

# Giving Peru a Productivity Boost: Towards a System of Continuous Education and Training

Pablo Lavado

Universidad del Pacifico

Jamele Rigolini

World Bank  
and IZA

Gustavo Yamada<sup>1</sup>

Universidad del Pacifico  
and IZA

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## **Abstract**

In spite of impressive rates of economic growth, the quality of the labor force's human capital is considered a major challenge for sustaining medium term economic growth in Peru. This note reviews the skills of the Peruvian labor force, and the status of the continuous education and training system. Based on such an assessment and on learnings from international best practices, it proposes a system of continuous education and training that draws from international best practices, but that addresses local capacity and institutional issues.

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<sup>1</sup> The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

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## 1. Introduction

The Peruvian economic performance during the last decade has been rather outstanding in terms of growth, The average annual GDP growth rate was 5.5%, and the country also achieved macroeconomic stability (average inflation rate of 2.9% per year), formal employment creation (formal registered employment grew at 4.9% per year) and poverty reduction (cut by half to 24%), according to Central Bank and INEI statistics. These unprecedented positive numbers were driven partly by external factors (a boom in commodities export prices), but also by internal drivers – record levels of investment of 27% of GDP and productivity gains of 1.6% per year, made possible by adequate macroeconomic management and structural reforms undertaken in the last two decades.

However, the quality of the labor force’s human capital is considered a major challenge for sustaining medium term economic growth, and a risk factor for falling into a “middle income trap”. Peru has made substantial progress in universal coverage of primary education (more than 85% of primary school completion between people aged from 12 to 14 years), and secondary and tertiary education attendance are around their expected levels for a middle income country (70% and 28% respectively). Nonetheless, national and international tests show rather low levels of actual learning in basic competencies such as reading comprehension and numerical abilities (only 26% of children in second grade pass a satisfactory level of mathematics, and 15-year-old Peruvians ranked in the lowest deciles of countries in the PISA assessment)<sup>2</sup>.

Peru’s government has taken bold steps to advance a comprehensive agenda to tackle the most pressing problems in basic general education based on four pillars: more public investment resources and public private partnerships for building and maintaining adequate school infrastructure, a meritocratic career for teachers based on better salaries and continuous performance evaluation and training, focus on actual learning capacities of students, and revamping the regulations for better management of the system<sup>3</sup>. Likewise, a new institutional framework for universities has been enacted and is currently in early stage of implementation. This will entail a new operating licensing procedure which will be monitored by a University Education Superintendency (Law 30220). A second layer system of quality assurance accreditation is also under reform. Finally, a joint Congress-Ministry of Education commission is working

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<sup>2</sup> Main statistics and results come from National Council of Education reports.

<sup>3</sup> Closure of 2<sup>nd</sup> International Forum of Education, Jaime Saavedra (2014). Available at <http://www.minedu.gob.pe/noticias/index.php?id=25371>.

on a new law for technical institutions at the tertiary level with the purpose of regulating the supply of professional technical careers.

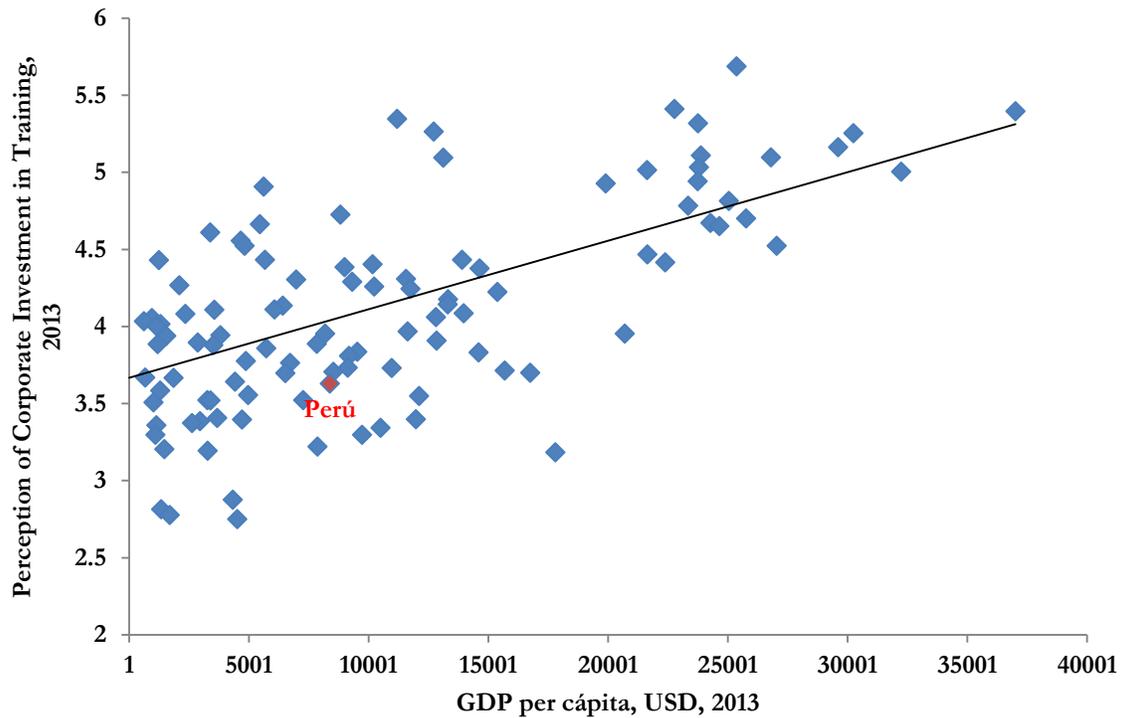
Yet, the specific vocational training system in Peru (initial and continuous technical education, which does not lead to an academic or professional degree, aimed at training and updating individuals to enhance their performance in the workplace), has not been part of any major policy initiative to date. This initiative may need the active involvement not only of the Labor Ministry (which formally has a Vice-Ministry of Employment Promotion and Labor Training), but also the Education Ministry (which oversees most technical institutions due to the professional degrees it approves), the Economics and Finance Ministry (in charge of the National Council of Competitiveness and any public budget and tax incentives for labor training), and ministries promoting and regulating specific economic activities (such as the Ministry of Production, which is responsible of the National Plan of Productive Diversification, and other sectorial ministries).

Revamping the dispersed and fragmented labor training system should be an important part of any future agenda for competitiveness, equity, and sustainable growth in Peru (Saavedra and Chacaltana, 2001). Firms complain of a divorce between their demand for up-to-date middle skill workers and the obsolete and disconnected training given by technical institutions and universities<sup>4</sup>. Likewise, perception of insufficient training in Peru is well documented in the World Economic Forum ranking of competitiveness. Figure 1 shows that Peru is placed in the 93th position in the variable “to what extent do companies invest in training and employee development?”, far below OCDE countries and its expected score for its development status. There is also evidence of a regressive pattern of access to quality training by poverty and other indicators of socioeconomic status (Chacaltana, 2005). Hence, coverage of labor training in quantity, quality, and pertinence should improve rapidly if Peru aims at sustainably gaining in competitiveness and development.

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<sup>4</sup> CADE for Education, 2013. Available at [http://ipae.pe/sites/default/files/memoria\\_cade\\_por\\_la\\_educ\\_2013v15.pdf](http://ipae.pe/sites/default/files/memoria_cade_por_la_educ_2013v15.pdf)

Figure 1: Perception of corporate investment in training and GDP per capita, 2013



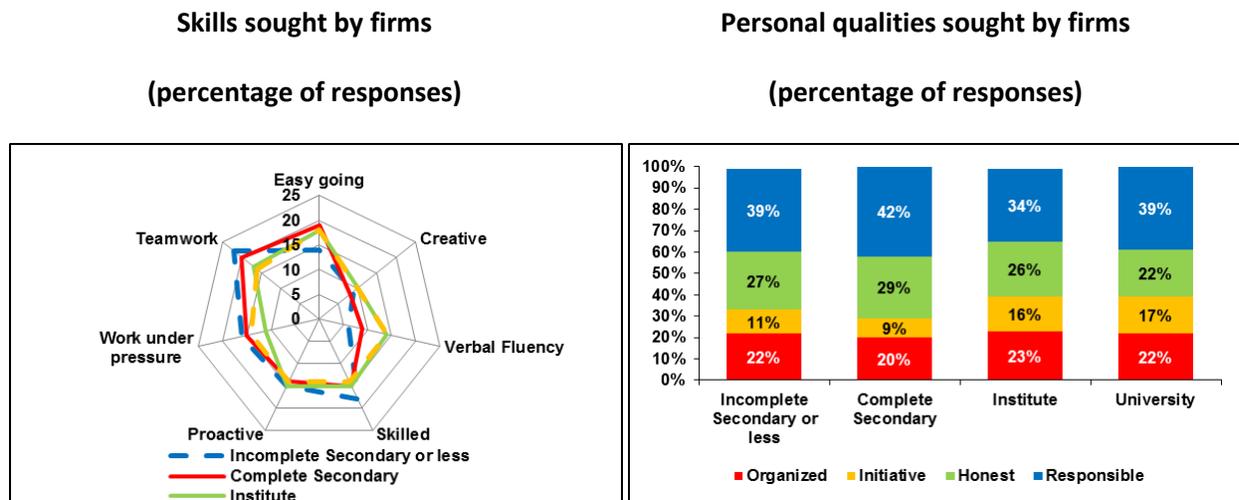
Source: Global Competitiveness Report 2013-2014, WEF.

This note fills two purposes. First, it reviews the skills of the Peruvian labor force, as well as the status of the continuous education and training system. Second, based on such an assessment, and on learnings from international best practices, it proposes a system of continuous education and training for Peru that draws from the current institutional environment, and that addresses local capacity and institutional issues. As such, the proposal is not a long term vision of where the system, independently from the current reality, should be headed to; rather, it is a proposal for making the system of continuous education and training more effective in the short to medium term: in sum, it is a first step towards a more comprehensive reform.

## 2. A benchmarking of skills of the Peruvian workforce

To a large extent, firms in Peru report having problems to find adequate employers because of gaps in both cognitive and socio-emotional skills. Figure 2 shows skills and personal qualities sought by firms. Interesting, at all educational levels, firms appear to give as much weight to non-cognitive skills such as “teamwork” than to the technical skills of the workers they are hiring. And on personal qualities, being honest and responsible appears to matter as much as having initiative and being organized. A good educational system must therefore put efforts not only to impart technical skills, but also the right non-cognitive abilities.

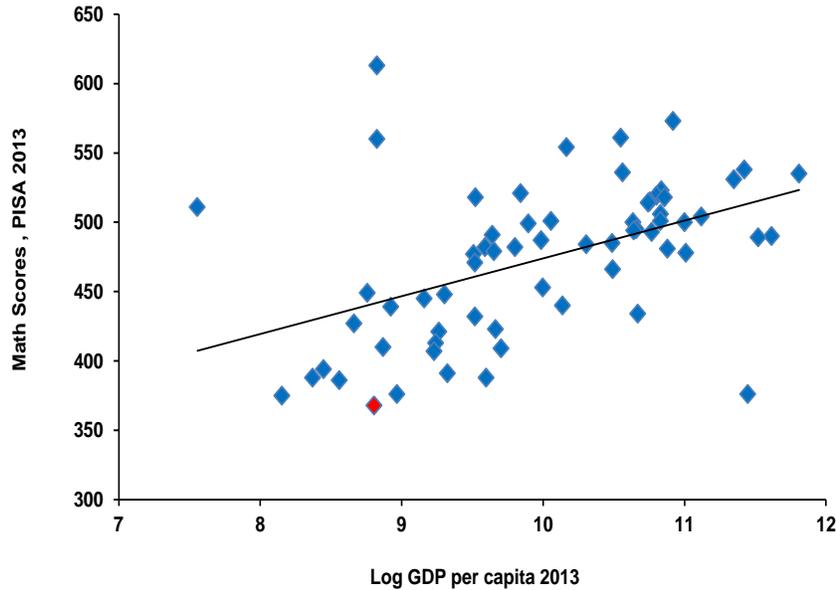
**Figure 2: Skills and personal qualities sought by firms**



Source: World Bank Survey, 2007-08, 802 micro and small size informal firms in Lima, Callao, Arequipa, Cusco, Huancayo and Trujillo.

Unfortunately, the formal system of education appears facing some challenges forming both sets of skills. While, overall, average test scores have improved over time, they remain low by international standards: For instance, Peru has one of the lowest levels in math and verbal scores (PISA 2009), significantly lower than the levels predicted by its GDP per capita (Figure 3).

**Figure 3: PISA scores and GDP per capita**



**Source: PISA and World Bank**

**Box 1. Data sources**

To benchmark abilities and continuous education, we make use of several data sources. Among others, we use the STEP and Enterprise surveys. The STEP (*Skills Towards Employability and Productivity*) survey is carried out by the World Bank and contains information regarding cognitive and non-cognitive abilities (measured as reading proficiency) and job relevant skills, as well as data on household characteristics, educational attainment, continuous education, employment history and family background. Between March, 2012 and July, 2014 data have been collected in Armenia, Bolivia, Colombia, Georgia, Ghana, Laos, Sri Lanka, Vietnam and Yunnan Province in China. The target population is urban adults aged 15 to 64, whether employed or not.

The Enterprise Survey is also carried out by the World Bank. It is a firm-level survey representative of each country's formal private sector. This survey covers a wide range of topics of the business environment, including continuous education, access to finance, corruption, infrastructure, crime, competition and performance measures. Its target population is formal firms with at least five employees.

We also make use of the ENIVE (*Encuesta de Hogares Especializada en Niveles de Empleo*), a household survey specialized in employment levels. Its main objective is to collect data about the

structure and dynamics of the labor force through socioeconomic variables as wages, migration, education, continuous education, between others. It was carried out by the Ministry of Labour and Employment Promotion since 2002 until 2011. It is representative for Lima Metropolitan Area (Lima and Callao).

In addition to these surveys, for Peru we use two sources to measure cognitive and non-cognitive abilities. The first one is the Education Census Evaluation (ECE). This survey contains information on math and verbal test scores of second grade pupils in Peru. It is carried annually by the Ministry of Education since 2007. The second source is the National Survey of Abilities (ENHAB). This survey contains information on wages, cognitive and socio emotional abilities (Big Five Personality Factors and Grit) as well as schooling trajectories. It was carried out by The World Bank in 2010 and it is nationally representative for the urban population.

In addition to relatively low average skills endowments, there appears to be a persistent gap in skills between the rich and the poor. Table 1 presents average math test scores of second grade pupils, ranked by district poverty rates. It shows that in 2008, students in the richest 10 percent districts performed, on average, 15 percent better than students in the poorest 10 percent districts. And that gap appears to have worsened over time: in 2013, the gap was 23 percent, with average test scores having actually *decreased* in absolute value in the poorest districts.

**Table 1: Second grade math test scores by district poverty rate**

<b>Mathematics</b>	2008	2009	2010	2011	2012	2013
First Decile	482.99	472.21	465.62	457	460.4	468.93
Second Decile	499.57	495.4	481.74	480.9	487.28	491.05
Third Decile	506.7	507.1	498.81	490.55	500.03	509.68
Fourth Decile	512.93	527.5	511.58	519.76	502.45	517.24
Fifth Decile	517.01	527.78	515.19	532.04	525.29	529.98
Sixth Decile	524.22	539.74	524.11	526.39	540.87	540.35
Seventh Decile	519.72	536.24	543.66	552.91	540.99	537.59
Eighth Decile	522.75	535.05	529.07	532.93	536.4	536.74
Ninth Decile	532.97	549.01	550.09	554.03	553.15	549.17
Tenth Decile	557.89	587.52	587.22	565.53	579.86	578.43

*1/ The deciles are according to the district poverty rate, 2009*

*Source: ECE*

An emerging literature has shown the importance of both cognitive and socioemotional skills for boosting both productivity and wages (though productivity is often measured indirectly). Heckman et al. (2006), for instance, showed that cognitive and non-cognitive skills affect the variance of wages, with the former having nonetheless a stronger impact than the latter. They provide empirical evidence on the effects of self-esteem and self-control on log hourly wages. Flossmann et al. (2007) replicate these results using German data. In the same direction are the results shown by Nikoloski and Ajwad (2014) in Central Asia, who found that both cognitive and non-cognitive skills influence employability, the type of employment and wages. Furthermore, Carneiro et al. (2007) analyzed the role of early cognitive and non-cognitive skills (at age 7) in Great Britain. They found that both type of skills are important for many later outcomes, including educational attainment, employment status and wages. Lindqvist and Vestman (2011) found strong evidence in Sweden that men who fare poorly in the labor market lack non-cognitive rather than cognitive; but, for skilled and high income workers, cognitive abilities are a strong predictor of wages. As this review will show, similar findings can also be observed for Peru.

### 3. Continuous education in Peru: returns and incidence

This section looks at the incidence and returns of the current system of continuous education in Peru. Several important messages emerge: first, *in spite of the many challenges, continuous education is already a profitable activity in Peru* – even in its current form. Workers who benefitted from training show better wage and employment outcomes, and to the extent that higher wages reflect higher productivity, firms also ought to benefit from training. To be sure, it is difficult to establish a causal relationship, but our findings are encouraging and, also, in line with international evidence. Second, *the market for continuous education has grown substantially in Peru*, with a variety of public and private actors that provide continuous education, with poor coordination among them. Third, with the exception of workplace training, *very little training is financed by firms*, which highlights the challenges of building a system that suits both firm and individual needs. Fourth, *workers with higher cognitive and non-cognitive skills are more likely to participate to continuous education*. There may be therefore a challenge for continuous education reaching the most vulnerable workers. Finally, *there is a lot of heterogeneity in the quality of continuous education in Peru*. Given the growing relevance of the continuous education market, and the large heterogeneity in quality, we believe the time is ripe for proposing a system of continuous education

for Peru that, while it accommodates the local institutional challenges, ensures that quality training is equitably and efficiently provided.

Table 2 looks at the returns to training on income using the ENHAB, STEP and ENIVE surveys. We pool countries together to improve sample size, but make use of country fixed effects. The training variable is defined, for STEP, as any respondent who has participated in a training course in the last 12 months whereas in ENHAB it only considers people aged 14 to 45 who is taking or has taken any course of at least one month duration. For ENIVE, training considers any respondent who has taken or is taking a training course.

Table 2 shows that, everything else being equal, having participated to some continuous education program is associated with an increase in wages of approximately 13 percent. Such a return is not negligible: it corresponds to 80 percent of the return for complete secondary education, and 25 percent for the return of complete university education. For Peru, the return to continuous education is a little higher, rising to approximately 16 percent.

Table 3 looks at returns to training depending on people's educational levels, and type of training institution. In line with the finding from the literature (see below), it shows that returns are quite heterogeneous, and depend very much on the profile of the individuals, and the type of training institution. Overall, continuous education seems to lead to positive returns as long as it is done in a center that offers an education level higher than the one already acquired by the individual: people with complete university education level only benefit of courses taken in universities or in the workplace, while people with complete superior non university level also benefit of sectorial training centers and training from post-secondary non university institutions. The returns to training in the workplace are approximately 30 percent for people with at least secondary and tertiary (non-university) level; while doing a university course increases wages by 28 percent for these groups. These returns are 22% (workplace) and 20% (university course) for people with tertiary (university) studies. In contrast, sectorial training centers (STC) and post-secondary non university institution (IES) have higher returns for the lower educational levels; but they do not show returns for workers with a university degree. This suggests that for a worker with technical studies it is profitable to do a university course; but a worker with university studies does not benefit from technical training in a STC or an IES.

**Table 2: Returns to Training on Income and Employability**

Source	Log income		
	ENHAB & STEP		ENIVE
	All Countries	All Countries	Peru Only
Training	0.143*** (0.0285)	0.130*** (0.0290)	0.160*** (0.0178)
Men	0.458*** (0.0222)	0.428*** (0.0229)	0.312*** (0.0176)
Between 18 & 24 years	0.149** (0.0753)	0.134* (0.0760)	0.150** (0.0674)
Between 25 & 34 years	0.386*** (0.0739)	0.371*** (0.0748)	0.297*** (0.0663)
Between 35 & 44 years	0.443*** (0.0758)	0.444*** (0.0769)	0.350*** (0.0666)
More than 45 years	0.378*** (0.0760)	0.374*** (0.0771)	0.358*** (0.0666)
White Collar	0.291*** (0.0315)	0.257*** (0.0314)	0.416*** (0.0275)
High School	0.177*** (0.0370)	0.177*** (0.0425)	0.207*** (0.0317)
Superior Non University	0.363*** (0.0435)	0.324*** (0.0498)	0.414*** (0.0357)
Superior University	0.614*** (0.0485)	0.566*** (0.0547)	0.760*** (0.0413)
Cognitive (quintile 2)		0.0129 (0.0350)	
Cognitive (quintile 3)		0.0142 (0.0354)	
Cognitive (quintile 4)		0.109*** (0.0374)	
Big Five (quintile 4)		0.0854** (0.0356)	
Grit (quintile 3)		0.0432 (0.0311)	
Grit (quintile 4)		0.0567 (0.0359)	
Constant	4.361*** (0.0791)	4.315*** (0.0848)	0.726*** (0.0699)
Observations	6,659	6,005	6,121
R-squared	0.297	0.275	0.290

*Note: The dependent variable is the natural logarithm of income (in dollars). Countries included: Peru, Bolivia, Colombia, Georgia and Ghana. All models included country dummies. Interactions with training were made (with age, education and white collar) but none came significant. We only show the significant quartiles for Cognitive, Big Five and Grit scores. Robust standard deviation is in parenthesis. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .*

*For ENHAB, "training" is defines as any respondent aged 14 to 45 who has taken or is taking any course or diplomaed of at least one month duration. For ENIVE, "training" is defined as any respondent who has participated in a training course. For STEP, "training" is defines as any respondent who has participated in a training course in the last 12 months.*

*Sources: ENIVE, ENHAB (Peru) and STEP (rest of countries)*

**Table 3: Returns to Training on Income by Educational Attainment and Training Type**

	Log income			
	Primary	High School	Sup. non Univ.	Sup. Univ.
Occupational Training Center	-0.0658 (0.127)	0.0962*** (0.0347)	0.0505 (0.0663)	0.00824 (0.0844)
Sectoral Training Centers	0.783*** (0.228)	0.236*** (0.0619)	0.270*** (0.0998)	-0.00374 (0.0960)
IES	0.0249 (0.297)	0.171*** (0.0395)	0.202*** (0.0516)	0.0936 (0.0651)
University Course	-	0.282*** (0.0830)	0.289*** (0.100)	0.208*** (0.0643)
Secondary Technical College	-0.164 (0.214)	0.0714 (0.104)	0.486* (0.274)	-0.190 (0.298)
Workplace	0.370 (0.419)	0.325*** (0.0564)	0.312*** (0.0663)	0.221** (0.0919)
Armed Forces Center	-	0.251** (0.120)	0.202 (0.264)	-0.103 (0.312)
Distance	-	-0.0847 (0.108)	0.638*** (0.130)	0.654 (0.532)
Others	0.202* (0.120)	0.136* (0.0715)	0.167* (0.0869)	0.143 (0.0881)
Men	0.226*** (0.0578)	0.335*** (0.0250)	0.257*** (0.0385)	0.246*** (0.0453)
Age	-0.000101 (0.00193)	0.00447*** (0.000967)	0.00317* (0.00168)	0.00228 (0.00197)
Years of education	0.0421** (0.0185)	0.0674*** (0.0112)	0.0987*** (0.0241)	0.144*** (0.0138)
Constant	0.898*** (0.158)	0.298** (0.131)	0.0271 (0.347)	-0.320 (0.212)
Observations	610	3,209	1,167	1,107
R-squared	0.062	0.101	0.104	0.162

*Note: The dependent variables is the natural logarithm of income. The sample varies according educational attainment. Robust standard deviation is in parenthesis. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$*

*Source: ENIVE*

Table 4 shows returns to training by economic sector. Training seems to be profitable across all sectors, ranging from around 15 percent in manufacturing, Commerce and Services, to 70 percent in Mining, and almost 130 percent in Agriculture and Fishing. Such high numbers should be taken however with more than a grain of salt. In spite of many controls, in sectors such as mining and agriculture these extremely large estimates are in part associated with large heterogeneities and differences in the profile of workers and types of firms that determine both if the firm is likely to encourage training, and the workers'

productivity. Such high numbers suggest that any causal relationship is almost impossible to establish. Nevertheless, even if we remain in the realm of associations, we can observe that training is associated with higher wages. This, and the magnitude of the impacts in some sectors, is consistent with the findings from international evidence that manages to establish a causal impact (see below).

**Table 4: Returns to training on income by Economic Sector**

	Log Income				
	Agricultural & Fishing	Mining	Manufacturing & Construction	Commerce	Services
Training	1.282*** (0.372)	0.665** (0.245)	0.145*** (0.0357)	0.148*** (0.0447)	0.155*** (0.0225)
Men	-0.374 (0.428)	0.349 (0.383)	0.465*** (0.0431)	0.312*** (0.0405)	0.191*** (0.0225)
Between 18 & 24 years	-0.0462 (0.222)		0.311** (0.130)	-0.0186 (0.134)	0.158 (0.0982)
Between 25 & 34 years	0.335 (0.268)	0.109 (0.299)	0.470*** (0.128)	0.122 (0.133)	0.289*** (0.0963)
Between 35 & 44 years	-0.0117 (0.481)	0.591 (0.386)	0.551*** (0.129)	0.125 (0.136)	0.360*** (0.0961)
More than 45 years	0.00532 (0.318)	0.847** (0.401)	0.562*** (0.130)	0.0784 (0.135)	0.403*** (0.0961)
White Collar	0.847 (0.981)	0.855** (0.367)	0.418*** (0.0669)	0.709*** (0.0713)	0.344*** (0.0341)
High School	-0.218 (0.359)	0.0522 (0.311)	0.228*** (0.0597)	0.256*** (0.0700)	0.158*** (0.0394)
Superior Non University	0.360 (0.592)		0.387*** (0.0682)	0.534*** (0.0804)	0.362*** (0.0451)
Superior University	-0.980 (0.615)	0.0271 (0.367)	0.700*** (0.0955)	0.874*** (0.0923)	0.734*** (0.0513)
Constant	1.944*** (0.358)	1.401*** (0.482)	0.515*** (0.137)	0.746*** (0.143)	0.840*** (0.0992)
Observations	41	29	1,418	1,311	3,323
R-squared	0.300	0.628	0.255	0.271	0.306

*Note: The dependent variables is the natural logarithm of income. The sample varies according economic sector. The variable "training" is defined as any respondent who has participated in a training course.*

*Robust standard deviation is in parenthesis. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1*

*Source: ENIVE*

Although training seems to lead to positive impacts on average income in all economic sectors in Peru, these returns depend on the type of training institution. Table 5 shows that training programs developed in the workplace and university courses are profitable in all sectors and they yield the highest return in the market. Sectorial Training Centers (STC) do not seem to work in the commerce sector, but yield the highest returns in extractive activities and manufacturing and construction. Post-secondary non-university institutions (IES) yield positive returns in all sectors except in manufacturing and construction,

approximately 16 percent in commerce and services. It is worth noting that programs in Occupational Training Centers (OTC) do not yield a significant return in any sector. Observe that in these regressions as well the magnitudes of the estimates are excessively large, making any causal interpretation challenging. Nevertheless, the fact that Occupational Training Centers do not show a significant association should still raise a flag. Moreover, we will see below that qualitative evidence corroborates the interpretation that only the more advanced institutes are likely to provide significant returns.

**Table 5: Returns of Training on Income in Peru by Economic Sector and Training Center**

	Log Income				
	Agricultural & Fishing	Mining	Manufacturing & Construction	Commerce	Services
Occupational Training Center	0.517* (0.262)		0.0220 (0.0625)	0.0844 (0.0705)	-0.0187 (0.0351)
Sectoral Training Centers		0.199 (0.236)	0.217*** (0.0741)	-0.0256 (0.107)	0.149** (0.0671)
IES		0.485 (0.523)	0.0578 (0.0560)	0.161** (0.0724)	0.166*** (0.0357)
University Course	2.634*** (0.810)	1.076** (0.448)	0.601*** (0.120)	0.574*** (0.130)	0.273*** (0.0501)
Secondary Technical College			0.0474 (0.138)	0.296 (0.316)	-0.00753 (0.117)
Workplace	1.313*** (0.183)	0.478* (0.265)	0.330*** (0.0786)	0.377*** (0.136)	0.218*** (0.0487)
Armed Forces Center			0.650*** (0.247)	-0.236*** (0.0345)	0.0536 (0.119)
Distance			-0.482*** (0.138)		0.637** (0.309)
Others	1.474*** (0.481)	0.157 (0.700)	0.145* (0.0818)	-0.0381 (0.126)	0.209*** (0.0551)
Men	-0.399 (0.387)	0.475 (0.444)	0.431*** (0.0445)	0.315*** (0.0424)	0.136*** (0.0228)
Age	-0.0138* (0.00797)	0.0188 (0.0114)	0.00812*** (0.00151)	0.00317** (0.00156)	0.00714*** (0.000894)
Years of education	-0.0518 (0.0516)	0.131 (0.0866)	0.0863*** (0.00685)	0.0918*** (0.00739)	0.0970*** (0.00390)
Constant	2.904*** (0.499)	-0.445 (1.285)	0.0282 (0.108)	0.0482 (0.121)	0.103 (0.0626)
Observations	41	28	1,418	1,310	3,323
R-squared	0.354	0.619	0.249	0.211	0.269

*Note: The dependent variables is the natural logarithm of income. The sample varies according economic sector. Robust standard deviation is in parenthesis. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1*

*Source: ENIVE*

There has also been an increase in the number of trained workers in Peru, particularly in Lima since 2002. According ENIVE, the proportion of people having been trained increased from 33 percent in 2002, to 45

percent in 2011 (Table 6). Training is given mainly in post-secondary non university institutions (approximately 25 percent between IES as well as CETPRO and similar centers), which is also where training has grown the most.

**Table 6: Distribution of Formal training according to study center, 2002-2011**

	ENIVE		ENHAB
	2002	2011	2012
<b>Total</b>	<b>33.3%</b>	<b>45.3%</b>	<b>13.5%</b>
Occupational Training Centers (CETPRO, CEO, CENECAPE, CECAPE)	9.4%	11.9%	5.4%
Sectoral Training Centers	1.9%	3.0%	1.2%
IES	9.7%	13.6%	4.2%
University Course	3.9%	5.9%	2.0%
Secondary Technical College or Institute of Commerce, Industrial or Agricultural	1.4%	0.9%	0.4%
Workplace (Company)	3.3%	3.8%	0.2%
Armed Forces center	1.2%	0.4%	0.0%
Virtual or Correspondence	0.2%	0.1%	0.1%
Other	2.3%	5.5%	0.0%

*1/ The definition of training according ENIVE is any worker who has studied or is studying any course. On the other hand, the definition of training in ENHAB is tighter as it only includes workers between 14 to 45 years who have taken a course of at least one month duration.*

*Source: ENIVE and ENHAB*

Unfortunately, the institutions with the highest returns are not only the ones with the lowest proportion of workers studying; but also the ones who have grown the least. The proportion of people having been trained in the workplace has increased only by 0.5 percentage points, while people who have done a university course has risen only by 2 percentage points. Furthermore, almost 10 percent of people who do continuous education follow their studies at an Occupational Training Center (OTC), which are institutions with low return, and even no return to workers with post-secondary studies (higher than

secondary). It appears therefore that there exists a mismatch between where people are trained, and the profitability (and quality) of these institutions.

Until now, we did not analyze the duration of training, and have possibly “bunched” very different types of training into the same categories. In Table 7 we look at course duration, which confirms indeed that many workers follow courses of short duration.

**Table 7: Median of course duration (hours) by study center and educational attainment**

	Without Educ. level	Primary	Secondary	Sup. Non University	Sup. University
Occupational Training Center		432	324***	384	384
Sectorial Training Center		600***	288***	108***	288
IES		208	312***	192**	288
University Course			216***	192***	156***
Secondary Technical College		864	416	480*	200
Workplace		8	24***	30***	40**
Armed Forces Center		2600	1320**	280	240
Distance			240	648***	72
Other	720	250*	144*	96*	96

*1/ The stars indicate if the return of studying in that institution is significant according to Table 2.*

*Source: ENIVE*

Interestingly, the “high return” institutes seem to be the ones with the lowest course duration. 50 percent of courses taken in the workplace, which yield the highest returns, lasts at most a month<sup>5</sup>. On the contrary, institutes such as the Occupational Training Centers (OTC) and Sectorial Training Centers (STC) that require an important amount of time investments are the ones with low returns (particularly OTC), and only benefit the less educated workers. IES and university courses are an intermediate path, providing returns to almost every worker regardless their educational attainment and lasting less than courses in OTCs or STCs. It is however difficult to assess causality: on the one hand, it may be possible that short “on the job” courses are better focused; on the other hand, however, longer training tends to be administered to less skilled workers, which may also present an obstacle to higher returns. Most likely, a mix of the two lies beyond the fact. Qualitative analyses should be performed to better assess causality.

A possible explanation of why the duration of most courses are short, is that training is mostly financed by the workers (Table 8). Almost 80 percent of the courses are funded by workers or relatives, while

<sup>5</sup> If we consider 2 hours per day and only taken on weekdays, we get that a course that lasts a month would consist of approximately 40 hours.

employers only funds around 14% of the courses. Such a disproportionate financing source holds across categories (with the exception of workplace training): almost all of the courses taken in an Occupational Training Center and IES, for instance, are self-financed, and less than 5% is financed by the firm. This situation is the same for high return institutions, particularly for university courses.

**Table 8: Funding sources by study center**

	<b>Own 1/</b>	<b>Workplace</b>	<b>Other</b>	<b>Total</b>
<b>Occupational Training Center</b>	776,150	14,225	35,614	825,989
	94.0%	1.7%	4.3%	29.3%
<b>Sectoral Training Centers</b>	133,722	26,390	11,485	171,597
	77.9%	15.4%	6.7%	6.1%
<b>IES</b>	796,390	42,035	15,885	854,310
	93.2%	4.9%	1.9%	30.3%
<b>University Courses</b>	269,932	46,570	18,696	335,198
	80.5%	13.9%	5.6%	11.9%
<b>Secondary Technical College</b>	32,514	428	23,844	56,786
	57.3%	0.8%	42.0%	2.0%
<b>Workplace</b>	12,183	198,980	5,125	216,288
	5.6%	92.0%	2.4%	7.7%
<b>Armed Forces Center</b>	8,548	12,407	6,065	27,020
	31.6%	45.9%	22.4%	1.0%
<b>Distance</b>	4,629	1,039	0	5,668
	81.7%	18.3%	0.0%	0.2%
<b>Other</b>	189,541	39,795	100,798	330,134
	57.4%	12.1%	30.5%	11.7%
<b>Total</b>	2,223,609	381,869	217,512	2,822,990
	78.8%	13.5%	7.7%	

1/ Includes own and relatives.

Source: ENIVE

The younger workers are the ones who participate to continuous education the most, particularly, workers aged 18 to 34 (Table 9). Column (1) also shows that workers with higher levels of education are also more likely to attend training, as well as white collar workers and people who work in a medium or large firm (ENIVE only). Observe that differences between the profiles obtained from both surveys can be explained by their sampling design, as ENHAB is nationally carried while ENIVE only covers Lima and Callao. Nevertheless, it is worth noting that, according to ENHAB, after controlling for cognitive and non-cognitive skills, the difference between workers with university studies and workers with primary education loses its significance. This means that workers with higher cognitive and non-cognitive skills are more likely to participate to continuous education. There may be therefore a challenge for continuous education reaching the most vulnerable workers.

**Table 9: Continuous Education Profile**

Dependent Variable	ENHAB		ENIVE	
	People aged 14 to 45 who have taken or are taking any course of at least one month duration		People who have taken or are taking any course	People aged 14 to 45 who have taken or are taking any course of at least one month duration
Men	-0.0289 (0.0270)	-0.0355 (0.0271)	-0.0563*** (0.0120)	-0.0536*** (0.0148)
Between 18 & 24 years	0.0780* (0.0403)	0.0685* (0.0402)	0.235*** (0.0304)	0.258*** (0.0289)
Between 25 & 34 years	0.111*** (0.0398)	0.0985** (0.0399)	0.249*** (0.0290)	0.275*** (0.0274)
Between 35 & 44 years	0.0270 (0.0617)	0.0211 (0.0637)	0.246*** (0.0292)	0.266*** (0.0276)
More than 45 years			0.235*** (0.0284)	
High School	0.135*** (0.0298)	0.0937*** (0.0334)	0.287*** (0.0159)	0.283*** (0.0216)
Superior Non University	0.172*** (0.0466)	0.101* (0.0538)	0.295*** (0.0209)	0.268*** (0.0266)
Superior University	0.172*** (0.0493)	0.0828 (0.0596)	0.340*** (0.0238)	0.319*** (0.0313)
White Collar	0.0487 (0.0462)	0.0344 (0.0460)	0.131*** (0.0188)	0.134*** (0.0228)
Medium Firms (10 to 100 work.)	0.0360 (0.0421)	0.0303 (0.0414)	0.0556*** (0.0175)	0.0496** (0.0201)
Big Firms (More than 100 work.)	0.0619 (0.0459)	0.0511 (0.0465)	0.143*** (0.0153)	0.121*** (0.0186)
Cognitive (quartile 2)		0.0504 (0.0345)		
Cognitive (quartile 3)		0.0820** (0.0387)		
Cognitive (quartile 4)		0.117** (0.0457)		
Grit (deciles 2 & 3)		0.0894** (0.0420)		
Grit (deciles 4 & 5 & 6)		0.0822** (0.0393)		
Grit (deciles 7 & 8 & 9)		0.0874** (0.0439)		
Grit (decile 10)		0.0309 (0.0620)		
Constant	-0.0415 (0.0413)	-0.158*** (0.0536)	-0.104*** (0.0296)	-0.138*** (0.0305)
Observations	850	847	6,402	4,294
R-squared	0.037	0.052	0.100	0.077

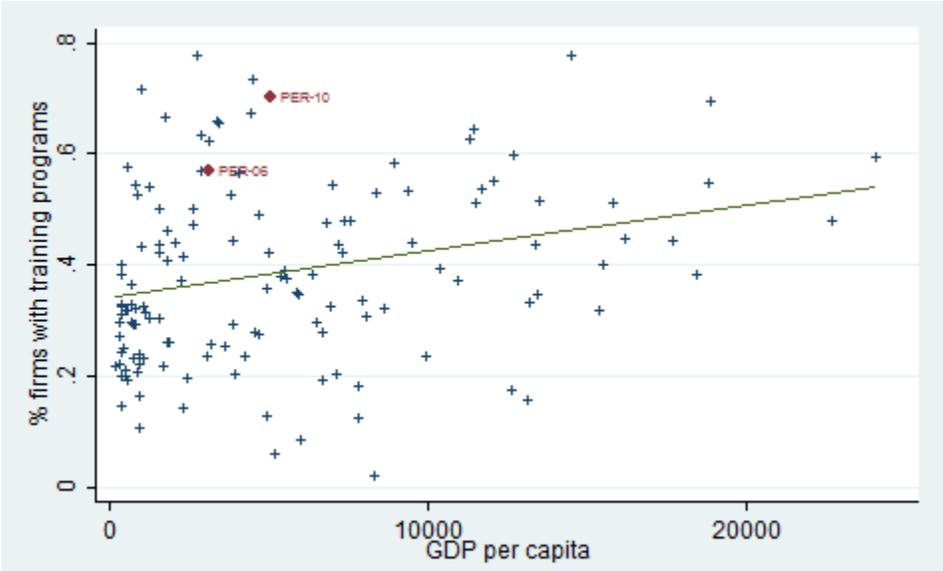
*Note: The dependent variables are: (i) For ENHAB, a dummy variable that takes the value of one if the respondent between 14 and 35 years old is studying or has ever studied any course or diplomaed of at least one month of duration; and (ii) For ENIVE, a dummy variable that takes the value of one if the respondent has ever studied or is studying any course. Column (4) applies the restrictions of the ENHAB training to the ENIVE.*

*For a more concise presentation, we only show the significant deciles for Big Five (none were significant) and Grit scores (ENHAB). Robust standard deviation is in parenthesis. \*\*\* p<0.01 \*\* p<0.05 \* p<0.1*

*Source: ENHAB and ENIVE*

It is important to analyze not only the supply side, but also the firms' demand for continuous education. As mentioned earlier, training improves the productivity of workers, which also has a positive impact on firms' productivity. This is why many – though not all – firms invest in training in order to increase its productivity.

**Figure 4: GDP per capita and Firms with training**



A simple benchmarking of firm-provided training suggests that firms in Peru provide less training than firms in countries with similar income per capita levels (Figure 4). Also, even though vocational training is increasing, the firms' perceptions about its quality are low (Table 10). Peruvian businessman's perceptions towards investment in training services are lower than both the world and South American averages; which leads Peru being ranked 93 (out of 144 countries available).

The perceptions index shown in Table 12 is constructed using the World Economic Forum (WEF). It consists in two questions regarding businessman's perception towards availability and firm's investment in training services for each country<sup>6</sup>. The scale ranges from one to seven; being one "not at all" and seven

<sup>6</sup> The questions are: 1) In your country, to what extent are high-quality, specialized training services available? And 2) In your country, to what extend do companies invest in training and employee development?

“widely available” and “to a great extent” for the first and second questions, respectively. The perception index is then the average score of these two questions.

**Table 10: Perception index**

Country	Perception Index	Ranking
Switzerland	5.69	1
Japan	5.41	2
Luxembourg	5.40	3
Malaysia	5.35	4
Finland	5.32	5
Qatar	5.26	6
Singapore	5.25	7
Norway	5.16	8
Belgium	5.11	9
Sweden	5.10	10
	⋮	
<b>Peru</b>	<b>3.76</b>	<b>93</b>
World Average	4.02	

Country	Perception Index	World Ranking	LAC Ranking
Brazil	4.31	44	1
Chile	4.22	52	2
Uruguay	3.91	80	3
Colombia	3.89	83	4
<b>Peru</b>	<b>3.76</b>	<b>93</b>	<b>5</b>
Argentina	3.73	95	6
Paraguay	3.65	105	7
Bolivia	3.52	115	8
Venezuela	3.34	124	9
LAC Average	3.82		

Source: World Economic Forum (2014)

Observe that there is no consensus on whether continuous education should have a cognitive and socioemotional component, in addition to the technical emphasis. Nevertheless, both cognitive and socioemotional skills have a positive impact on productivity, wages and employability. Therefore, depending on the profile of the workers, it would be good to let the door open for continuous education to include both components.

### Some implications for policy

The training modalities that deliver the highest returns for continuous education are the workplace, universities and Sectoral Training Centers (the latter only for workers with an education level lower than or equal to technical education). At the same time, however, almost 60% of workers continue their education in institutions with lower returns, particularly, post-secondary non university institutions (IES) and Occupational Training Centers.

Furthermore, the more profitable institutions (specially the workplace) seem to be far more efficient as they are the ones that involve less time per course. In general continuous education is mainly funded by the worker (or relatives) whereas the firm is just responsible for courses taken in the workplace. The

market seems therefore to be trapped in an inefficient and suboptimal equilibrium, where workers bear most of the cost of training, and attend, for the most part, the less efficient institutions.

To be sure, the profile of workers who attend these institutions may be behind some of these associations: for instance, if IES and Occupational Training Centers would train workers with more challenging learning abilities, something that we can capture with difficulty in our analysis, the low impact of training could be due to the workers' profile, and not necessarily the type and quality of training imparted. While such omitted characteristics may play a role, the findings are consistent with qualitative evidence suggesting that IES and Occupational Training Centers offer lower quality training (see below).

Several factors can be behind this suboptimal level of investment. From the demand side, the worker may not be entirely certain of the skills needed for the job, or the abilities that employers are looking for. The worker may also be financially constrained, and may not be able to afford high quality continuous education as some courses are quite expensive. From the supply side, firms face a trade-off: investing in training and increasing workers' productivity, against a higher likelihood of losing them. Both the workers' and employers' constraints are likely to lead to suboptimal investments in training. There is therefore ample room to improve the market through public interventions.

An optimal subsidy to continuous education (whatever form it may take), for instance, should take into account both workers' and firms' incomplete information sets and uncertainty. To maximize impacts, subsidies to continuous education should also be offered in a variety of formats that accommodate both firms' and workers' preferences for training. It may be wise to start however with the most efficient ones – the workplace, universities and Sectoral Training Centers (for technicians).

To be sure, firms should finance some share of the training – the challenge is to define how much of it. The expected marginal cost of training to firms should be equal to the expected private marginal benefit of the training. The marginal cost entails the cost of training and the probability of losing the workers due to its higher employability. The marginal benefit entails the increase in productivity. The state should only finance the “public” or “general” component of training, and possibly slightly mortgaged to ensure incentives are aligned. And workers, especially skilled ones, should bear some of the costs too. At the end, an optimal financing mechanism should find an equitable and incentive compatible sharing of the costs of training among all parties involved: firms, workers and the Government.

Implementing such a subsidy may not come without its challenges. First, fostering and ensuring quality training at the workplace may be challenging. It is difficult to monitor both the quantity and quality of training given in a firm. Firms could for instance agree with workers to share the benefits of a subsidy,

while providing little training. Overcoming such issues would require strong law enforcement, which however may be challenging under the current institutional setting.

A subsidy would also entail some implementation challenges. As the main objective is to increase the competitiveness of the economy, an optimal subsidy would be to assign it to an employer-employee match; but this is unfeasible in practice. Hence who should receive the subsidy, the worker or the firm?

Becker (1975) distinguishes between general and specific training. The former is useful for many firms, in particular within a market (these firms can be thought as competitors). Hence general training benefits mainly the worker, because the acquired knowledge allows him to potentially work in any of the competitors, and as such Becker argues that it should be funded by the employee. On the other side, specific training has only benefits in the current workplace of the worker; it should therefore be funded by the firm. Stevens (1994) goes beyond this dichotomy, and proposes the concept of “*transferable training*”. The term “transferable” refers to training that is useful for at least one firm in addition to the one who provides the training. Under this perspective, the specific and general training proposed by Becker are just extreme cases; being the former the one with no external market for those abilities, and the latter the one where the market is very large. This approach leads to the challenge we previously discussed: if the training is easily transferable, firms may invest sub optimally in continuous education.

To be sure, under full certainty, no asymmetries of information and well-functioning credit markets, we could leave workers the task to finance their general training. In practice, as we have seen, there are however many obstacles that may prevent workers to seek training. Also, subsidizing workers may be more complex than subsidizing firms. First, the administrative costs of subsidizing workers are higher than subsidizing firms. Second, the financial capability of the worker is more limited than it is for the firm; which may shrink the possibility to finance training through cost-effective tools such as tax rebates. Finally, to the extent that most training entails both a specific and generic component, firms are the ones who know best the abilities and skills required for the job.

In the policy section, we will revisit some of these arguments to propose a system of continuous education for Peru that is compatible with local institutional capacity and design, and that covers a large profile of firms and workers.

## 4. Implementation of training programs: Lessons from international experience

Training programs exist in all countries, and range widely in their scope and sophistication. Some forms of training is imparted by almost all employers; private training centers are ubiquitous; social programs have often remedial and technical education components; and in many middle and upper income countries, Governments have put in place sophisticated training, accreditation and certification systems to guarantee the quality and portability of skills.

From a theoretical perspective, there is a strong rationale for Government involvement in training given the many market failures related to the skill acquisition process, which include information asymmetries in the labor market; mobility and portability of knowledge; credit and social constraints – all factors that may lead to sub optimal investment in training (Honorati and McArdle2013). Training programs respond to both productivity and equity objectives. From a productivity perspective, training is good for value-added and income growth, as it allows firms to maintain their workforce up to date with the latest technologies, and workers of all skills to invest further in their human capital, climbing the income and social ladder. From a social perspective, training can improve labor market perspectives of vulnerable and low-income individuals who have left the formal schooling system, and youth transitioning from school to work who need to complement their education with more technically-oriented training.

A small but growing body of literature has documented the impacts of firm-based training on productivity. Among others, Almeida and Carneiro (2009) estimate the rate of return to firm investments in human capital for large Portuguese firms. For the firms who do provide training, the authors find substantial returns to investment (8.6 percent on average). Barret and O’Connell (2001) find similar results for Irish firms. Interestingly, the authors manage to distinguish between general training (i.e. training that is portable in nature as it does not relate to the specifics of the firm’s production methods – see Becker, 1975), and firm-specific training, and find statistically significant positive effects on productivity for general training only. Similarly, Bartel (1995) conducts a within-firm analysis, and find training to impact positively job performance measures – which are closely related to productivity. See also Almeida, Behrman and Robalino (2012) for a more thorough review.

There is a much larger literature looking at the impacts of training on wages and employment. It is dangerous to infer productivity gains from wages alone, but to the extent that higher wages do reflect in part productivity gains, there is strong and consistent evidence that continuous education and training

can be good for both firms and workers. On the job training provided by firms, for instance, has been shown to consistently affect wages positively (see, among others, Lynch, 1992; Frazis and Loewenstein 2005; and Almeida, Behrman and Robalino 2012).

Firm-provided on the job training is however only one possible avenue for training, and other forms of training, such as training provided to vulnerable groups, may lead to lesser impacts. It is not the same teaching to unskilled youth, as teaching, say, to skilled workers or doctors who need to learn about the latest technologies in their fields. Certifying basic technical competencies may also be easier than designing a certification process for narrow but highly technical postgraduate courses. And the accreditation process of training institutes for vulnerable youth has different requisites than the accreditation of institutes for trained professionals – one would hope a stronger emphasis on the ability to impart remedial education, life and non-cognitive skills.

Often, unfortunately, all these components are bunched together into a single category – continuous education. Such generalization may be the reason why continuous education may face negative perceptions, with a strong belief that it has little to no labor market impacts. Yet, a careful review of a growing international evidence suggests a much more nuanced picture. The impacts of training depend on several factors, such as the target population; the adequateness of training curricula; and the economic cycle.

In this section we review aspects of training that impact evaluations and meta analyses have found to affect the impacts of training programs on labor market outcomes (i.e. employment and income). A summary of the evidence is shown in Table. We divide factors into the ones that have shown to have, on average, no impact; little impact; some impact; and a consistent impact. By consistent impacts we mean factors that have consistently shown across evaluations to affect labor market outcomes.

To be sure, such a classification needs to be taken with a grain of salt. First, the magnitude of the impacts can vary significantly across evaluations, which is a reflection of the fact that impacts depend on many factor, from the quality of the implementation, to the overall package that has been offered, to economic conditions, and the profile of the treated population. This is why we choose to focus on features that have been consistently shown to affect impacts, but do not discuss much the magnitude. Second, some features may show a large impact under a certain package of services and for a certain type of beneficiaries, but no impact under other packages and beneficiary profiles. To make an example, life skills training may show large impacts for low skilled and vulnerable populations, but little impact for trained professionals. In trying to resume impacts we must make abstraction of such heterogeneities; accordingly,

we classify some features as having “some impact” not necessarily because the impact is small or negligible, but because it may be observed only under certain conditions.

Overall, in addition to firm-provided training, which we have already discussed, three factors have been shown to have a strong and consistent impact on labor market outcomes: the presence of on-the-job training, which may or may not complement classroom training; the length of training; and the provision of a comprehensive package of services that goes beyond pure training (see Table).

Pure classroom technical training, unless it is very specialized, has been consistently shown to lead to almost no impacts. This is because technical training is more than just learning notions – it is about putting them in practice, and learning how to solve daily issues arising on the job.

Short training durations also have limited impacts. Digesting and assimilating notions, techniques and problem-solving takes time. Short training can be useful for trained specialists to learn about the ultimate technology, but is of little use for imparting broader skills, in particular for people who may also be in need of remedial education: it is not possible to expect training to resolve in a few hours what people may have missed for years in the formal education system.

Finally, training alone may be of little impact if it is not accompanied by a comprehensive package of services, which can range, depending on the profile of beneficiaries, from remedial education to psychosocial support and vocational assessment, to employment services aimed at helping people to better integrate the labor market.

While the findings are less consistent across the literature, or only apply to certain profiles of trainees, several other factors have also been shown to affect labor market outcomes (see again Table 11). First, the institutional and economic context has a strong impact on labor market outcomes. Poor capacity of training institutes, or a severe economic downturn, are likely to reduce the impacts of training. Large firms also seem to provide better training – both because of scale effects that allow them implementing more efficient training programs, and because they tend to exploit more sophisticated technologies, and hence may place more emphasis on training.

Some profiles of beneficiaries, such as the unemployed, vulnerable or marginalized populations, and out-of-school youth are also harder to train due to psychosocial factors and (in particular for the last two groups) difficult life trajectories that often kept them away from school. On the other hand, training inactive women who are willing to join the labor market, or new hires who are keen to learn how to perform in their new job, seems to lead to positive impacts. Such differences in impacts across profiles of

beneficiaries highlight the importance of considering, beyond cognitive skills, non-cognitive, motivational and aspirational aspects, as they influence both the capacity of trainees to assimilate notions, as well as their aspirations and confidence that training may be able to change their trajectories in life.

Working in close relationship with the private sector is also crucial for training to deliver impacts. This sounds obvious, and has been said over and over again. Yet, there is lots of confusion about what “working closely with the private sector” means. In many countries, this translates into centralized agreements and committees in which the public sector, guilds and employers’ associations participate. Often such arrangements deliver poor results. The objective of working closely with the private sector is to provide training that responds to the employers’ needs, and frequently employers’ associations are too far away from the technical specificities of local firms to be able to design training modules that suit their needs. Employers’ association may also represent too much of a diverse set of firms, each of them with different needs in terms of skills.

Whether participants complete the training, or whether firms have committed to hire a percentage of the participants once the training is completed, is also associated with better labor market outcomes. Nevertheless, these associations should be interpreted with caution. The observed association between training completion and labor market outcomes may only indicate that if participants are motivated enough to complete the training, they may also be better motivated in the labor market: forcing people to complete training may therefore not lead to higher impacts. Similarly, we should carefully think about the option of asking firms to commit to hire a certain percentage of the candidates: this may improve labor market outcomes, but since firms will put more efforts in screening candidates, only the most suited will be hired. While such a strategy may improve efficiency and labor market outcomes, it may pose a challenge if the objective of the program is also to reach vulnerable groups who may be less motivated and more difficult to train. Also, asking firms to provide non-binding letters of intent does not seem to be a useful strategy – and actually, has been shown to delay significantly the provision of training.

**Table 11: Factors affecting impacts of training programs**

	Most frequent observed impact (earnings and/or employment)	Observations	References
Context (legal framework, capacity, quality of training network, economic activity, economic cycle)	✓✓	If training does not respond to the context, impacts can be significantly reduced.	Betcherman, Olivas and Dar (2004); González-Velosa, Ripani and Rosas-Schady (2012)
Size of firms	✓✓	Larger firms tend to provide better on the job training - some even have internal training centers	González-Velosa, Ripani and Rosas-Schady (2012)
Unemployed	✓	Training tends to have modest impacts for the unemployed, mostly on employment, little on earnings.	Betcherman, Olivas and Dar (2004)
Marginalized / Poor groups	✓	The more marginalized a group, the less likely it is that training will have an impact.	Betcherman, Olivas and Dar (2004); Bishop (1996); González-Velosa, Ripani and Rosas-Schady (2012); Heckman, Lalonde and Smith (1999)
Youth	✓	Small positive impact mostly limited to the <i>juvenes</i> LAC programs, most on employment, in some cases on earnings. Impact depend much on the presence of a comprehensive package of services.	Attanasio, Kugler and Meghir (2011); de Crombrugge, Espinoza and Heijke (2010); Betcherman, Olivas and Dar (2004); Greenberg, Michalopoulos and Robins (2002); Honorati and Aedo and Nuñez, (2004); Attanasio, Kugler and Meghir (2011); Galasso, Carneiro and Ginja (2014); Greenberg, Michalopoulos and Robins (2002); Honorati and McArdle (2013)
(Inactive) women	✓✓	Impact is marked when women move from inactive to active status.	Almeida, Behrman and Robalino (2012); Almeida and Carneiro (2009); Barrett and O'Connell (2001); Bishop (1996); Frasis and Loewenstein (2005); Lynch (1992).
Firm training	✓✓✓	Firms' on the job training has been consistently shown to have positive returns on both wages and productivity.	Betcherman, Olivas and Dar (2004); González-Velosa, Ripani and Rosas-Schady (2012); Honorati and McArdle (2013)
On the job training component	✓✓✓	On the job training is the feature that has been most consistently reported to positively affect impacts.	Betcherman, Olivas and Dar (2004); González-Velosa, Ripani and Rosas-Schady (2012); Honorati and McArdle (2013)
Pure classroom training (technical and soft skills)	×	Very limited impact, unless directed to specific needs, or accompanied with on the job training.	Betcherman, Olivas and Dar (2004); González-Velosa, Ripani and Rosas-Schady (2012); Honorati and McArdle (2013)
Training tailored to local employers' needs (demand-driven design)	✓✓	To have an impact, training must address the needs of local employers - which poses a challenge to nation-wide approaches.	Betcherman, Olivas and Dar (2004); González-Velosa, Ripani and Rosas-Schady (2012); Honorati and McArdle (2013)
Comprehensive package of services	✓✓✓	A comprehensive package should include on the job training, remedial education, psychosocial support, personalized counseling, vocational assessment, and employment services.	Betcherman, Olivas and Dar (2004); Betcherman et al (2007); de Montesquiou and Sheldon (2014); Honorati and McArdle (2013)
Employer-provided training	✓✓	There is however an important selection effect, as only the most motivated workers may access training. Longer training periods (more than 4 weeks) have the largest impact.	Bishop (1996); González-Velosa, Ripani and Rosas-Schady (2012)
Length of training	✓✓✓	Digesting concepts and notions takes time - short training spells have usually very little impact.	Attanasio, Kugler and Meghir (2011); Bishop (1996); González-Velosa, Ripani and Rosas-Schady (2012); Honorati and McArdle (2013)
Completion of training	✓✓	Not completing training leads to very little impacts.	de Crombrugge, Espinoza and Heijke (2010)
Commitment to hire with pre-selection of candidates by firms	✓✓	Firms committing to hire make stronger screening efforts.	González-Velosa, Ripani and Rosas-Schady (2012)
Labor demand analysis thorough letters of intent	×	Letters of intent are a poor proxy of employers' needs and interest	González-Velosa, Ripani and Rosas-Schady (2012)
Continuous training system	✓✓	The longer are the delays in getting a course started, the less employers will be interested	González-Velosa, Ripani and Rosas-Schady (2012)
Public-private collaboration in the recruitment process	✓✓	The closer employers are involved, the better outcomes tend to be.	González-Velosa, Ripani and Rosas-Schady (2012)
Life skills training	✓	There is still little research on the impacts of life skills training, but these skills are important for the labor market, and some people may not have received adequate training.	González-Velosa, Ripani and Rosas-Schady (2012); Honorati and McArdle (2013)
Business / entrepreneurship training	✓✓	Pure training has limited impact, mostly on likelihood to start a business. Impacts on earnings are present only if training is part of a comprehensive package, which includes financial literacy and seed funds.	Blattman, Fiala and Martinez (2011); Drexler, Fisher and Schoar (2014); Honorati and McArdle (2013); Karlan and Valdivia (2011); Montesquiou and Sheldon (2014)

Flexibility also seems to be rewarded. Decentralized programs that subsidize the provision of training on an ongoing basis seem to be more successful than similar programs that do it through large calls for proposals. This is because large calls for proposals generate delays that may reduce the interest of firms and training institutes to apply for training grants (González-Velosa, Ripani and Rosas-Schady 2012). Similarly, collaborating with firms in selecting candidates, rather than basing the hiring process purely on strictly predefined criteria, also seems to help identifying more suitable candidates.

Finally, the content of the training also matters. Life skills training increasingly appears as an important component of training programs, in particular for groups, such as the vulnerable youth, who have clear deficiencies in this area. Similarly, providing basic business and entrepreneurship training to small scale entrepreneurs can also lead to impacts, but the comprehensiveness of services offered seems to matter: impacts are often observed only when training is accompanied with other interventions, such as financial literacy training, and some form of seed funds.

## 5. Overview of the Peruvian training system

Most continuous technical training is provided by the same institutions in charge of professional technical degrees at the higher education level. They usually offer classes for students of full time professional degrees in the morning, and continuous technical training courses in the evening.

The Peruvian formal education system is organized by the General Law of Education (Law N° 28044) enacted in 2003 (Espinoza, 2011). This norm establishes a two stage education system: basic education and higher education. There are three levels of basic and general education: Preschool, Primary (six years) and Secondary (five years), with no formal option for secondary technical education, which could be the beginning of the problem (Korean Institute, 2015; Yamada et al. 2013). Only a handful of vocational high schools have survived from the times when it was a formal option for secondary education, and they represent less than 1% of current enrolment.

Meanwhile, higher education has two main branches. Universities offer five to seven years of undergraduate studies leading to academic bachelor's degrees and professional licenses officially recognized by the Peruvian State (*título a nombre de la nación*) in hundreds of careers. Some of them offer courses and certifications for continuous education only for university professionals and

represent around 13% of total training given in Lima as captured by a 2011 household survey specialized in employment (ENIVE).

Technological Superior Institutions (IEST) supply three to four years of formal education leading to “Professional Technical” degrees officially recognized by the Peruvian State. To obtain this specific diploma it is mandatory to have completed a 3000 hours program at least. To obtain the “Technical” diploma recognized by the State, the requisite is to have completed a 2000 hours program at least. Finally, to obtain a “Technical Auxiliary” certification recognized by the State is necessary complete a 1000 hours program.

Among these IEST, there are four large sectorial institutions – the so-called National Services of Sectorial Formation (NSSF) with a combined public-private sector management: SENATI for manufacturing, SENCICO for construction, CENFOTUR for tourism, and INICTEL for telecommunications. They are regarded as the most prestigious state technical institutions due to their connections with the private sector (members of large private trade associations participate in their board of directors and management committees) and large and stable source of funding (see Box 2). However, they represent only 6.6% of continuous training given in Lima in 2011.

**Box 2: The National Services of Sectorial Formation (NSSF)**

**SENATI**, the National Service for Training in Industrial Work, was founded in 1961 by Law N° 13771 with the purpose of providing training for industrial and manufacturing activities. Part of their activities are funded by a mandatory contribution equivalent to the 0.75% of total wage bill for manufacturing firms with more than 20 formal employees. As a counterpart, each firm has the right to send one employee for every 20 workers in the plant under the dual training mechanism (four days a week in the firm and one day in SENATI). There is also a chance for firms with less than 20 workers to get workers training if they make a contribution corresponding to the 2% of a tax unit (currently S/. 3,800). Nevertheless, small and medium size firms consider that this system has to be improved. They argue that a one day per week training is not nearly enough to increase de productivity of their labor force and that most of these youngsters lack basic competencies for the workplace, both cognitive and non-cognitive skills. Employers suggest a full time immersion in SENATI to get those basic skills first and later on a dual system to enhance more technical skills.

**SENCICO**, the National Service of Training for the Construction Industry, was established in 1977 by Law N° 21673 in order to offer training and certifications for the labor force specialized in the construction activities. Their programs are financed by direct resources from the National Budget and the corresponding contributions of construction companies (0.5% of total income of the firm derived from any construction activity). SENCICO offers a more classical three level formation. The operational programs are directed to people with a truncated secondary education and current workers in the construction sector. The technical programs are conducted to offer a professional technical degree in three years so it is necessary to have a certificate of completed secondary education to apply. The higher education level offers individual courses for updating skills at the professional level.

**INICTEL**, the National Institute of Research and Training in Telecommunications, was created in 1971 by Law N° 19020 (General Law of Telecommunications). This institute does not only offer training courses, but also has research activities and execution of projects related with its field of study. Specifically, ESUTEL (Institute of Telecommunications and Telematics) is in charge of the vocational training area and receives funds from telecommunications firms corresponding to a 2% of annual profits contribution. Additionally, ESUTEL imparts master degree programs and specialization/updating courses.

**CENFOTUR**, the Center for Formation on Tourism, was created in 1975 by Law N° 21828 after several administrative reforms. Their activities are financed by National Budget and tuitions and fees paid by students.

Source: Espinoza (2011), webpages and interviews.

Other IESTs can be fully public or private, profit-seeking or not. Their quality and pertinence is rather heterogeneous but represent the largest share of continuous training (30% in 2011). On the top of the scale there are however just a handful of up-to-date and well equipped prestigious institutions like TECSUP (private non-for-profit institution ran by one of the wealthiest economic groups in Peru with investments in mining, industry and education), with international accreditations and technical degrees accepted as equivalent to BA in applied engineering in Europe and the USA.

Most of the universe of IEST lacks quality and pertinence. Public IEST have been suffering the same kind of problems faced by public elementary and secondary schools. Instructor's and director's

salaries and work conditions have been the same as with other teachers and they barely interact with the real world of enterprises. Many public IST have not had significant investment in equipment for decades (Yamada and Montero, 2009). Most private IST have similar problems of low quality and pertinence. Accordingly, the average returns (IRR) to professional degrees in public and private IST are low and close to zero (Yamada and Castro, 2008). All these IST can and do offer specific courses and training for shorter periods of time open for workers who would like to update their skills and for the general public. Overall, they represent 30% of the total supply of training.

In addition, the technical education system contemplates the participation of public and private CETPROs, Productive-Technical Education Centers, which grant diplomas and certifications based on training of shorter duration for participants who do not need to have any prior formal education (Rodriguez, 1995). Quality and pertinence issues also seem to be common in these centers. They comprise 26.3 percent of total training currently provided.

CETPROs were enacted by the General Education Law (Law Nº 28044) on the base of previous CEO (Occupational Education Centers). This norm establishes a formally sound technical-productive education by stages, which however faces implementation challenges due to lack of well qualified human resources and financial difficulties. The first stage provides the students all the necessary qualifications for the execution of minor complexity activities which may ease their incorporation to the labor market. Young people can apply to this stage without certifying complete basic education. This is an occupation-oriented training and it confers the technical assistant degree. The second stage trains the students for a specialized occupational activity. After completing this stage, students are able to receive a technical degree with mention on the correspondent specialty. Population attending CETPROs are mostly poor individuals who cannot afford a higher education investment.

**Table 12: Proportion of people trained by CETPROs by labor income decile**

Decile	2004	2011	Decile	2004	2011
1	39.3%	39.8%	6	39.3%	27.4%
2	50.1%	34.1%	7	27.9%	24.2%
3	44.3%	42.3%	8	17.1%	19.0%
4	40.6%	30.2%	9	12.0%	13.6%
5	34.1%	37.5%	10	7.1%	15.9%

Source: ENIVE 2004-2011

### Training directly provided by the firms

Training directly provided by companies may be among the most adequate way to address their specific needs, and a powerful device for enhancing productivity in the labor force in the short run, especially considering the widespread problems of low quality and pertinence of the supply of formal training in Peru. However, according to ENIVE this option of training represents less than 10% of total training (8.4%).

Reasons behind this low incidence can be general to any country, but also specific to Peru. Among others, firms do not have enough incentives to provide and finance the socially optimal amount of general training since workers can take it with them if they leave the firm (Chacaltana, 2004). Moreover, companies, especially small and medium size ones, may find the fixed costs related to provide formal training inside the firm too high.

Only very few companies have formally established their own universities or training centers, such as the Peruvian conglomerate Interbank (which owns and operates an array of top service providers like banks, insurance companies, retailers, department stores, restaurant and drugstores chains, universities, technical institutes and schools); they do not have however official recognition. A few other leading companies established agreements with prestigious technical centers for direct training of new technicians. This is the case of Ferreyros, supplier of Caterpillar equipment for mining and construction, which runs a hands-on training program with Caterpillar equipment with

TECSUP. Overall, however, firm-provided training remains relatively rare, and is mostly concentrated among the largest firms.

## Government financing of training

The largest training initiatives financed by the Peruvian Government are *Projovent* and the new initiative of tax rebates for formal manufacturing companies undertaking workers' training.

*Projovent* began in 1997 as a pilot project financed by IDB and was continued with government budget and other international cooperation funding in the last fifteen years, training a total of 50,000 youngsters. *Projovent* was aimed to improve employability of poor youngsters by financing 3 months of training in formal technical institutions and securing 3 months of paid internship in a firm. Technical institutions had to dialogue with firms to prepare courses relevant to them since they had to commit internships provided and paid by the firms. Government enrolled the youngsters based on their poverty status and granted the financing to courses with the highest mixed score of technical quality and costs.

*Projovent* was an adaptation of Chile's *Joven* to the Peruvian setting, but because of limited funds and national legislation it was more stringent, requiring firms to pay minimum wages to the interns. There have been several rounds of the program subject to quasi-experimental impact evaluations (Galdo et al, 2008; Ñopo and Saavedra, 2003; Rosas, 2006), and the findings are generally positive on employability and income improvement, after 6, 12 and 18 months of finishing the program, somewhat better than the average impact found in similar programs in other Latin American countries (Díaz and Jaramillo, 2006). The impact was enhanced when the quality of the training increased, though it decreased for extremely poor individuals (Galdo et al, 2008).

Tax incentives for training investments in Peru have been subject to several changes in recent years, with the goal to expand them, but results are limited so far. Traditionally, the training bill was considered for tax calculation as a general expense account, just like any other expenditure. Chacaltana (2004), Jaramillo et al. (2008) and Yamada (2008) among others showed the low incidence of training in Peru (and the economic principle behind this suboptimal equilibrium as in Becker, 1975), and proposed adapting a tax credit scheme for training investment like in Malaysia and Chile.

A Law Promoting Human Capital (Law 29498) adopted in 2010 also limited to 5% of the total wage bill the expenses in training that could be considered as expenditures for income tax calculations. This legislation was heavily criticized by firms since it was going in the opposite direction of policy goals and was abolished the following year.

In 2014, within the context of a second round of measures to reactivate the economy (*Segundo Paquete*), the Law 30056 established a tax credit for training expenditures for small and medium size manufacturing firms, up to 1 percent of the total wage bill. The regulation accompanying this law has however not yet been issued.

A stronger scheme was also proposed in the context of the fifth round of measures to reactivate the economy (*Quinto Paquete*) in the Law to Promote Formal Employment of Youngsters (Law 30228). This law established a voluntary scheme for formal firms of all sizes and sectors to hire youngsters with lower benefits, but a mandatory training program co-financed by the government through a tax credit of up to 2% of total wage bill. The training recognized for tax rebates had to last between 60 to 400 hours per year, and had to take place in a formally recognized training institution. This piece of legislation was however later revoked.

With this policy background, and the increased focus on boosting productivity, the time is ripe for discussing a reform of the training system in Peru, not only for the youth but for the labor force as a whole and for continuous upgrading of technical capacities. The next section outlines a proposal for a training system that follows international best practices, and at the same time adapts to the institutional settings and specificities of the country. Rather than being definitive, the proposal aims at providing food for thoughts to stimulate a discussion around training, which eventually may lead to reforming a system that is in great need of upgrading.

## 6. A policy proposal for promoting continuous education and training in Peru

The first section of this report has shown that there are high return to investment in continuous training, both in terms of higher incomes and productivity. At the same time, the report has documented two worrying trends: suboptimal investments in training, and a large heterogeneity in the quality of training institutions, with many of them delivering training of poor quality that is

disconnected with the needs of the private sector. Many factors influence such trends: for instance, the fact that workers can “walk away” with the acquired training may be in part responsible for firms’ suboptimal investments, and highlight the importance for public sector interventions. At the same time, however, suboptimal investments may be responsible for the poor quality of training provided, and vice-versa: there is a need therefore to break such a vicious cycle that is hampering progress on both the equity (i.e. better wages) and productivity front.

Based on the findings of the report, this section sketches a proposal for a system of continuous education and training in Peru. While, often, training systems have been designed based on international best practices, we argue that such a system must be flexible enough to adapt to local settings and constraints. While learning from international best practices is essential, we must read them through the lenses of the local context, and adapt them accordingly.

For instance, creating a comprehensive competencies-based certification system should be seen as a medium to long term goal. Such a sophisticated system requires a good and regular dialogue with the private sector – not only at the central level, but with the firms that actually will employ trained workers; the flexibility to adapt competencies on a regular basis; a large pool of trained specialists who have the skills to construct such competency-based curricula; accredited institutions that can certify workers; a supervisory and regulatory body; and firms that value such certificates, among others. While, ultimately, it may be a desirable objective to achieve, we believe that in the short to medium term there is a need to propose a simpler system that, progressively, can be improved. “Too much engineering” and regulation may deliver counter-productive results. In particular, to be effective a comprehensive system of continuous education and training need to respond to the following challenges:

- **Reaching all firms, from small informal firms, to large formal ones.** Given that many large firms provide their own training, while most informal firms do not subsidize training at all, such heterogeneity calls for establishing different windows, to finance internal training in large firms, to subsidizing small firms’ usage of training institutes, and subsidizing training institutes who may organize training for small informal firms. Each window should have different quality oversight processes.
- **Reaching most workers, from skilled to unskilled ones.** Each worker profile will need a different type of training – from highly technical one for skilled workers, to a mix of socio-emotional and technical training for some vulnerable workers.

- **Reaching an optimal level of benefits and subsidies.** Reaching an optimal level of benefits and subsidies is challenging – both because of implementation and design constraints. On the one hand, a subsidy scheme should be as simple as possible. On the other hand, training needs – and hence subsidies – vary by skills, age, and workers’ financial situation. Overall, subsidies should take into account how much courses cost, and how frequent they should be. While, theoretically, subsidies should be tailored to specific profiles, from an implementation perspective there should be as few as possible modalities.
- **Quality oversight processes should take into account the highly decentralized institutional settings.** While there may be a central unit in charge of running the system and overseeing quality control processes, given the challenges in establishing quality oversight institutions, quality should also be ensured by means of market forces. Accordingly, training should be subsidized, but not excessively so, to the extent that firms and workers do find it attractive to train, but do matter about the quality of the training they receive. Reaching such a balance is a complex exercise, especially because the balance will vary according to the type of workers and firms.

Based on these constraints, and the findings of the report, **we advocate the establishment of two windows**. The first window should cover the larger firms that have the ability to impart training, or to seek out training institutes that can address their training needs. Such firms tend to be formal and file for income taxes – hence a **tax credit scheme** may be the most appropriate and effective scheme. The second window should cover small and informal firms that do not file for income taxes, as well as unskilled and vulnerable workers who do not work for large formal firms. Such firms tend not to train their workforce, and some of their workers may require training that goes beyond technical skills: literacy or non-cognitive curricula may need, for instance, to be part of the training. Subsidies for these firms and workers may not be effective: it is likely that the State may have to finance a large part or even the entirety of the training, both for equity and productivity considerations. We advocate therefore the establishment of a **second window that finances directly training**, either to firms or to training institutes. Such a window could be constructed upon the current *Projovent* framework, albeit with some modifications.

## A tax credit scheme for formal firms

A tax credit scheme could expand the current tax rebate for training expenditures (up to 1% of payroll) for micro, small and medium size firms (MIPYME) in the manufacturing sector. The tax rebate, still under implementation by the Production and Labor Ministries, is a step in the right direction, but will not be sufficient, in scale and scope, to generate the quantum leap in training needed in Peru at this juncture. A typical structure of a training course to be promoted under a more general scheme could be summarized as follows (see Table 13): 3 sessions of 3 hours each per week, usually in the evenings (training should be compatible with regular workload, otherwise firms might not be willing to grant permission to the worker) during 3 months, every 3 years. This is a “3 to the power of 3” scheme and amounts to a total of 117 hours of training every 3 years. Considering an average cost of 8 dollars per training hour, it would add to a total of 936 dollars.

**Table 13: Tax credit scheme assumptions**

Variables	
Classes per week	3
Class length (in hours)	3
Weeks	13
Total Hours of Training	117
Average Hourly Cost (US\$)	8
Training Timing (in years)	3
Total Cost Per Period (US\$)	936
Total Cost Per Period (S/.)	2808
Tipo de cambio (USDPEN)	3.00
Tax Rebate	50%
Fraction of trained workers	33%
Number of wage payments per year	15

Elaboration: CIUP

Hence, let us consider 936 dollars (2800 soles at the current exchange rate of 3 soles per dollar) as the average cost of continuous training in Peru. As detail in Table 14, if we assume one third of the labor force in every firm to be trained every year under this scheme, this would be equivalent to 4.8%, 4.1%, 3.5% and 3.1% of the annual payroll for the microenterprise, small, medium and large scale enterprise.

**Table 14: Tax credit scheme by size of the firm**

Size of the firm	Micro	Small	Medium	Large
Average number of workers	6.5	45.1	285.3	2,239.0
Average wage of formal workers (S/.)	1,294	1,529	1,794	2,043
Number of payments per year	15	15	15	15
Annual cost of payroll (S/.)	125,777	1,035,075	7,677,240	68,613,420
Cost of training course	2,808	2,808	2,808	2,808
Fraction of workers trained	33%	33%	33%	33%
Annual total cost of training course per firm to cover a third of workers (S/.)	6,065	42,242	267,034	2,095,682
Percentage of training cost respect to payroll to cover a half of workers	<b>4.8%</b>	<b>4.1%</b>	<b>3.5%</b>	<b>3.1%</b>
Tax credit for the firm	<b>2.4%</b>	<b>2.0%</b>	<b>1.7%</b>	<b>1.5%</b>

Source: ENAHO and PRODUCE

Elaboration: CIUP

One important principle of any training incentive scheme should be the cofinancing between the state and the firm (to promote actual pertinence and quality of training, aiming at productivity gains for the worker and the firm). Therefore, if we consider a roughly equal share by both stakeholders, the scheme could limit the total tax rebate to 2.0% for micro and small size enterprises, and 1.5% to

medium and large size enterprises. Notice that this scheme has a desirable built-in progressive nature, benefitting more in relative terms to the smaller firms.

Also, if there may be constraints on the fiscal space available, the program could restrict the tax rebate to train workers with primary, secondary and technical higher education at most (i.e. the tax rebate would not be given for training college educated workers, who have a much higher likelihood to be trained already). Another desirable characteristic of the scheme is that it should be available to all sectors of the economy (all CIIU codes). As seen in previous sections of this report, productivity gains from continuous training can be sizable across all sectors of the economy.

Likewise, training should not be restricted to technical courses, but could also include training in soft skills (firms have complained about the important gap in training in this area in several public and private forums). Once again, cofinancing by the firm should be a sufficient signal that this training is productivity enhancing for the firm and the economy.

Another issue to consider is the quality assurance mechanisms. Official licensing for training institutions (given by the Education Ministry) could still be a formal requirement (since most of them offer three year professional technical degrees too), but might not be sufficient for quality control. To some extent, relying on partial financing from the firm should also enhance quality, since the firm has the incentive in investing on good quality training.

The scheme should also cover firm-provided training, or training by individual mentors, either inside or outside the firm, since they do not issue formal receipts that could be presented for tax rebate. In this scenario, the Labor Ministry could have a maximum of 10 working days to certificate the pertinence of the program, checking with its referential lists of occupational profiles and training programs. The training could be focused on either technical or non-technical skills equally. If no notice is received after that binding period, positive administrative silence (i.e. approval) would apply.

Observe however that such a tax rebate program for promoting training is not a realistic vehicle to benefit the whole spectrum of microenterprises, since 60% of them are not subject to income tax, and therefore would not have a potential source for tax rebate. For smaller firms, both formal and informal ones, a second window operated by the Labor Ministry should be opened, to provide direct training financing to be used in courses given by certified training institutions, as detailed below.

## Direct financing of training to small firms and unskilled workers

Most small firms – even formal ones – do not provide training to their workers. And unskilled and vulnerable workers, such as the unemployed youth, may not work for large firms that provide training. To these workers and firms, training should be imparted as much for equity and social assistance, as for productivity considerations. While mechanisms should be in place for guaranteeing the training to be of quality and cost effective, it should be covered to a large extent by the State – subsidy schemes are very likely to deliver low take-up rates. An analysis of Chile’s tax credit scheme for training, for instance, suggests that only the largest firms were making use of it, and that skilled workers were benefitting disproportionately from it (Castillo, 2006).

Such a window could be an adaptation of the current *Projoven* system, to allow for the broader scope, and reduce some of the inefficiencies that may hamper take-up. The system should allow training proposals to be submitted both by certified training institutes (regarding certification criteria, see the discussion in the previous section) and small firms.

Training institutions should be able to submit proposals for training workers who are already employed (possibly in collaboration with their employers), but also for training the unemployed or under-employed workforce. Training should include firm-provided on the job training, and possibly, for workers who do not have yet a job, commitments from firms to hire a given percentage of the trainees. Both requirements would serve to ensure greater relevance of the training imparted, as well as greater buy-in from the private sector. To be sure, such a strategy may exclude from the system the most vulnerable workers, who may need longer training and may not be able to find, *ex ante*, firms willing to hire them. But such vulnerable workers may be in need of larger investments than what a national system may be able to spend on training, and a dedicated program with different targeting criteria (that may or may not be linked to the direct financing window) should be developed.

Small firms wanting to boost the skills of their workforce should also be allowed to submit proposals. Such proposals should have already pre-identified the (qualified) training institutes to be hired. Firms should also be required to pay a small fraction of the training costs to ensure the relevance of the training, possibly directly to training institutes. Given their low margins and training constraints, the direct cost to firms should however be minimal, enough to ensure their commitment to good training, but not enough to discourage them to apply. A balance sheet analysis should be performed before assessing adequate levels of co-financing.

Good communication with firms and training institutes will also be essential to ensure that firms are aware of the program, and understand the benefits of training for their productivity and their workforce.

To begin with, the cost of training could be assumed to be in line with the cost incurred by larger, formal firms (see the previous section). It could then be reassessed on a regular basis. Also, in contrast with the current *Projoven* system, training proposals should be allowed to be submitted on a rolling basis, rather than based on calls at given intervals, to allow to respond with more flexibility to firms' needs (González-Velosa et al 2012).

Whether the system should include additional eligibility criteria depends very much on the fiscal envelope allocated to the system. By requiring training institutes to find firms willing to commit to hire some of the workers, and small firms to subsidize part of the training, some screening should already take place. If this would not be enough, one could also restrict the window to certain types of firms only, and to workers with incomplete secondary education, for instance.

### Improving training quality: the supply side

Demand-driven financing as proposed in the previous sections should promote an effective match between the firms' needs and the training institutions' supply, especially for some reasonably good training institutions such as the sectorial centers, some private and public technical superior institutions, and a few occupational training centers.

Nevertheless, as detailed in the previous sections, the universe of training institutions in Peru is rather vast, comprising close to a thousand centers of very heterogeneous quality and institutional settings. While some of them (public-private sectoral, and some private superior institutions) have been able to maintain a dynamic and sustainable size of operations, with up-to-date- equipment, curricula and instructors, due to stable sources of funding and close relationships with firms in their domains, the majority of Peruvian training centers (public technical superior institutions and occupational centers) have little contact with the productive sector and have had very low infrastructure and equipment investments (Yamada and Montero, 2006).

A comprehensive reform to tackle this situation will also need strong institutional changes, especially in the institutions that are under the responsibility of the Government. Most public higher technical institutions and occupational centers have historically operated like an extension of the

basic education system: they are formally and actually managed just like any other regular school in the country. Their directors and instructors are school teachers “trapped” in a school world, with no incentives or experience in going out to the real productive sector to ask for skills demands. Many of their teachers have never had any practical experience in an actual occupation in a Peruvian firm of any size.

Since the Education Ministry has historically focused its attention to the primary and secondary levels of education, this part of the system, which is post-secondary and more cross-sectoral in nature, has at times lacked leadership and resources. The situation seems to have arrived however at a turning point: the current administration has shown strong commitment to reform higher education, both at the university and the technological institutes’ level. Such a reform offers an opportunity to improve the quality of technical training not only through monetary incentives, but also with some direct interventions.

Reforms could include a more flexible but effective regulatory system for private and public institutions focusing on licensing based on a basic set of quality conditions for the provision of technical careers (the new Law of Higher Technical Institutions currently under preparation would tackle this issue). The reform could also include a rationalization of the number of public institutions, boosting them with new management and better infrastructure, focusing their activities on sectors that serve the needs of the national and regional economies, merging institutions to obtain a better cost structure and management, and closing the centers that do not pass economic or social appraisals.

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