate. The project is restricted to the education system because that system is unwilling to share power in education and training matters. In the design phase, employers are not engaged in any way. Similarly, there is no employer engagement in the application phase as all training is school-based. Finally, the updating phase provides no opportunity for employers to give feedback or initiate changes.

Case D is another example of higher employer engagement. It is similar to Case B, except for a higher score in the application phase. Case D originates as a partnership between education and employers, including one of its leadership team coming from employment and the project's connections to its local Chamber of Commerce. The project engages employers in curriculum design and planning of the reform. In the application phase, Case D outscores Case B because its workplace learning model is a dual apprenticeship model where students spend more time in the workplace and have a curriculum for the work they do there. Finally, while Case D is establishing an excellent data management system for employer feedback, they do not have a formal role in updating.

Case IA is the first of the international cases. This case is starting from a stronger VET system and seeking to improve that system by increasing employer engagement and therefore skills matching. However, it struggles with the bureaucracy of the existing system and an attitude that employer might be good advisors but they are not equal partners, so its design-phase score is only three. Similarly, in the application phase employers are welcomed as internship providers but not given the responsibility of longer-term curriculum-based training of apprentices. Finally, Case IA's score in the updating phase is

only two because employers' feedback is limited to what they choose to provide instead of coming through a formalized or representative system.

Case IB also has an existing VET system, but it is less fully articulated than the one in Case IA. In IB, employer engagement is tied with Case C for a very low score. Again, the education system sees itself as separate from employers. Engagement in the design phase is nonexistent, and currently curriculum for the new program is developed by individual teachers for their own classes and not on a comprehensive level. There is a national qualifications framework, but that is developed by the government and more of a suggestion than a guide for curriculum development. In the application phase, employers are currently not engaged—though future reforms aim to include them as training providers—and most training is done in schools or education-based training centers. Finally, employers have no role in curriculum updating and there is no process for either feedback or updating despite an excellent research infrastructure around VET.

Case NA is in a country where the VET system is elaborately developed and similar to Case IA. In the design phase of the reform we are following, employers are lightly engaged but usually through advisory meetings or councils and not formal responsibility for curriculum development. Employers are actually more engaged in Case NA's application phase—the only case where the application phase is the highest score—and trainees are engaged in productive workplace learning. However, that workplace learning is done without curricula or on curricula designed by the individual training firm so it is more like an internship than an apprenticeship. In the updating phase, Case NA collects a great deal of feedback on students, including their post-graduation trajectories and as much else as they can access. However, there is no role for employers in formally providing feedback on graduates' skills or updating the curriculum.

Finally, Case NB is an American non-traditional case. This reform, like NA, is carried out in schools but initiated by a non-education actor. The design phase of this reform is its highlight for employer engagement, as it formally seeks out the input of employers though they do not have much power. The application phase for Case NB is limited to very short non-productive interactions with firms, partly because the program is aimed at lower-secondary students rather than the upper-secondary

students targeted by the other reforms. Finally, Case NB is very focused on developing the program and has not created any formal role for employers in the curriculum updating phase to date.

4.1.2 Outcome scores

Outcomes are qualitative because there are not yet any quantitatively measurable outcomes for any reform. Indeed, almost all of them still have no students involved so there is nothing to measure. We categorize reforms' progress as stalled, progressing incrementally, or progressing radically. A stalled reform has made no progress. An incrementally progressing reform has made headway, but without changing the education system. These are projects that are adding new elements or procedures within old programs, modifying course content without addressing its delivery, and other small remodels that do not change the structure of education. Finally, radically progressing reforms are changing the institutional framework in which VET operates, and making systemic changes. Two researchers independently scored the reforms and we asked each team to send in their own assessment of progress in these terms. All scores agreed, and are shown in Table 3.

Table 3: One-year progress scores

	A	B	C	D	IA	IB	NA	NB
Stalled			1					
Progressing – Incremental					2		2	2
Progressing – Radical	3	3		3		3		

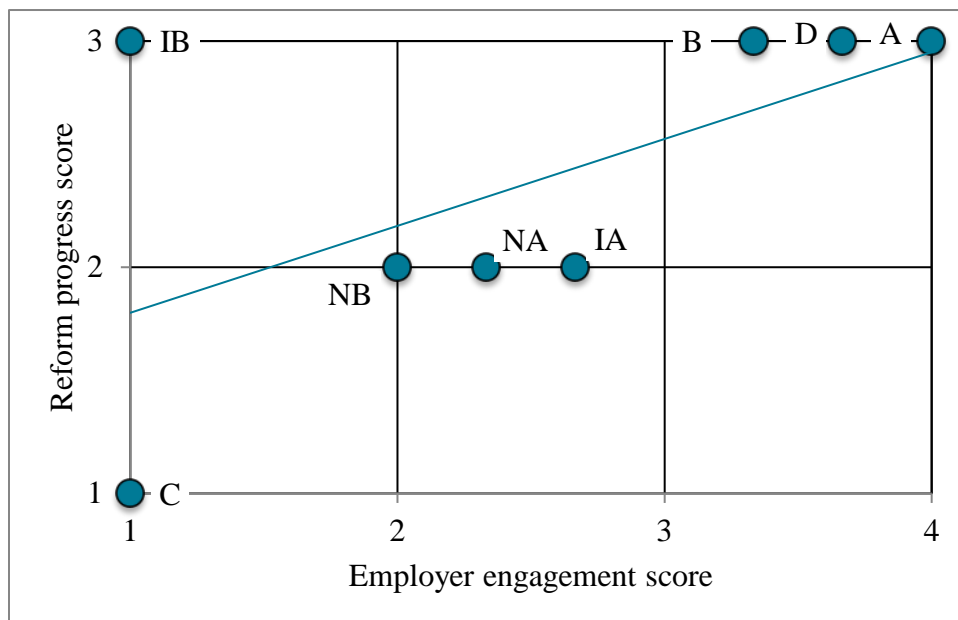
The stalled case, C, is based entirely in the education system and has no formal role for employers at all. It has faced a number of other issues like frequent personnel turnover so lack of employer engagement is certainly not its only issue, but it is a significant barrier. The successful American cases—A, B, and C—are all exceptionally strong in terms of employer engagement. A and B have employment leaders in leadership positions on the reform teams themselves, and D originates from a chamber of commerce that has brought education on board instead of the other way around. Again, these cases have much in their favor that goes beyond employer engagement but it has played a major role. In the international cases, IA has struggled to bring employers into a bureaucratic structure that guards its power rather jealously. While progress has been made, it is difficult for the reform team to convince education system actors that they need employers and difficult to progress without them. IB has

progressed dramatically and we will discuss their progress in more detail shortly. Both non-traditional cases have made slight progress, and both deal with lukewarm support from employers. NA has a strong position in the education sector, but NB is on less stable footing there. We move on to a qualitative comparison of employer engagement and progress.

5. Results

We visually compare reform progress to employer engagement by plotting the two measures together. As shown in Figure 5, there is a clear and very strong relationship between the two measures with more employer-engaged reforms making much more progress. C, the project where employers are all but excluded, is also stalled. NB, NA, and IA—reforms where employers are engaged but not strongly—have progressed but not strongly. B, D, and A are all strongly connected to the employment system and progressing radically.

Figure 5: Employer engagement and progress



IB is a stark outlier, with a very low employer engagement score and radical progress. That project has been adopted by a strong top-down government that can implement policies almost unilaterally. When that government decided that developing an apprenticeship system complete with workplace learning was the course it wanted to take, it did so almost immediately. IB is the only project

described here that has students involved as of this writing, with the first group of vocational high schools transitioning to the new model as early as the fall of 2015—just months after the institute. This paper does not address the quality of the reforms, but given what we have seen with respect to teachers' concerns about being asked to simultaneously design and apply a new VET curriculum and system simultaneously, individually, and on mere months' notice, we have concerns about the eventual quality of the system. Employers are engaged as workplace trainers and employers of the apprentices, but they do not have a large role in curriculum design and updating—tasks that currently fall to individual teachers creating curricula for only their classes in their own schools. Without system capacity measures like career counseling, coordination mechanisms, and common curricula, this reform is a big risk. Our hope is that the system grows to support the new program, but we will continue to track this case to find out. That said, it is clear that employer engagement is not a necessary feature of progressing reforms when a strong top-down government exists and is willing to push implementation through.

This assessment is qualitative and not causal. It is a theory-building step that helps build our understanding of VET implementation processes. Employer engagement appears to play a role—even a major role—in the progress of the reforms we study, but it is not the only thing going on in any case. All of the reforms are dealing with personnel victories and challenges, local politics, resource issues, and much more. None of them has yet progressed from the initial program change or pilot project to a system-level reform, so there is still a great deal of uncertainty in their final results. There is no a single cause of any of their outcomes, but it appears the employer engagement encourages progress toward implementation in the first year of a VET-oriented reform.

6. Conclusions

Employer engagement appears to be positively related to the progress of VET reform implementation. This confirms that there is a role for employer engagement in the reform and implementation process, and that more employer engagement—at least to the point measured here—is better. This finding supports our hypothesis and the general consensus that employer engagement is critical to VET programs in general, while contributing to our understanding of VET reform implementation. It appears that employers must be involved in the reform itself and not only in a new

program developed by others. This fits with the anecdotal reports of reformers who have worked on projects like these and the intuition in the literature that employer engagement is much more than skills councils (Sung, 2010). We are able to show across reforms that the projects where employers are integrated make more progress toward implementing VET.

Employer engagement is not, however, a universal necessary condition: when the reform is enacted in a strong top-down manner that does not leave much room for non-compliance, implementation will progress regardless of employer engagement. This is true for a government that has a top-down method of operation and likely also true for any other power source that can operate in such a way on actors involved in VET. The finding that employer engagement is very important but not necessary is surprising and goes against the literature somewhat (Sung, 2010). We are able to identify this finding because of our sample composition: the replication cases in the United States provide a strong foundation for similar situations and struggles, but the international and non-traditional cases give us the chance to look outside of a single context or similar institutional structures. As case studies of education reforms are typically very deep but very narrow instead of the relatively shallow but more broad approach of this study, our approach yields a new perspective.

This has its limitations. While the shallow-but-broad approach of our study is useful compared to the more canonical narrow-but-deep approach utilized by case study researchers, it also loses some of the nuance that those researchers are able to report. We cannot provide fully articulated reports on all eight reforms in this context, but we are able to focus on the cross-case aspect of the analysis and identify new findings. Similarly, as mentioned before, this study is exploratory and not causal. It is a type of research that is necessary in a field such as VET reform implementation where there is not a large base of previous research and theory on which to build, but we are eager to expand the size, timeline, and capacity for causal analysis in this work as time passes for these cases and new ones are added. Despite being a large sample for cross-case research, our sample remains quite small. Our progress measure is limited to a broad qualitative response, and while it appears to be accurate in that all reformers and researchers agreed on each project's performance, it is far from precise. Finally, the measure we use for employer engagement in the reform is also quite general. A very important future direction for research on VET reform implementation will be the development of some measure that can

accurately reflect reforms' quality in terms of features like employer engagement and feasibility—especially in terms of the reform team itself and its own turnover or burnout risk.

Employers need to move from consumers of skills to co-producers of the same in partnership with education. It seems counterintuitive for reformers to ask them to take on responsibility for parts of the entire education and training process instead of only acting as advisors. However, the lower responsibility of an advisory role also strips employers of their opportunity to earn back their investments through the productive contributions and potential future employment of trainees. When employers' returns depend on the long timeframe of waiting until trainees graduate and the risk that their competitors will simply poach away the graduates, rational employers choose not to participate and the system fails. When investments are returned relatively quickly and employers have the opportunity to provide trainees with firm-specific as well as the required general skills, their investment is higher but so is their return. Asking employers to do more in the implementation of a new or better VET system feels dangerous to education-based reformers, but it appears to be the safest bet for the progress of their reforms.

The next steps for this specific research project are to continue following the cases as they progress through their reforms, and to add new cases into the group of reforms. We need more evidence to support the insights developed in this study, and longer timeframes to understand the eventual system-level effects of these projects. As a research community, we all need to understand what features of reforms, reformers, and reform processes enable VET programs and systems to improve such that they enhance the experience of young people and older adults on the labor market. Increasing trends towards high skill requirements, ongoing technological change, and demand for education and/or training beyond the secondary level in all countries mean that VET systems can be impactful domestic and economic policy drivers. We should understand their development and implementation to facilitate their improvement.

References

1. Acemoglu, D., & Pischke, J. S. (1996). Why do firms train? Theory and evidence (No. w5605). *National bureau of economic research*.
2. Afeti, G., & Adubra, A. L. (2012). Lifelong technical and vocational skills development for sustainable socioeconomic growth in Africa. Synthesis Paper—Sub-Theme 2. Presented at *Triennale on Education and Training in Africa*, February, 12-17.
3. Alailima, P.J. (1992). Education-employment linkages: The macro profile. *Sri Lanka Journal of Social Science* 15(1&2), 1-45.
4. Becker, G. S. (1962). Investment in human capital: A theoretical analysis. *The journal of political economy*, 70(5.2), 9-49.
5. Bennell, P., & Segerstrom, J. (1998). Vocational education and training in developing countries: Has the World Bank got it right? *International Journal of Educational Development*, 18(4), 271-287.
6. Billett, S., & Choy, S. (2013). Learning through work: Emerging perspectives and new challenges. *Journal of Workplace Learning*, 25(4), 264-276.
7. Billett, S., & Smith, A. (2003). Compliance, engagement and commitment: Increasing employer expenditure in training. *Journal of Vocational Education and Training*, 55(3), 281-300.
8. Bolli, T., & Rageth, L. (2016). Measuring the Social Status of Education Programmes: Applying a New Measurement to Dual Vocational Education and Training in Switzerland. *KOF Working Papers* No. 403. <http://dx.doi.org/10.3929/ethz-a-010605143>
9. Bolli, T., & Renold, U. (2015). Comparative advantages of school and workplace environment in competence acquisition: Empirical evidence from a survey among

- professional tertiary education and training students in Switzerland. *KOF Working Papers* No. 389. <http://dx.doi.org/10.3929/ethz-a-010480922>
10. Cunningham, W. V., & Villaseñor, P. (2016). Employer voices, employer demands, and implications for public skills development policy connecting the labor and education sectors. *The World Bank Research Observer*, 31(1), 102-134.
 11. Eichhorst, W., Rodríguez-Planas, N., Schmidl, R., & Zimmermann, K. F. (2015). A road map to vocational education and training in industrialized countries. *ILR Review*, 0019793914564963.
 12. Ferrier, F., Dumbrell, T., & Burke, G. (2008). *Vocational Education and Training Providers in Competitive Training Markets*. National Centre for Vocational Education Research Ltd. PO Box 8288, Stational Arcade, Adelaide, SA 5000, Australia.
 13. Finegold, D., & Soskice, D. (1988). The failure of training in Britain: analysis and prescription. *Oxford review of economic policy*, 4(3), 21-53.
 14. Fullan, M. (2016). *The new meaning of educational change*. New York: Routledge.
 15. Hoffman, N. (2011). *Schooling in the workplace: How six of the world's best vocational educations systems prepare students for jobs and life*. Harvard Education Press. Cambridge, MA.
 16. Hoffman, N. (2012). Improving Career and Technical Education in the United States. In *Preparing Today's Students for Tomorrow's Jobs in Metropolitan America* Laura W. Perna (Ed.) Philadelphia: University of Pennsylvania Press.
 17. Hung, W., Jonassen, D. H., & Liu, R. (2008). Problem-based learning. *Handbook of research on educational communications and technology: Fourth edition*, Spector, J.M., Merrill, M.D., Elen, J., & Bishop, M.J. (eds.). p. 485-506. New York: Springer.

18. Kendall, J. S. (2011). *Understanding common core state standards*. Alexandria, VA: Association for Supervision and Curriculum Development.
19. Kreps, D. M., Milgrom, P., Roberts, J., & Wilson, R. (1982). Rational Cooperation in the Finitely-Repeated Prisoners' Dilemma (No. TR-375). Stanford Univ, CA: Inst for Mathematical Studies in the Social Sciences.
20. Lazear, E. P. (2009). Firm-Specific Human Capital: A Skill-Weights Approach. *Journal of Political Economy*, 117(5), 914-940.
21. Lehmann, W., Taylor, A., & Wright, L. (2014). Youth apprenticeships in Canada: on their inferior status despite skilled labour shortages. *Journal of Vocational Education & Training*, 66(4), 572-589.
22. Lerman, R. I. (2013). Are employability skills learned in US youth education and training programs?. *IZA Journal of Labor Policy*, 2(1), 1.
23. Livingstone, D. W. (2009). *Education & jobs: Exploring the gaps*. Toronto: University of Toronto Press.
24. Muehlemann, S., Schweri, J., Winkelmann, R., & Wolter, S. C. (2007). An empirical analysis of the decision to train apprentices. *Labour*, 21(3), 419-441.
25. Osborne, M. J. (2004). *An introduction to game theory* (Vol. 3, No. 3). New York: Oxford University Press.
26. Pilz, M. (2013). Contemporary apprenticeship: international perspectives on an evolving model of learning. *Journal of Vocational Education & Training*, 65(4), 623-625.
27. Pusterla, F. (2016). The Great Recession and the Working Conditions of Youth: A Descriptive Analysis of the European Labour Market. *KOF Studies* No. 83. DOI <http://dx.doi.org/10.3929/ethz-a-010736346>

28. Reeves, D. (2009) *Leading change in your school: How to conquer myths, build commitment, and get results*. Alexandria, VA: Association for Supervision and Curriculum Development.
29. Renold, U., Bolli, T., Caves, K., Buergi, J., Egg, M. E., Kemper, J., & Rageth, L. (2016). Feasibility study for a curriculum comparison in vocational education and training intermediary report II: Education-employment linkage index. *KOF Studies* No. 80. <http://dx.doi.org/10.3929/ethz-a-010696087>
30. Renold, U., Bolli, T., Caves, K., Rageth, L., Agarwal, V., & Pusterla, F. (2015). Feasibility study for a curriculum comparison in vocational education and training intermediary report I: The 20 top performers. *KOF Studies* No. 70. DOI <http://dx.doi.org/10.3929/ethz-a-010713492>
31. Rose, M. (2012). Rethinking remedial education and the academic-vocational divide. *Mind, Culture, and Activity*, 19(1), 1-16.
32. Spaulding, S. & Martin-Caughey, A. (2015). *The goals and dimensions of employer engagement in workforce development programs*. Washington, D.C., Urban Institute
33. Sung, J. (2010). Vocational education and training and employer engagement: an industry-led sectoral system in the Netherlands. *International Journal of training and Development*, 14(1), 16-31.
34. Sung, J., Raddon, A., & Ashton, D. N. (2006). *Skills Abroad: A comparative assessment of international policy approaches to skills leading to the development of policy recommendations for the UK*. Sector Skills Development Agency.
35. Symonds, W. C., Schwartz, R., & Ferguson, R. F. (2011). *Pathways to prosperity: Meeting the challenge of preparing young Americans*. Cambridge, MA: Pathways to Prosperity Project at Harvard Graduate School of Education.

36. Trilling, B., & Fadel, C. (2009). *21st century skills: Learning for life in our times*. San Francisco: John Wiley & Sons.
37. UNESCO, (2015). Recommendation concerning technical and vocational education and training (TVET). Available at http://portal.unesco.org/en/ev.php-URL_ID=49355&URL_DO=DO_TOPIC&URL_SECTION=201.html
38. Wolter, S. (2016). "Costs and benefits of apprenticeship programmes from the perspective of firms." June 2016. CEMETS Summer Institute presentation.
39. Wolter, S. C., & Muehlemann, S. (2015). *Apprenticeship training in Spain: a cost-effective model for firms?* Bertelsmann Foundation.
40. Wolter, S. C., & Ryan, P. (2011). Apprenticeship. *Handbook of the Economics of Education*, Hanushek, E., Machin, S. & Woessmann, L. (eds.). Vol. 3, p. 521-576.
41. Wolter, S. C., Muehlemann, S., & Schweri, J. (2006). Why some firms train apprentices and many others do not. *German Economic Review*, 7(3), 249-264.
42. Yin, R.K. (2014). *Case study research: Design and methods*. Los Angeles: SAGE Publications.