

Vocational Education and Training in Brazil

Knowledge Sharing Forum on
Development Experiences:
Comparative Experiences of Korea
and Latin America and the Caribbean

André Portela Souza
Lycia Lima
Amanda Arabage
Juliana Camargo
Thiago de Lucena
Sammara Soares

Knowledge and Learning
Sector

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Contents

Executive Summary.....	1
1. Introduction.....	2
2. Overview of VET in Brazil	3
2.1 A Historical Outlook: From Apprentice Schools to PRONATEC.....	3
2.2 VET in Brazil Today	5
2.3 Evidence on the Impacts of VET in Brazil.....	13
3. Trends and Innovations on VET in Brazil.....	14
3.1 VET as a Social Inclusion Program	15
3.2 Incorporating Educational Technologies in VET: The Expansion of Distance Learning.....	17
3.3 Fostering VET Initiatives from Companies.....	20
4. Discussion and Challenges	20
4.1 Retention Challenges.....	21
4.2 Transition to Labor Market Challenges.....	23
4.3 Shortage of Information Challenges.....	25
5. Conclusion.....	25
References	28
Appendix	31

Tables

Table 1	S System Institutions	11
Table 2	Tax Rates Base	12

Figures

Figure 1	Timeline of VET in Brazil.....	3
Figure 2	Federal Spending in Vocational Education	4
Figure 3	Accumulated Enrollment's Rate by PRONATEC'S Program (2011-2014) ..	4
Figure 4	Levels of Brazilian Vocational System	6
Figure 5	Accumulated Enrollment Rate by Qualification and Training Courses (2011-2014)	7
Figure 6	Technical vs. General Secondary Education in Brazil	8
Figure 7	Technical Courses Breakdown	8
Figure 8	Technological vs. General Tertiary Education in Brazil	9
Figure 9	Enrollment in Technical Education: Private vs. Public (Total).....	10
Figure 10	Enrollment in Technical Education: Private vs. Public (Federal, State and Municipal)	10
Figure 11	SENAI Enrollments.....	122
Figure 12	Evolution of Bolsa Formação Enrollments (2011-2014)	16
Figure 13	Evolution of Bolsa Formação Expenditures (2011-2013).....	16
Figure 14	Gender and Schooling of Bolsa Formação's Beneficiaries	166
Figure 15	E-Tec Annual Federal Expenditures in R\$ Millions	18
Figure 16	Evolution of Brazil E-Tec Network's Number (Accumulated) of Support Poles	188
Figure 17	Regional Distribution of Brazil E-Tec Network's Support Poles	19
Figure 18	Student's Evaluation about E-Tec's Courses (2014).....	19
Figure 19	Challenges of VET	200
Figure 20	Performance of the Vocational Education and Training (VET) in the Labor Market.....	24

Executive Summary

The past decade has witnessed an unprecedented surge in the emphasis given to the role of vocational education and training in Brazil. This has been characterized by an increasing flow of resources from the government to vocational education and training and a substantial increase in the number of enrollments. Particularly from 2011 onwards, with the launch of the PRONATEC program as one of the main flagship initiatives of President Dilma Rousseff's government, VET has gained even more visibility.

The coverage of vocational education and training in Brazil is low, but it has an increasing trend. When compared to general education courses over time, the path is clear: VET education is gaining momentum, attracting more students that would otherwise follow a purely general track. Enrollment in VET courses still represents a small portion of total secondary education in Brazil but it has notably increased over the past years. The Federal government's spending on vocational education has risen from 0.04% of GDP in 2007 to around 0.2% of GDP in 2013. As a result, in 2007, 9% of total students enrolled in general secondary education were also enrolled in a VET program whereas in 2013, this number reached 17%.

Regarding VET provision, although private institutions still enroll less students than public ones, their importance is far from negligible. Such institutions play an important role in VET in Brazil, with special attention to the so-called *S System*, which is privately managed but receive public funds through taxes over firms' payrolls. The *S System* is responsible for the provision of approximately 43% of professional and technical education in Brazil.

Alongside of undeniable advancements pertaining to the recent surge of VET in Brazil, there are also several challenges. The challenges related to VET students and providers in Brazil are multidimensional and stretch over the entire student experience –from a student's entry in a VET program, passing through school retention until the transition of students to the labor market. Among the main challenges pertaining VET in Brazil are the mismatch between supply and demand of professional skills, school evasion and lack of transparency by the government and VET providers.

1. Introduction

Vocational Education and Training (VET) has a meaningful role to play in the development of skills for the workforce. VET programs can ease the school to work transition, increase workers' productivity and help provide the market with demanded specific skilled labor.

Developing countries, in particular, should invest in these types of programs due to their higher levels of unskilled labor, since some of them may benefit from these programs. Benefits of VET programs in developing countries are well documented. Malamud (2008) shows that when accounted for selection bias, vocational education yields higher earnings for individuals than general education. Tansel (1998) also finds evidence of greater earnings for vocational high school graduates when compared to general education. Hanushek (2011) provides cross-country evidence that VET students face a higher probability of employment after graduation when compared to similar general education students.

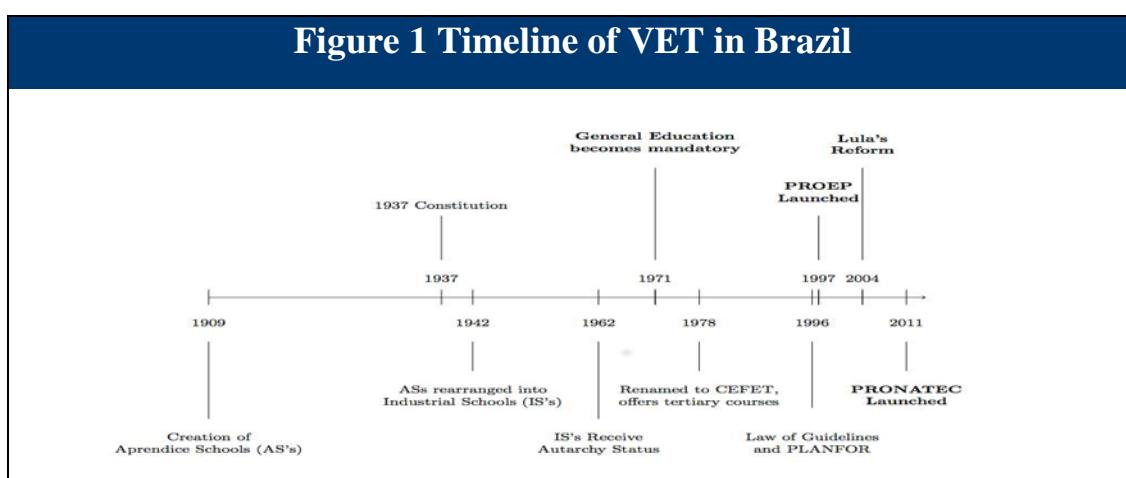
With compelling evidence on the benefits of vocational education, it is not surprising that Brazil is investing in this modality. The concerns of the Brazilian government regarding vocational education traces back to 1909 when the first apprentice schools were built. Nevertheless, it was over the past 30 years that Brazilian vocational education and training programs have gained growing relevance. Since 2011, with the launch of the PRONATEC program –one of the largest VET umbrella program in Brazilian history– the sector has gained even more visibility, shaping what today is the Brazilian vocational structure.

The remainder of this paper is divided into 4 main sections: ii) Overview of VET in Brazil, iii) Trends and Innovations of VET in Brazil, iv) Main Challenges for VET in Brazil, and v) Conclusion.

2. Overview of VET in Brazil

2.1 A Historical Outlook: From Apprentice Schools to PRONATEC

The history of vocational training in Brazil starts in 1909, when the Federal Government created the *Escolas de Aprendizes e Artífices* (Apprentice Schools). These schools provided technical training to poor students with primary schooling level, and were not designed with the main goal of supplying the labor market with specific skills. For almost a century, these schools characterized the country's VET efforts and were the base for current VET system in Brazil.

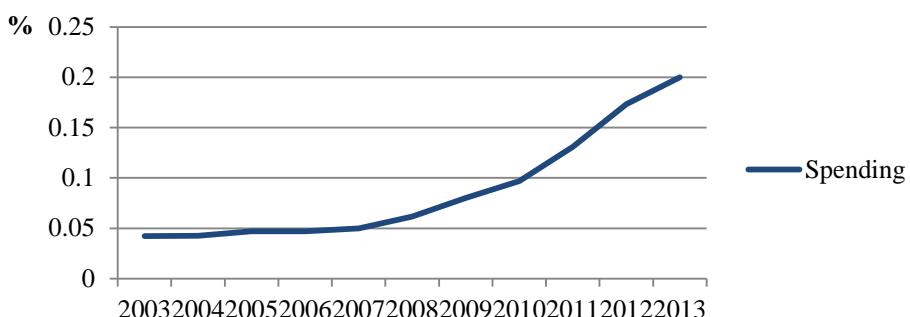


The apprentice schools underwent a series of transformations during the first half of the 20th century. In 1971, general education became mandatory in the core curriculum of technical schools motivated by the argument that this would increase returns to technical school's graduates. Equivalency to secondary school was granted to these schools, which later started offering tertiary courses, evolving into today's Federal Institutes of Technological Education (IFET).

Several important efforts towards developing the present-day VET Education System in Brazil were made from 1996 onwards. The efforts vary from several initiatives, regulation laws, and guidelines for structure and financing of VET programs. Enrollments increased sharply, as well as federal spending on vocational education - from 720.3 million to 7.614 billion Reais, an equivalent to 0.04% of the GDP in 2003 and 0.2% of GDP in 2013.

Figure 2 Federal Spending in Vocational Education

(% of GDP)

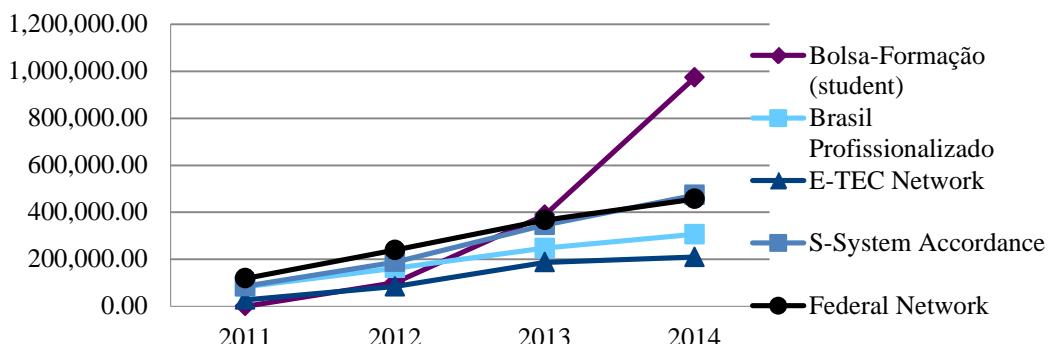


Source: SIAFI

The main initiative related to VET in Brazil today was launched by the Federal Government in 2011 to become one of the largest VET programs in Brazilian history: *Programa Nacional de Acesso ao Ensino Técnico e Emprego – PRONATEC* (National Program of Access to Professional Education and Employment). The program was designed aiming at expanding access to VET in Brazil in order to foster the labor market opportunities to the population. In order to do so, it has been increasing the number of VET institutions, the number of openings in courses and offering financial assistance to vulnerable students interested in enrolling. Today, PRONATEC offers 646 types of short qualification courses and 220 technical courses.

Figure 3 Accumulated Enrollment's Rate by PRONATEC'S Program

(2011-2014)¹



Source: SETEC/MEC, November 2014

¹ These values correspond to the accumulate number of enrollments. For 2014, such number corresponds to total enrollment until august of 2014.

PRONATEC is composed of six smaller programs: i) *Bolsa Formação* (Training Scholarship); ii) *FIES Técnico* (Technical FIES); iii) E-Tec Network; iv) *S System* Agreement; v) *Brasil Profissionalizado* (Professionalized Brazil); and vi) Expansion of the Federal Network. See Figure 4 for the evolution of accumulated enrollment in PRONATEC programs. The expansion tendency is clear, particularly for *Bolsa Formação*.

The programs *Bolsa Formação* and *FIES Técnico* are both related to student financing. *Bolsa Formação*, a voucher-type scholarship, is one of the most important PRONATEC initiatives. It is composed by two modalities: *Bolsa Formação Estudante*, directed to students enrolled in secondary school from public schools and *Bolsa Formação Trabalhador*, intended primarily to a low-income public. *FIES Técnico*, on the other hand, offer low interest rate loans to vocational education students, previously only available to general education students. *FIES Empresa* offers low interest loans to companies willing to offer professional qualification to their employees.

The programs E-Tec Network and *Brasil Profissionalizado* finance the development of VET institutions. The E-Tec Network provides financial assistance to institutions looking to increase the offer of distance learning professional courses, offered free of charge to PRONATEC students. *Brasil Profissionalizado* also offers financial assistance, but specifically to the state network looking to expand their structure.

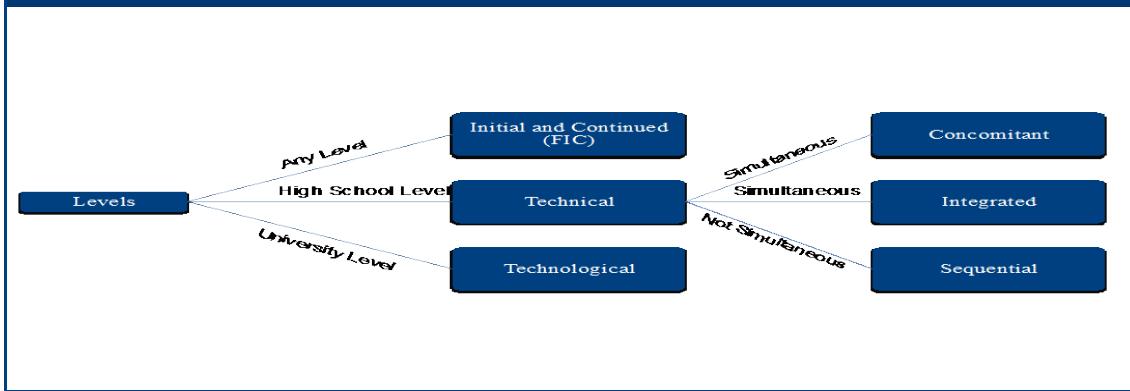
Last but not least, the *S System* Agreement was signed in 2008 between the federal government and two institutions of the *S System* – SENAI and SENAC. The *S System* is a group of 10 institutions that play a very important role in the provision of VET in Brazil. According to the agreement, by 2014, SENAC and SENAI must allocate two thirds of their revenues from compulsory taxation to the provision of free professional and technical education programs.

2.2 VET in Brazil Today

2.2.1 Structure

The current structure of VET is divided into three different levels, illustrated in Figure 4.

Figure 4 Levels of Brazilian Vocational System



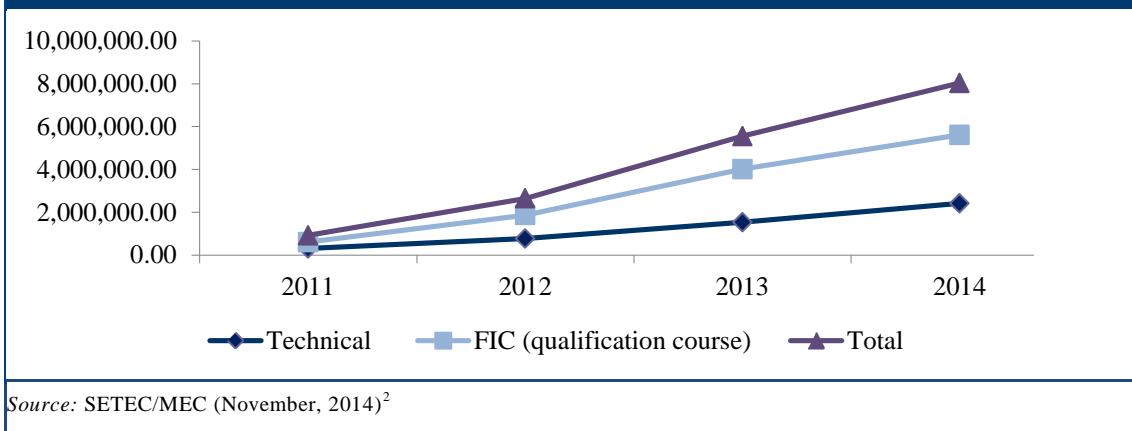
FIC Courses

Initial or Continued Formation courses (FIC courses) are the ones with the broadest targeted population. Anyone can enroll in this type of program. There are no requirements regarding educational degree or age. Their goal is to provide an initial qualification to those whose level of educational achievement is low or have no practical training or experience. In particular, 89.5% of FIC courses are offered by the *S System*, while the other 10.15% are the responsibility of the federal and state technical networks. If well-tuned to the needs of the labor market of a given region, this course modality has the real potential to broaden perspectives and opportunities for insertion (or reinsertion) in the labor market.

These courses are typically short term courses and don't grant any educational level degree (secondary or tertiary) but focus on practical knowledge for very specific careers such as butcher, hair dresser, waitress, receptionist, among others.

Figure 5 shows that both professional education modalities – FIC and Technical - expanded significantly over the past 4 years. FIC courses had an unprecedented evolution due mainly to Government initiative to expand free of charge courses directed at the part of the population with socioeconomic disadvantage.

Figure 5 Accumulated Enrollment Rate by Qualification and Training Courses (2011-2014)



Technical Courses

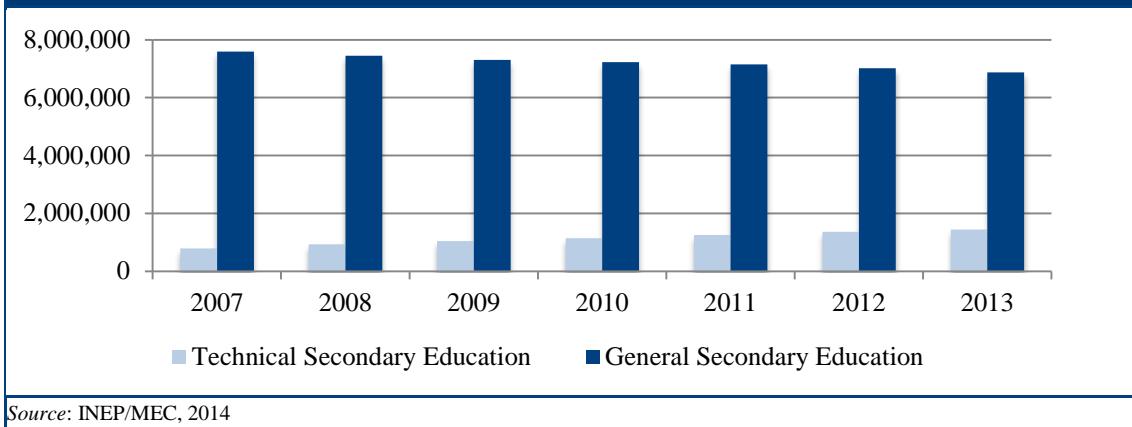
Technical Courses provide professional training to students enrolled in secondary school and secondary school graduates. These courses operate in three modalities:

- I. **Integrated** - Offered to students who want to attend simultaneously Vocational and General Education courses at the same institution.
- II. **Concomitant** - Offered to those students enrolled in a General education course elsewhere but want to enroll in a technical course in another institution.
- III. **Sequential** - Offered only to those who completed secondary school.

These courses still represent a small portion of total secondary education in Brazil. In 2013, the number of students enrolled in general education exclusively was around 6.8 million, whereas the number of students enrolled in Technical education was 1.4 million. When compared to general education courses over time, however, the path is clear: technical courses are gaining momentum, attracting more students that would otherwise follow a general track (Figure 6). While the number of general secondary students dropped by 9.4% from 2007 to 2013, the number of technical secondary students increased 45% between 2007 and 2013.

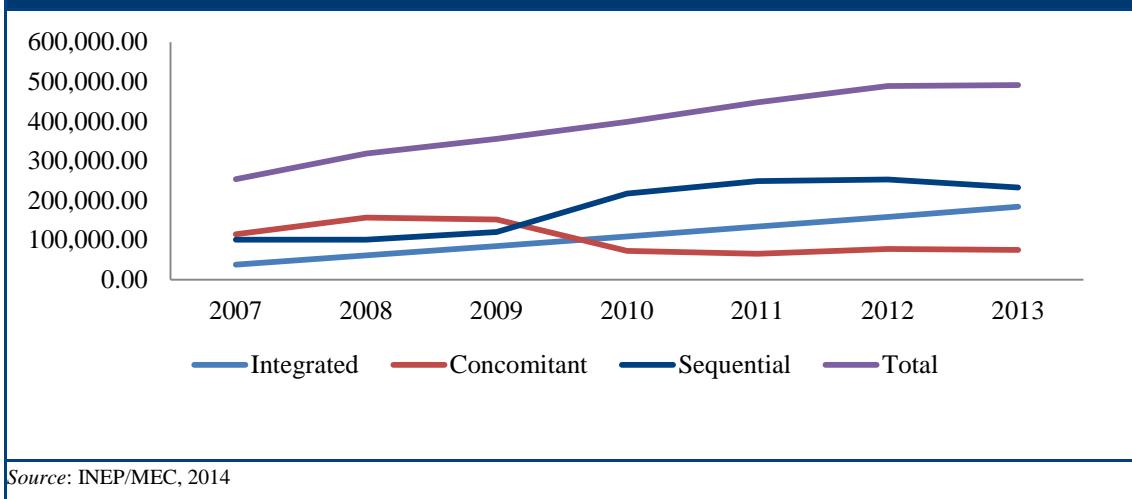
² These values correspond to the accumulate number of enrollments. For 2014, such number corresponds to total enrollment until August of 2014.

Figure 6 Technical vs. General Secondary Education in Brazil



Source: INEP/MEC, 2014

Figure 7 Technical Courses Breakdown



Source: INEP/MEC, 2014

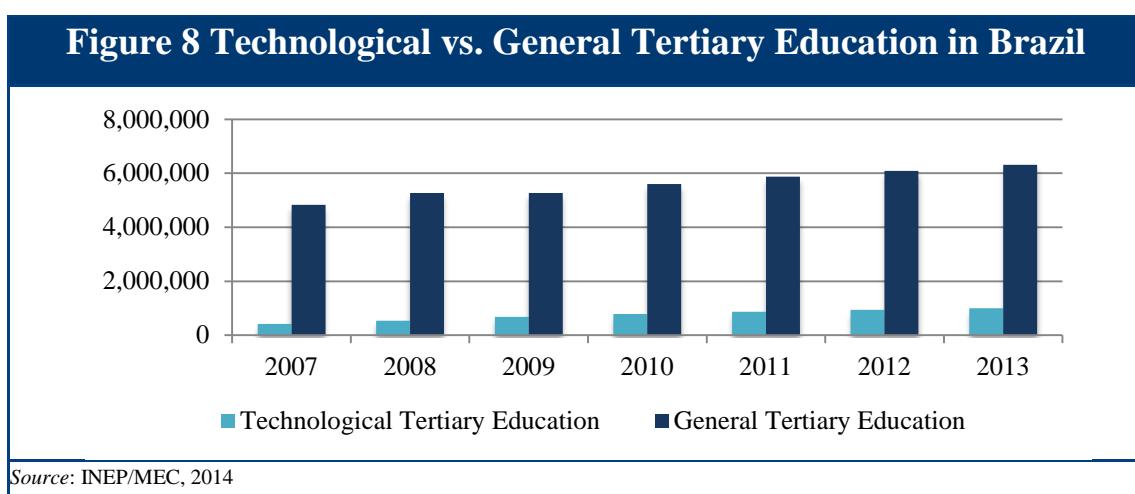
The trend in enrollment in the different modalities of technical secondary education is presented in Figure 7. Sequential courses account for more than half of total enrollments in technical secondary education. From this, it is inferred that the majority of students enrolling in technical education does so after graduating in secondary general education.

Technological Courses

Technological courses are equivalent to tertiary level courses. These programs are only available to secondary school graduates and grant a diploma that is equivalent to a university degree. Therefore, as mentioned before, in order to enroll in a technological course, students are required to have completed high school, but not necessarily

technical high school. Technological courses tend to last three years, one year less than the average tertiary degrees.

As in technical education, technological education also seems to be experiencing increasing enrollment over the past seven years. The number of technological students increased drastically from 414,822 in 2007 to 995,746 in 2013, a 140% expansion. However, differently from technical education, which is experiencing a shift from general to technical modalities, both general and technological tertiary education have experienced substantial increases between 2007 and 2013.

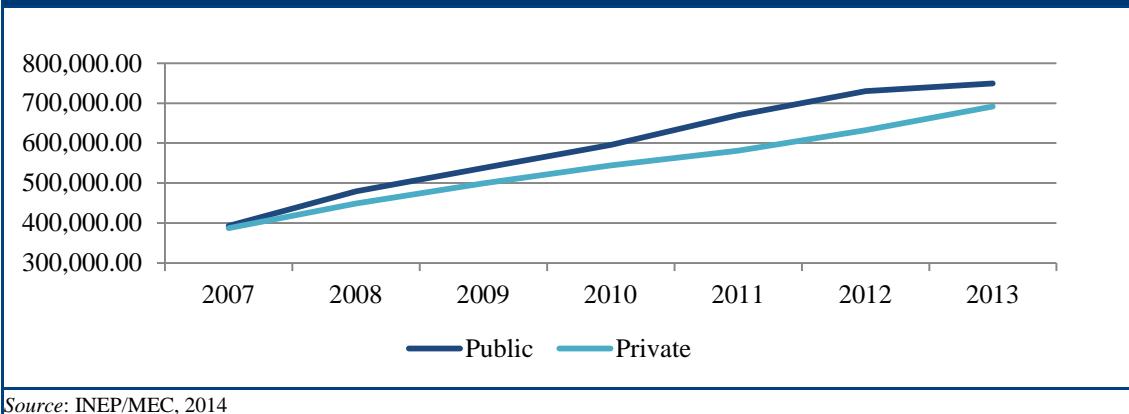


2.2.2 VET Provision

2.2.2.1 Public vs. Private

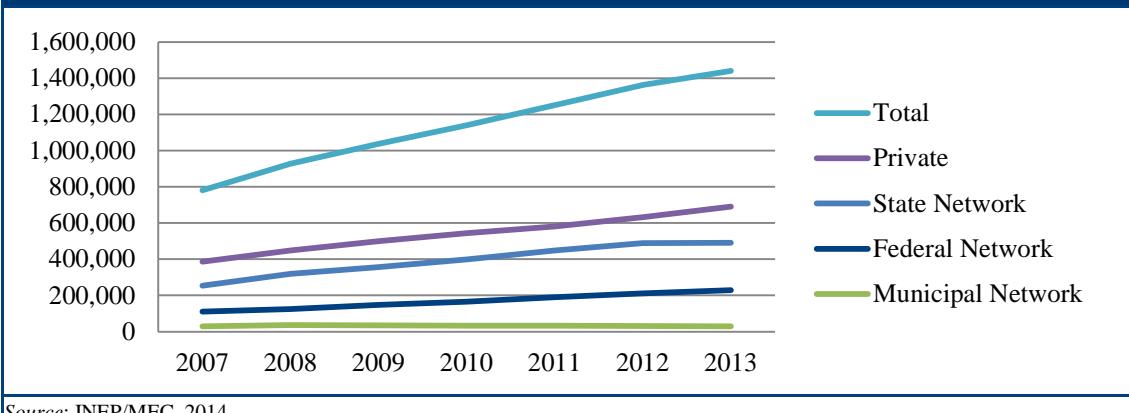
Institutions offering VET courses may be public or private. The Federal Network of Vocational Institutions comprises the public system, present across the country. It consists of three main types of institutions: i) Federal Institutes, ii) Technical Schools associated to Federal Universities, and iii) Technological Centers and Universities. Aside from the federal network, each state has its own state network with decentralized funding. This network is composed of *Faculdades Técnicas Estaduais* (State Technical Universities – FAETEC, focused on tertiary education) and *Escolas Técnicas Estaduais* (State Technical Schools - ETE, focused on secondary education). Municipal Networks are less relevant, as they tend to be small.

Figure 9 Enrollment in Technical Education: Private vs. Public (Total)



Source: INEP/MEC, 2014

Figure 10 Enrollment in Technical Education: Private vs. Public (Federal, State and Municipal)



Source: INEP/MEC, 2014

Although private institutions still enroll less students than public ones, their importance is far from negligible. Private institutions may be divided into two subgroups: private vocational schools or universities and institutions of the *S System*. It is important to highlight that there exists a recent cooperation between the federal government and private educational establishments. Besides *FIES Técnico*, a student holding *Bolsa Formação Estudante* is also able to enroll in a technical course hosted by an enabled private institution. In 2014, private vocational schools were responsible for 19.9% of total enrollments in technical³ courses in Brazil (Ministry of Education, 2014). On the other hand, the *S System* is a very important player responsible for the provision of 43% of professional and technical education in Brazil (Confederação Nacional da Indústria, 2014).

³ The enrollment rate of 19.9% regards only technical courses, *not* short term qualification courses (FIC).

2.2.2.2 The S System

The Brazilian *S System* is a group of entities classified as autonomous social services, nonprofit private entities that exert private activities of public interest. Each autonomous social service is specific to an economical sector and responsible for (i) promoting the improvement of the quality of life of workers within that sector, and (ii) providing professional and technical education, to fulfill the demand for qualified workers on it. The *S System* is composed of a network of 10 different institutions, detailed in Table 1.

Table 1 S System Institutions

Acronym	Name	Mission
SENAI	Industry's national learning service	Promoting professional and technological education, to innovate and transfer industrial technologies in order to stimulate industry's competition
SESI	Industry's social service	Enhancing industry workers and their families' quality of life by taking actions related to education, health and leisure.
IEL	<i>Euvaldo Lodi's Institute</i>	Stimulating industrial firms' competitiveness by providing custom management improvement and management education programs.
SENAC	Commerce's national learning service	Offering professional and technical education for workers on commerce, services and tourism sectors.
SESC	Commerce's social service	Enhancing commerce workers and their families' quality of life by executing programs related to education, health, leisure and culture.
SEBRAE	Brazilian micro and small enterprises support service	Stimulating entrepreneurship and support micro and small enterprises by promoting their competitiveness and sustainability.
SENAR	Rural national learning service.	Offering professional education and promote social progress in rural areas, increasing the quality of life of rural workers and contributing to the country's development.
SENAT/ SEST	Transportation's national learning and social services	Promoting the quality of life of transport workers by offering health, culture, leisure and safety programs as well as vocational training.
SESCOOP	Cooperatives' national learning service	Promoting the development of cooperatives by advising their establishment, monitoring, supervising and auditing their work as well as providing vocational training for their workers.

Although privately managed, the institutions of the *S System* are not entirely privately funded. Part of their revenues is private, as they may charge fees for some of their services and activities. However, a significant share of their revenue is public, as they may collect mandatory taxes over payrolls from firms in the sectors they are relative to.

The way each institution of the *S System* collects taxes varies according to the entities (some collect directly while others make use of Government collection services). Furthermore, rates may differ according to specific characteristics of firms. Table 2 contains the tax rates base by institution.

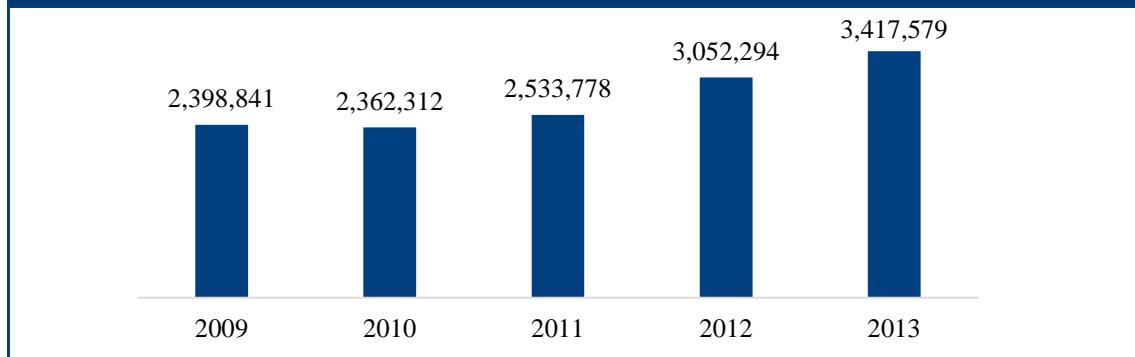
Table 2 Tax Rates Base

Entity	SENAI	SESI	SENAC	SESC	SEBRAE	SENAR	SEST	SENAT	SESCOOP
Fee	1.00%	1.50%	1.00%	1.50%	0.3%	to	0.2%	to	1.50%
Rate					0.6%		2.5%		1.00% to 2.50%

Source: Senado Federal (<http://www12.senado.leg.br/noticias/glossario-legislativo/sistema-s>)

In terms of professional and technical education provision, the two most important entities are SENAI (industry's national learning service) and SENAC (commerce's national learning service). Figure 11 shows that enrollments at SENAI's programs between 2009 and 2013 increased 42% from 2,398,841 to 3,417,574 –evidence that VET has been gaining importance not only in the public system, but also in the private one (Figure 11).

Figure 11 SENAI Enrollments



Source: SENAI, SESI and IEL- Relatório Anual 2012 and Relatório anual 2013

An expressive part of SENAI and SENAC program enrollments is due to their gratuity, in compliance with agreement between the institutions and the Brazilian Federal Government. According to this agreement, by 2014, SENAI and SENAC should allocate two thirds of annual revenues from compulsory taxation to the provision of free professional and technical education programs. In 2013, of 1,663,685 enrolled in SENAC professional and technical education courses, nearly 1 million students had access to education at no charge.

2.3 Evidence on the Impacts of VET in Brazil

The previous section described the Brazilian VET system and showed its relevance has increased in Brazil. Increases in enrollment indicate more people are obtaining vocational training in Brazil. But what do we know about the impacts of VET programs in Brazil? Do students that graduate from these courses obtain higher wages? Are there differences in quality and in market absorption of graduates of public versus private systems?

Almeida et al. (2014) and Costa Lima, Fernandes and Vasconcellos (2010) use different methodologies to analyze the impact of different categories of professional education on earnings and on the probability of being employed. Using a propensity score approach, Almeida et al. estimate that the return to vocational secondary education on wages is on average 9.7% higher than the equivalent general education level. This impact is slightly smaller in magnitude than the one found by Costa Lima et al. (2010). In the latter study, the authors find a wage differential of 12.5 % (also significant at 1% level) using an ordinary least squares approach, and of 12.9% using a propensity score matching approach.

An additional interesting analysis made by Almeida et al. is to separate the effects by institution type. This analysis shows a clear pattern: courses offered by the *S System* seem to be associated with larger wages, followed by private institutions then public institutions.

Assunção and Gonzaga (2010) use the National Household Sample Survey (PNAD) of 2007 to identify the effects of qualification and technical education on earnings. Considering a sample of employed individuals with ages from 18 to 64, the authors used propensity score estimations to find that earning of individuals with a

qualification course are 9.8% higher when compared to individuals with the equivalent level of education. Decomposing this difference by institutional nature, their findings corroborate the argument that the *S System* is associated with higher earnings than other private and public sector qualification education programs (13.5% against 8.9% and 5.9%, respectively). These differences of the *S System* on earnings vary according to region. Both present much higher earnings differentials on the poorest North and Northeast regions, where there is a higher concentration of unskilled workers.

Oliva (2014) studies the impact of technical and technological training programs on placement and wages using Centro Paula Souza data collection on labor market and placement of former students in a couple of years after completion. Centro Paula Souza (CPS) is an Educational Center in Brazil that offers technical and technological degrees. Using this data, the author finds positive and significant impacts on CPS former students, mainly on job market variables. There are increases in employment probabilities, 3.47 percentage points and especially on females by 5.58 percentage points. The study also finds that CPS is associated with increases in earnings by 7.8 percentage points, on average. When observing male students only, the increase is even larger: 10.2 percentage points. Oliva (2014) finds also positive gains on formal work probabilities, an increase of 2.7 percentage points. Moreover, these differences favoring CPS workers on occupation, formal work and wages are larger in São Paulo Metropolitan Region (RMSP) than in the rest of municipalities of the state. On the other hand, analyzing the impact by gender, these differences are larger on women in the outside the metropolitan region and men on RMSP.

3. Trends and Innovations on VET in Brazil

Vocational education and training (VET) became itself an educational policy trend in Brazil. The large investments made and the targeted achieved goals reveal the growing emphasis this modality of education has received over the past years. The government reported (SETEC/MEC, 2014) an expansion of 1,561,745 new VET enrollments, which corresponds to an average growth rate of about 47% from 2011 to 2014 over 3,535 municipalities, around 63% of total Brazilian municipalities. The substantial increase brings forth new investment priorities, innovations in policy design and financing mechanisms, along with a series of challenges.

3.1 VET as a Social Inclusion Program

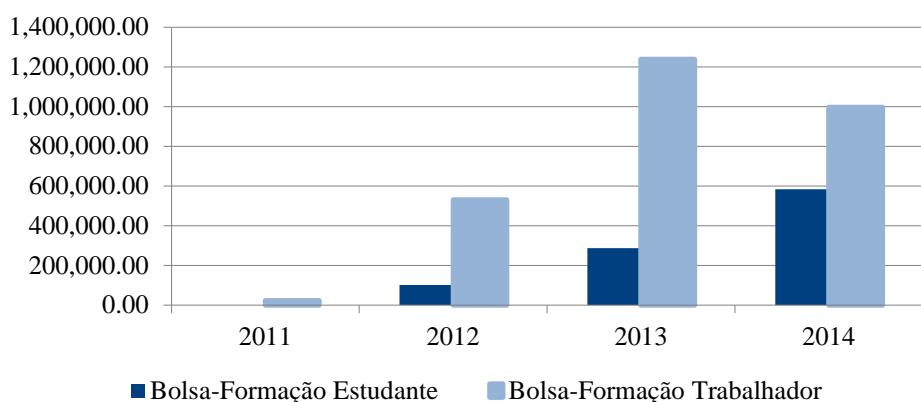
The main initiative related to VET in Brazil today –PRONATEC– does not emphasize technical and vocational education as a specific mean to supplying the market with the necessary skilled labor force, but foremost as a program to promote social and productive inclusion. It has a heavy social policy component, clearly stating as its goal “to promote training opportunities to teenagers, workers and the beneficiaries of the cash transfer programs.” It innovates mainly in the area of providing financial support to vulnerable students, as to enable their training and further absorption by the labor market.

3.1.1 Financing Mechanisms for the Vulnerable Population

The *Bolsa Formação* (BF) is the main financing mechanism within the PRONATEC program, anchor to promoting social inclusion. Its innovation lies on providing free training to the vulnerable population previously unable to afford VET. This mechanism is a scholarship: the government sponsors vacancies at professional education institutions already well established in the market and encourage students and workers to attend professional qualification and training education. The BF is offered in two modalities: *Bolsa Formação Estudante*, aimed at students enrolled in public secondary level schools and *Bolsa Formação Trabalhador*, targeting primarily low-income individuals.

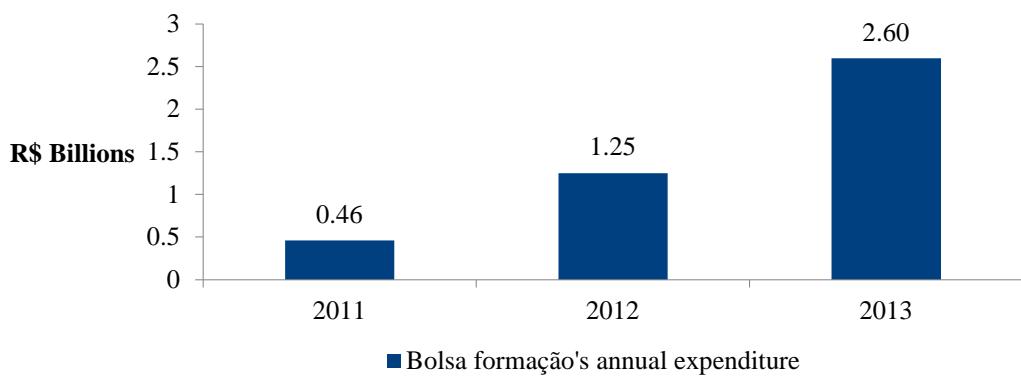
In 2013, the amount invested in this program was approximately R\$ 2.7 billions allocated to more than 3,200 municipalities. This amount financed a total of 1.5 million enrollments, and accounts for 27% of total expenditures in vocational and training courses. Figures 12 and 13 show the enrollment and the investment evolution, respectively, from 2011 to 2014. Figure 14 shows the profile of beneficiaries: 60% women, 98% of the beneficiaries have completed secondary school or less and 16% have completed primary school or less.

Figure 12 Evolution of Bolsa Formação Enrollments (2011-2014)



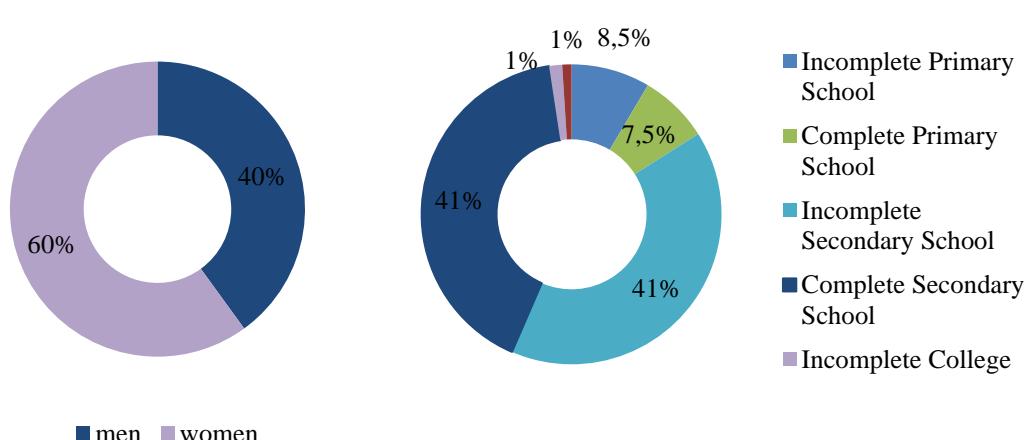
Source: SETEC/MEC, 2014

Figure 13 Evolution of Bolsa Formação Expenditures (2011-2013)



Source: Relatório SETEC, 2011 and Relatório SETEC, 2012

Figure 14 Gender and Schooling of Bolsa Formação's Beneficiaries



Source: Relatório SETEC, 2011, Relatório SETEC, 2012 and Relatório SETEC, 2013

A modality of VET that increased dramatically was the FIC courses, mainly driven by funding availability through *Bolsa Formação*. FIC are shorter term qualification courses, which offered 1,215,691 new vacancies from 2011 to 2013. According to Wiik et al. (2014), for 879 municipalities in the five Brazilian regions, the beneficiaries of *Bolsa-Formação Trabalhador* can be subdivided into two main types: (i) fresh out of high school students seeking to improve curricula to get better paid positions in the labor market, and (ii) older people with low education, who have had little or no experience in the formal labor market and sought to enter often times autonomously.

3.1.2 Social and Productive Inclusion of Vulnerable Women

Mulheres Mil (Thousand Women) was launched in 2011 as a gender focused program aiming at promoting social and productive inclusion of socioeconomic vulnerable women through free qualification courses. Specifically, the program allows women living in vulnerable communities to have access to vocational training and has among its components the promotion of entrepreneurship, digital inclusion, self-esteem, health, rights, duties and cooperative thinking.

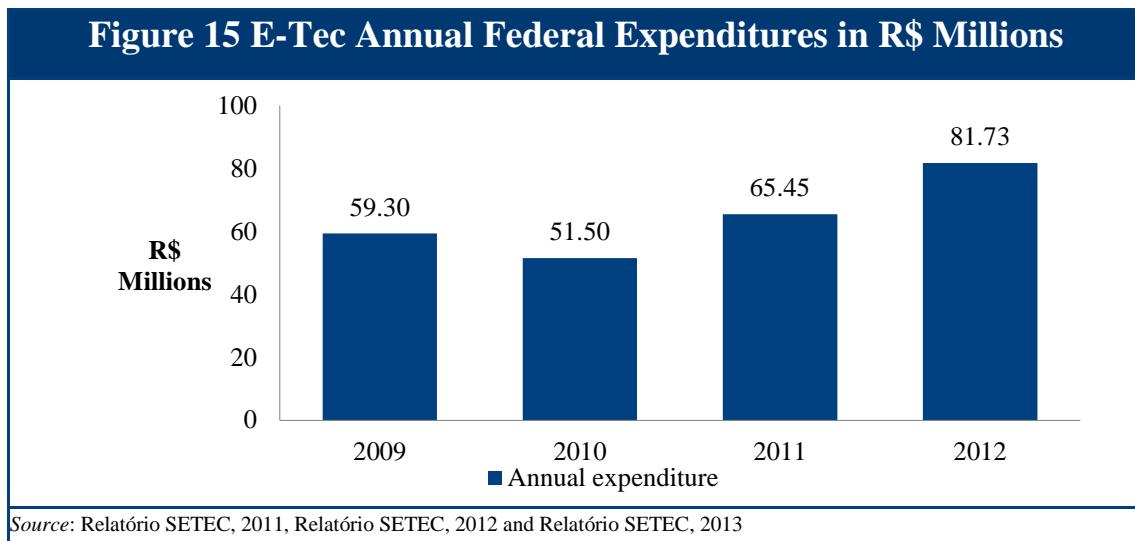
The positive assessments of this initiative led to its expansion, with the goal of reaching hundred thousand women from 2011 to 2014. Since 2013, the *Mulheres Mil* Program partnered with PRONATEC *Bolsa Formação Trabalhador* to expand the number of vacancies offered and hence broaden the impact of the program on social inclusion of vulnerable women.

3.2 Incorporating Educational Technologies in VET: The Expansion of Distance Learning

Another VET in Brazil innovation is government initiatives to explore technology in training education. Online education is becoming an increasingly important tool for the expansion and democratization of professional and technical education in Brazil.

Launched in 2007 by the Ministry of Education and set up in 2011 as one of PRONATEC actions, the E-TEC Network established as its mission: expand supply of free public technical distance-learning courses. In addition to offering secondary level courses, it is also part of the strategy to expand distance-learning modality for FIC short courses and undergraduate technology courses. Figure 15 shows evidence on the

growing importance of distance learning in Brazil: the evolution of federal government's expenditures with E-TEC network and evolution and regional distribution of E-TEC support poles.



For institutions interested in joining the E-TEC Network setting-up of "support poles" is requirement in order to attain adequate infrastructure and human resources for classroom activities. Between 2011 and 2013, the number of "support poles" increased 260%, as illustrated in Figure 16. However, these are not equally distributed among the Brazilian regions but concentrated in the South (one of the richest regions in Brazil), as illustrated by Figure 17.

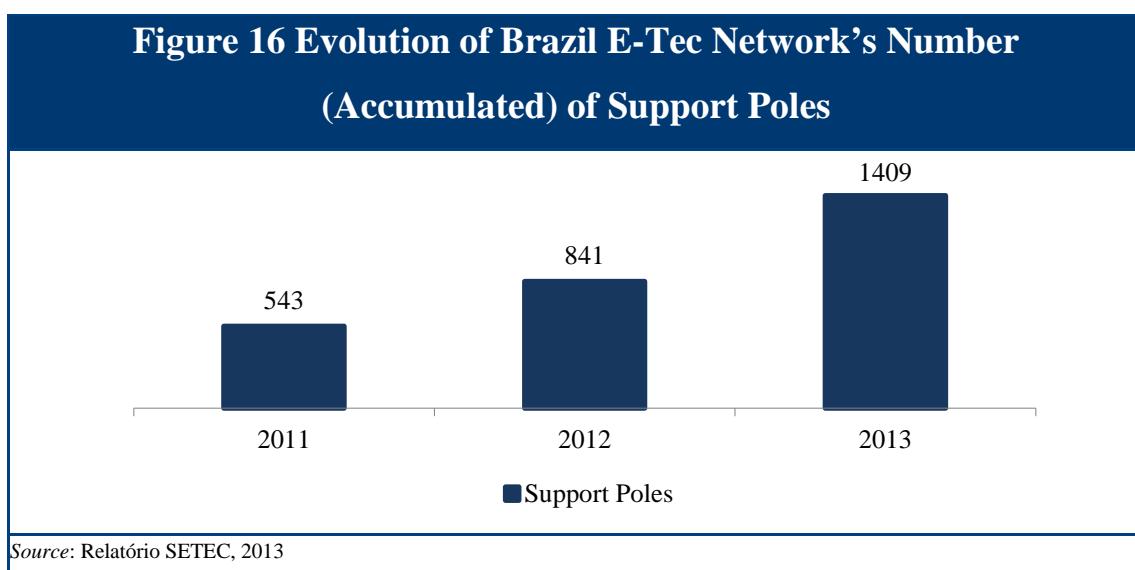
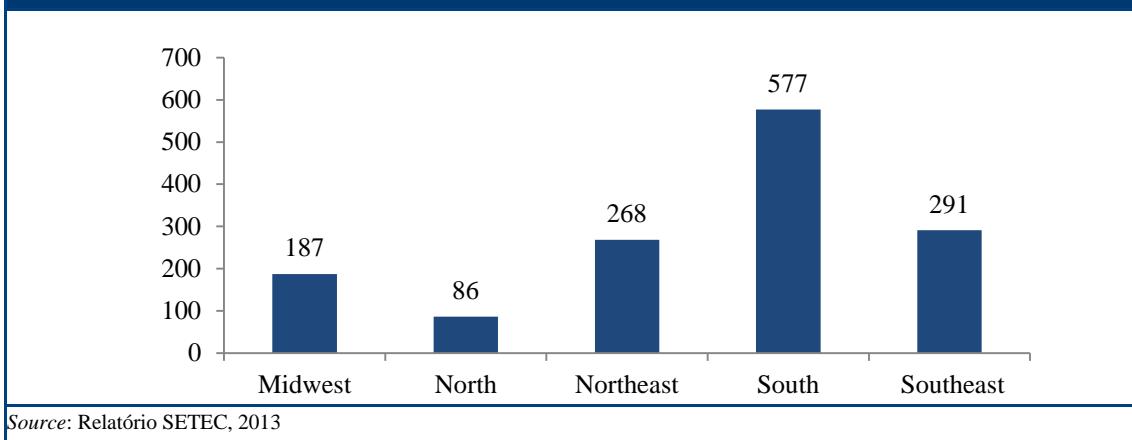
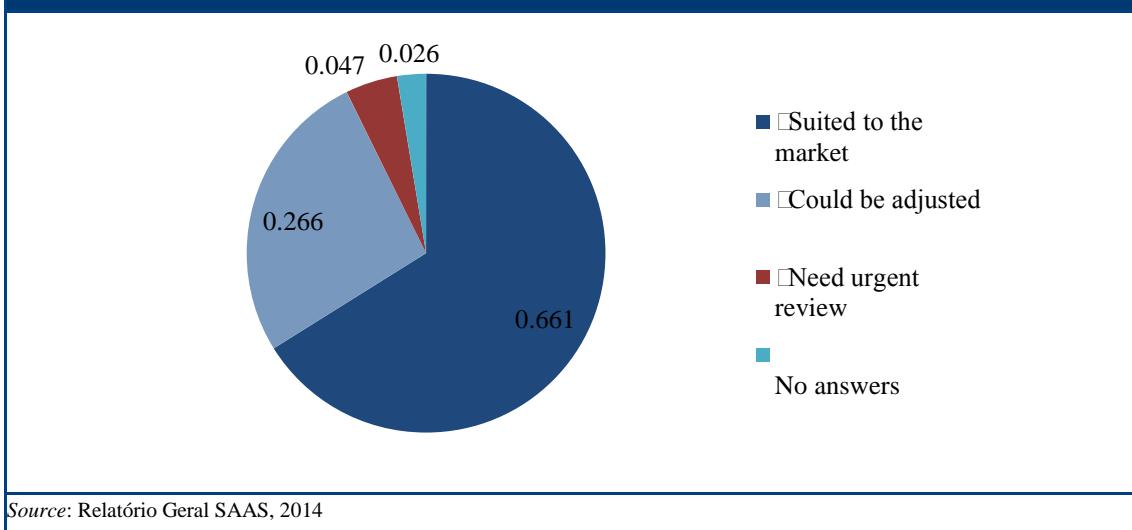


Figure 17 Regional Distribution of Brazil E-Tec Network's Support Poles



The E-TEC Network has a well established monitoring and evaluation system. Since 2010, there are reports with opinion surveys on the quality of courses in various dimensions. Students, teachers, coordinators and tutors participate in the evaluation process through questionnaires sent via e-mail and reply voluntarily. In 2014, there were a total of 11,857 evaluations in Brazil. Regarding the perception of E-TEC Courses on the labor market (Figure 18), the majority of respondents declared it to be well suited to the market needs and 26% declared the courses should be adjusted to better fit market needs.

Figure 18 Student's Evaluation about E-Tec's Courses (2014)



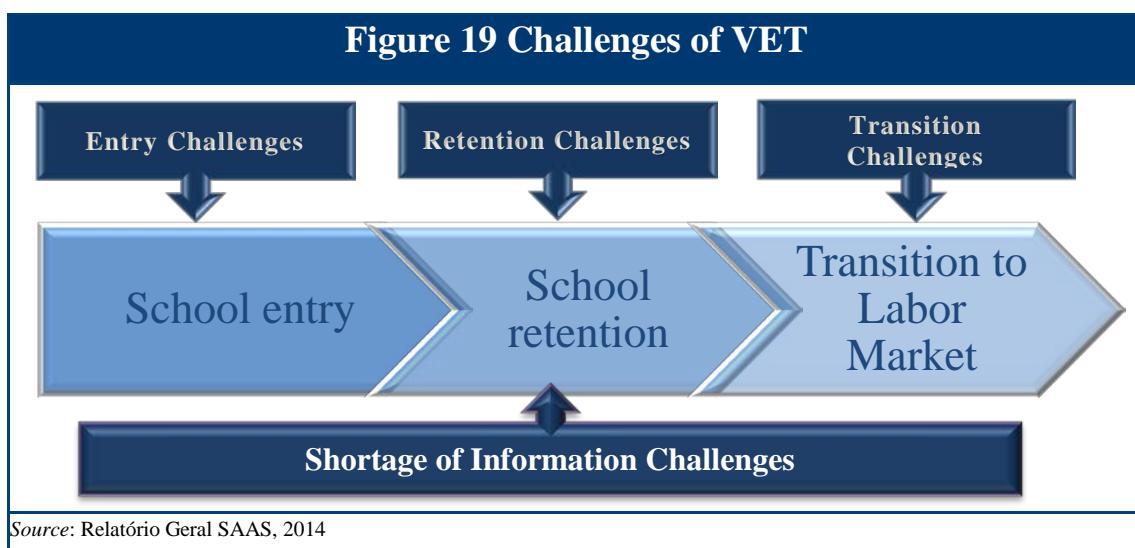
3.3 Fostering VET Initiatives from Companies

Although the Government's main emphasis in VET is to promote social inclusion, there are ongoing initiatives to promote VET as a whole –for both vulnerable and non vulnerable population. The FIES initiative was launched in 2012 as a subsidized credit line to finance both students willing to join a VET course and companies willing to offer professional qualification to their employees. The interest rate of the FIES loans are 3.4% per year, very low compared to the Brazilian interest rate (SELIC, currently 12.75% per year).

4. Discussion and Challenges

The past decade witnessed an unprecedented surge in the emphasis given to the role of vocational education and training in Brazil. This has been characterized by an increasing flow of resources from the government to vocational education and training and a substantial increase in the number of enrollments. Particularly from 2011 onwards, with the launch of the PRONATEC program as one of the main flagship initiatives of President Dilma Rousseff Government, VET has gained even more visibility. Alongside undeniable advancements pertaining to the recent surge of VET in Brazil, there are also several challenges.

The challenges related to VET students and providers in Brazil are multidimensional and stretch over the entire student experience –from a student's entry in a VET program, passing through school retention until the transition of students to the labor market (Figure 19).



The main challenge related to school entry is linked to student information asymmetry prior to their enrollment in the program. Due to the absence of accurate and comprehensive information on a specific course from curriculum structure to dedication requirement and employability potential, students may enter the program with misguided expectations or give up on it before or soon after enrolling.

The process of attracting students to the courses sponsored by government scholarships has posed a challenge to program managers, as they target an audience composed mostly by vulnerable population historically left out of the VET system. For this public, there is no tradition of commitment and placing value to education, “*many think that they will not be able to conclude the course, or that the course will not have an impact in their lives*”⁴. In fact, research carried out by Trogiani et al. (2012) shows that the program in the city of Osasco in São Paulo faces difficulties in attracting and retaining audience committed with the courses. Local managers report that these challenges are mostly associated with the inadequacy of communication tools to advertise the courses and also with the inability of the audience to recognize the potential impact of VET on obtaining better opportunities in the labor market.

4.1 Retention Challenges

An important concern related to VET in Brazil is school evasion. According to the Secretariat of Vocational and Technological Education, the official dropout rate of students enrolled in vocational courses through the PRONATEC Program was around 12.86% from 2011 to 2014. However, there are reasons to believe this number is greatly underestimated due to the lack of effective government monitoring over private VET providers.⁵

A large portion of PRONATEC’s VET scholarships is paid by the government to the private institutions conditional to school enrollment of selected vulnerable students. According to the Federal Auditing Institution’s Auditing Report (2014) and interviews with stakeholders, due to the complexity of VET network of providers, the government fails to monitor the attendance of sponsored students on privately provided

⁴ Information obtained from an interview granted to IPEA (2014) by SETEC’s manager

⁵1. <http://ultimosegundo.ig.com.br/politica/2014-10-19/dilma-nega-irregularidades-no-pronatec-mas-diz-que-controle-deve-ser-aprimorado.html>

2. Except E-Tec Program, which has a highly developed M&E system.

courses and, therefore, fails to detect evasion of initially enrolled students. By doing so, the government is unaware of the actual number of beneficiaries, hence is likely to waste resources by maintaining the transfers to private providers based on the original number of sponsored enrollments.

Additional evidence on evasion rates of some private institutions corroborate the hypothesis that government reported overall evasion rate is underestimated. For instance, *Faculdade Sumaré*, a private institution that offers technical courses in information technology sponsored by the PRONATEC program, declared a dropout rate of about 60% of sponsored students, which converges with the evidence of other private VET schools in which evasion rates vary between 45 and 60%.⁶

A survey about professional education sponsored by the *Confederação Nacional da Indústria* (CNI – National Industry Confederation) in 2013 reveals that, among technical course dropouts, 42% declared they failed to conclude the course because they could not afford it; 33% declared to have lost interest in the area; 31% had difficulties in reconciling work and study; and 29% were dissatisfied with the chosen course.

According to the SENAI Education Manager, a potential explanation for the high evasion rate is the low educational level of sponsored students. Since students often enroll in a course with little knowledge of its actual content, many give up when they learn its real composition and requirements. Some schools even offer tutoring in Portuguese and Mathematics to help students follow the course content. However, some students have severe educational background deficiencies, therefore the tutoring often is not enough to keep them in the program.

Another potential explanation for school evasion, which is also a barrier for entry in VET, is the rigidity of the curriculum for the technical degrees⁷. To enroll in a technical secondary school, a student must either be enrolled in general education school or must have already completed it. Therefore, in order to obtain a secondary technical degree, students are required to complete the full curriculum of general secondary education in addition to the entire technical curriculum.

⁶ The Schools cited are: Anhanguera, Pitágoras, Universidade de Cuiabá and Uniban.
Source: <http://ultimosegundo.ig.com.br/educacao/2014-09-02/cursos-tecnicos-pagos-por-governo-tem-evasao-de-ate-60-em-algunas-faculdades.html>

⁷ 1. Schwartzman, 2013. Ensino, Formação Profissional e A Questão da Mão de Obra.
2. Observatório PNE – Educação profissional. <http://www.observatoriopne.org.br/metas-pne/11-educacao-profissional>

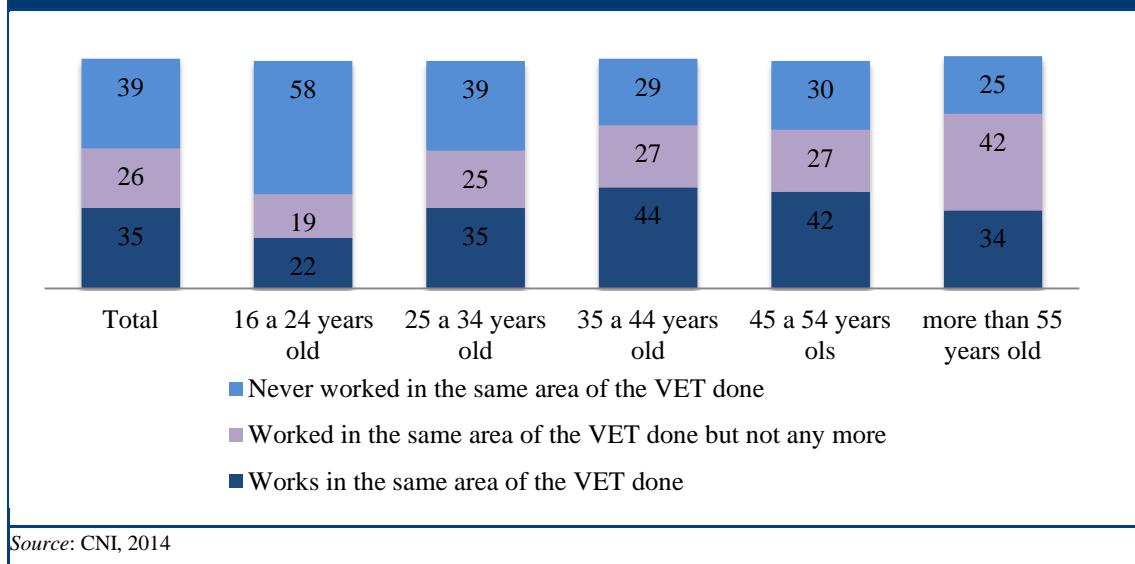
4.2 Transition to Labor Market Challenges

After becoming a core public policy of the current government through the PRONATEC Program, VET in Brazil has progressively shaped up as a social policy with the utmost priority of providing free of charge training to the poor. The main concern related to this tendency is the potential detachment of VET from its role as a sector that focuses on labor market and industry needs.⁸ The VET system is supply driven, providing free training to vulnerable population in skills that are not necessarily well regarded by the market. This inefficient allocation of government resources seems to give rise to a mismatch between supply and demand of skills. The result is that, after receiving sponsored training by the government, a portion of recent graduates in technical courses end up either employed at a total different function than that they were trained for, unemployed or pursue further university training due to the lack of good opportunities in the market.

In the report “Portrait of Brazilian Population: Professional Education”, CNI (2014) presents evidence that indicates this mismatch should indeed be a matter of concern (Figure 20). For a representative sample for the Brazilian population, 39% of people that graduated in a VET course declared they have never worked in the area of their professional training. For younger cohorts, this figure is even more critical: 58% of those aged 16-24 has never been employed in an area related to their technical training.

⁸ <http://www.ovale.com.br/vitrine-de-dilma-na-educac-o-pronatec-ainda-patinha-no-vale-1.555816>

Figure 20 Performance of the Vocational Education and Training (VET) in the Labor Market
(Percentage of Answers of Former VET Students by Age)



According to Claudio de Moura Castro, a well-regarded VET specialist in Brazil, one of the fundamental flaws of the PRONATEC program is that its conception did not follow the common rationale for professional qualification –identifying the demands first and then designing technical courses tailor– made for the needs of the local labor market. The Auditing Report of the Federal Auditing Institution (2014) corroborates this perception indicating that the choices of courses supplied are chosen in a rather discretionary manner by the course providers, independently of market and student demands. Such analysis is reinforced through the survey carried out by McKinsey & Company (2013), which shows a significant disconnection between the VET institutions and the employers, suggesting a lack of communication between the stakeholders.

Although evidence suggests a mismatch between supply of courses and market demands, there are a few isolated initiatives in Brazil to identify in market trends in demand for skills. The *S System* SENAI has created the Industry Work Map to help SENAI's regional departments determine which VET programs should be offered. However, although developed by an institution that relies partially on public funding, this tool is not publicly available and hence not accessible by the majority of the VET provider network.

4.3 Shortage of Information Challenges

One of the main challenges related to VET in Brazil is the deficiency of publicly available information regarding every aspect of the sector. The shortage of information made available by government and providers may be explained mainly by three issues: i) lack of transparency; ii) lack of monitoring and evaluation information, and iii) poorly designed communication mechanisms.

Raising data is a very arduous –and sometimes impossible– task. Information particularly difficult to obtain are data related to the amount invested in each subprogram, the number of students that evade and do not conclude the course, the distribution of enrollments by Brazilian states, student profiles, student performance, and course quality.

The information availability restriction is remarkable as a very significant portion of VET in Brazil is sponsored by the government, so information should, in principle, be available for accountability purposes, especially after the approval in 2011 of the Access to Information Law⁹. Lack of information not only restrains analysis and research, but also creates a barrier to access, as it fails to provide accessible information to the population, limiting access and retention in the Program.

As a result, it is a hard task to precisely analyze reality from a different perspective other than that presented by the government. Performing impact evaluations of VET on labor market outcomes, diagnostics studies, cost-benefit analysis and other studies are not possible in this scenario of limited information - monitoring and transparency.

5. Conclusion

For the past decade Vocational Education and Training (VET) has gained an unprecedented relevance in Brazil. Both the investment from government and students' enrollment have strongly increased over the past decade. In 2011 was launched one of the most important programs of VET, *Programa Nacional de Acesso ao Ensino Técnico em Emprego* (PRONATEC), which in order to expand VET access, increased the number of VET institutions and the number of openings

⁹ The Access to Information Law – *Lei de Acesso à Informação* (Lei nº 12.527/2011), states that any individual – public or private – should, without need of motive, have access to any and every public information of public entities (<http://www.acessoainformacao.gov.br/assuntos/conheca-seu-direito/a-lei-de-acesso-a-informacao>).

in courses. It also provides financial assistance to vulnerable students. Besides its own programs, PRONATEC has a partnership with the *S System*, a program privately managed that receives public funds through taxes over firms' payrolls. The *S System* is responsible for the provision of approximately 43% of qualification and technical education in Brazil.

Empirical evidence on VET shows positive impact on individual income. Both Almeida et al. (2014) and Costa Lima, Fernandes and Vasconcellos (2010) found that wages of those with vocational secondary education are higher (9.8% and 12.5% respectively) than those with the equivalent general education level. Also, Assunção and Gonzaga (2010) identified a positive impact of qualification courses on earnings. Wages are 9.8% higher when compared to individuals with the same level of education. When decomposing the differential by institutional nature, *S System* is associated with higher earnings (13.5%) than other private qualification programs (8.9%) and public institutions (5.9%). There are also regional differences, as North and Northeast present higher wage differentials than in the other regions. Finally, Oliva (2014) narrows the study to one educational center in Brazil, Centro Paula Souza (CPS), and finds that, former CPS students face a higher probability of employment (3.47 percentage points), especially women (5.58 p.p), as well as an increase on formal employment probability (2.7 p.p). CPS has also a positive impact on earnings (7.8 p.p), mainly on men (10.2 p.p).

It is important to notice that PRONATEC does not emphasize technical and vocational education as a mean for supplying the market with the necessary skilled labor force. Its target is, instead, the promotion of social and productive inclusion, with *Bolsa Formação* (BF) as its main financing mechanism. Another innovation in VET in Brazil is the government's initiatives to explore technology in training education. Online learning is increasingly becoming an important tool for the expansion and democratization of professional and technical education in Brazil through E-Tec Network, which has the mission to expand the supply of free public technical distance-learning courses.

Finally, the challenges related to VET students and providers in Brazil are multidimensional and stretch over the entire student experience – from a student's entry in a VET program, passing through school retention until their transition to the labor market. Among the main challenges pertaining VET in Brazil are the mismatch between supply and demand of professional skills. The VET system is

mostly supply driven, providing skills that are not necessarily well regarded by the market. The result is that, after receiving sponsored training by the government, a portion of recent graduates in technical courses end up either employed at a total different function than that they were trained for, unemployed or go pursue further university training due to the lack of good opportunities in the market.

References

- Almeida, Rita, Anazawa, Leandro, Menezes Filho, Naercio and Vasconcellos, Ligia. 2014. "Retornos da Educação Profissional e Técnica no Brasil". Brazil. Mimeographed document.
- Assunção, J and Gonzaga, G. 2010. *Educação Profissional no Brasil: Inserção e Retorno*. Brasília, Brazil: SENAI-DN, Série Cenários, 3.
- Copola, G. 2011. *Os Serviços Sociais Autônomos e a Necessidade de Licitar*. Salvador, Brasil: Jam Jurídica, v. 12, p. 19.
- Costa, Fernanda, Fernandes, Julia Guerra e Vasconcellos, Lígia. 2010. *Avaliação Econômica do Ensino Médio Profissional*. Brazil: Fundação Itaú Social.
- Hanushek, Eric A., Woessmann, Ludger, and Zhang, Lei. 2011. *General education, vocational education, and labor-market outcomes over the life-cycle*. National Bureau of Economic Research. No. w17504
- Malamud, Ofer, and Pop-Eleches, Cristian. 2010. *General education versus vocational training: Evidence from an economy in transition*. Review of Economics and Statistics 92.1: 43-60.
- Mourshed, Mone, Farrell, Diana and Barton, Dominic. 2013. *Educação para o Trabalho: Desenhando um Sistema que Funcione*. McKinsey Center for Government.
- Oliva, Bruno Teodoro. 2014. "Três ensaios de economia da educação.". São Paulo, Brazil: Fundação Getúlio Vargas
- Schwartzman, S. and C. M. Castro. 2013. *Ensino, Formação Profissional e a Questão da Mão de Obra*. Rio de Janeiro, Brasil. Ensaio: Aval. Pol. Públ. Educ., 21 (80): 563-624.
- Tansel, Aysit. 1999. "General versus vocational high schools and labor market outcomes in Turkey." *Economic Research Forum Working Paper*. No. 9905. 1998.
- Trogiani, Caio et al. 2012. *Desafios para a Implementação do Programa PRONATEC/OSASCO Sem Miséria*. São Paulo, Brasil: Escola de Administração Pública de São Paulo – Fundação Getúlio Vargas.

Wiik, Flávio et al. 2014. *Estudo Qualitativo Junto a Alunos Egressos e Desistentes, Representantes das Unidades Ofertantes e Interlocutores Municipais do PRONATEC-Brasil Sem Miséria (BSM)*. Cadernos de Estudos - Síntese das Pesquisas de Avaliação de Programas Sociais do MDS 2011 – 2014.

Confederação Nacional da Indústria. 2012. *Relatório Anual 2012*. Brasília, Brazil: Confederação Nacional da Indústria, SESI, SENAI e IEL.

Confederação Nacional da Indústria. 2013. *Relatório Anual 2013*. Brasília, Brazil: Confederação Nacional da Indústria, SESI, SENAI e IEL.

Confederação Nacional da Indústria. 2014. Pesquisa *CNI-IBOPE: Retratos da Sociedade Brasileira: Educação Profissional*. Brasília, Brazil: Confederação Nacional da Indústria

Controladoria Geral da União. 2014. *Relatório de Auditoria Anual de Contas*. Brasília, Brasil. Controladoria Geral da União: Relatório nº. 201406282.

Educação, Cidadania e Desenvolvimento Sustentável. 2011. *Histórias Mil das Mulheres Mil*. Brasil: Educação, Cidadania e Desenvolvimento Sustentável.

Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira. 2010. *Censo da Educação Superior*. Brasília, Brazil: Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira.

Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira. 2011. *Censo da Educação Superior*. Brasília, Brazil: Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira.

Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira. 2012. *Censo da Educação Superior*. Brasília, Brazil: Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira.

Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira. 2013. *Resumo Técnico do Censo da Educação Superior*. Brasília, Brazil: Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira.

Secretaria de Educação Profissional e Tecnológica do Ministério da Educação. 2007. *Educação Profissional Técnica de Nível Médio Integrada ao Ensino Médio*. Brasília, Brazil: Secretaria de Educação Profissional e Tecnológica do Ministério da Educação.

Secretaria de Educação Profissional e Tecnológica do Ministério da Educação. 2011.

Prestação de Contas Ordinária Anual – Relatório de Gestão do Exercício de 2011. Brasília, Brazil: Secretaria de Educação Profissional e Tecnológica do Ministério da Educação.

Secretaria de Educação Profissional e Tecnológica do Ministério da Educação. 2012.

Prestação de Contas Ordinária Anual – Relatório de Gestão do Exercício de 2012. Brasília, Brazil: Secretaria de Educação Profissional e Tecnológica do Ministério da Educação.

Secretaria de Educação Profissional e Tecnológica do Ministério da Educação. 2013.

Prestação de Contas Ordinária Anual – Relatório de Gestão do Exercício de 2013. Brasília, Brazil: Secretaria de Educação Profissional e Tecnológica do Ministério da Educação.

Websites

www.tesouro.fazenda.gov.br/siafi

<http://www12.senado.leg.br/noticias/glossario-legislativo/sistema-s>

<http://ultimosegundo.ig.com.br/politica/2014-10-19/dilma-nega-irregularidades-no-pronatec-mas-diz-que-controle-deve-ser-aprimorado.html>

<http://ultimosegundo.ig.com.br/educacao/2014-09-02/cursos-tecnicos-pagos-por-governo-tem-evasao-de-ate-60-em-algunas-faculdades.html>

<http://www.observatoriodopne.org.br/metas-pne/11-educacao-profissional>

<http://www.ovale.com.br/vitrine-de-dilma-na-educacao-pronatec-ainda-patina-no-vale-1.555816>

<http://pronatec.mec.gov.br/>

<http://redefederal.mec.gov.br/>

<http://www.centropaulasouza.sp.gov.br/>

Appendix

The Authors

André Portela Souza

PhD in Economics by Cornell University

Professor in Economics in São Paulo School of Economics – Fundação Getulio Vargas
Executive Director of Center for Learning on Evaluation and Results Brazil and
Lusophone Africa – Fundação Getulio Vargas

Coordinator of Applied Microeconomic Center at São Paulo School of Economics –
Fundação Getulio Vargas

Institutional affiliation: Fundação Getulio Vargas

andre.portela.souza@fgv.br

Lycia Lima

Executive Coordinator of Center for Learning on Evaluation and Results Brazil and
Lusophone Africa – Fundação Getulio Vargas

PhD candidate in Public Administration and Government - Fundação Getulio Vargas

Institutional affiliation: Fundação Getulio Vargas

lycia.lima@fgv.br

Amanda Arabage

Current PhD student in Economics in São Paulo School of Economics – Fundação
Getulio Vargas

Institutional affiliation: Fundação Getulio Vargas

Amanda.arabage@fgv.br

Juliana Camargo

Current PhD student in Economics in São Paulo School of Economics – Fundação
Getulio Vargas

Institutional affiliation: Fundação Getulio Vargas

juliana.camargo@gvmail.br

Thiago de Lucena

Current Masters student in Economics in São Paulo School of Economics – Fundação
Getulio Vargas

Institutional affiliation: Fundação Getulio Vargas

t.delucena@gmail.com

Sammara Soares

Current PhD student in Economics in São Paulo School of Economics – Fundação
Getulio Vargas

Institutional affiliation: Fundação Getulio Vargas

Sammara.soares@gvmail.br