IIMB Management Review (2016) **28**, 98–110

available at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/iimb

Labour market outcome for formal vocational education and training in India: Safety net and beyond

Tutan Ahmed *

Public Policy & Management, Indian Institute of Management Calcutta, Kolkata, India

Received 2 March 2014; revised 20 October 2014; accepted 23 May 2016; available online 11 June 2016

KEYWORDS
Vocational education and training;
Labour market;
Wage;
Unemployment;
Safety net;
India;
Ministry of Skill Development and Entrepreneurship

Abstract This paper explores the safety net aspect of the labour market incentive for vocational education and training (VET) in the Indian context. Using two rounds of National Sample Survey data this paper explores the wage, unemployment, and status of employment of the individuals who participate in the labour market after completing VET. It is observed that there is a significant positive return of VET to the wages, and a significant number of individuals participate in salaried work. However, unemployment from VET is quite high, particularly for the individuals who have done VET courses which correspond to lower levels of general education. Institutional factors which may impact this labour market outcome are also explored for the Indian context.

Introduction

Compared to other developing and developed countries, participation in formal vocational education and training (VET) has remained quite low in India (Tilak, 2002; UNESCO, 2011). However, there have been many developments since the period of the 11th Plan and with the formation of the National Skill Development Corporation (NSDC) and the National Skill Development Agency (NSDA). The Government of India started with the ambitious goal of fresh skilling/upskilling or re-skilling of 500 million by the year 2022. The Ministry of Skill Development and Entrepreneurship was formed in 2014 to address the overarching skilling activities in the country.[1] As per the National Skill Development Policy which the Ministry has brought out as part of its first policy goals in 2015, the skilling target has been revised to 402.9 million by 2022.[2] The Ministry of Skill Development and Entrepreneurship aims to bring convergence among various training programmes through implementation of "common norm" for the programmes. As per the cabinet notification, dated 27th December 2013, the entire education and training system of the country is going to adopt the National Skill Qualification Framework (NSQF), which is under the purview of the National Skill Development Policy. The Ministry is working on building a large infrastructure of training across the country

* Tel.: +91 9874088821.
E-mail address: tutana09@email.iimcal.ac.in.

[1] http://www.skilldevelopment.gov.in/.
[2] http://www.skilldevelopment.gov.in/assets/images/Skill%20India/policy%20booklet-%20Final.pdf.

http://dx.doi.org/10.1016/j.iimb.2016.05.002

through National Skill Development Corporation (NSDC) and Director General of Training (DGT).[3] Along with creating infrastructure, the organisations under the Ministry are working on developing various institutional innovations for improving training programmes and their outcomes. Apart from these initiatives from the Union Government all the states have launched their respective State Skill Development Missions (SSDM).

While these massive skilling activities are taking place, it is necessary to understand whether there would be participation from students in a sustained manner so that the purpose of these initiatives is served. There are examples of many large interventions in the area of skill development, particularly in the developing countries, which have failed (Antoninis, 2001; Foster, 1965; King & Martin, 2002). The reason for these failures often is the lack of incentives for students to participate in these programmes. The programmes tend to fail if there is not enough demand for them from the students in a sustained manner.

Why people participate in VET: the incentive of safety net

A concept of "safety net" has been emerging, led in particular by Shavit, Arum, Muller, Ryan, and Werfhorst (Arum & Shavit, 1995; Ryan, 2001; Shavit & Muller, 2000; Werfhorst, 2002) on the individual's incentive for joining VET. The main argument of the safety net concept is that individuals who are interested in a risk averse career choice would participate in VET. A risk averse choice means low unemployment possibility with a similar or a comparative low wage as compared to the alternative career choices. It follows from this argument that people with VET qualification are more likely to be in the workforce than people with corresponding general education at upper secondary or lower secondary level as the individuals who join VET are inclined to join the labour market immediately even at a lower wage than the plausible future wage of their counterparts who are continuing in the higher education stream.

Shavit and Muller (2000) argue that vocational education can act as a safety net since the unemployment rate is lower for VET trained manpower than graduates from non-vocational tracks at a comparable level. A similar argument is made by Arum and Shavit (1995). They argue that VET reduces the probability of unemployment, and the probability of employment in lowest paying jobs. Vocational education and training has been studied using multiple frameworks as well as in multiple contexts. However, the safety net theory is most conducive to reaching a general conclusion about VET (Ryan, 2001; Shavit & Muller, 2000; Werfhorst, 2002). The safety net theory also argues that people in VET are likely to get a wage similar to or lower than what people would get after higher education. Studies which do not claim to represent the safety net theory also take a similar stand (Kuczera, Kis, & Wurzburg, 2009). Thus, a higher chance of getting employment and a similar or relatively lower pay than what one gets after higher general education are considered as incentives to join VET, according to the safety net theory. This suggests a trade-off between choices for low-risk low-pay and high-risk high-pay jobs.

In this article, an attempt is made to understand whether this kind of incentive for individuals who have joined the labour market after completion of VET exists in the Indian labour market. It can be argued that if there is an incentive of safety net already existing for the VET trained manpower in the labour market in India, the success of the initiatives taken for skilling, in terms of adequate participation, is more likely.

Moderating factor: institutional design

The extent to which VET would act as a safety net depends upon the institutional design around VET (Iannelli & Raffe, 2007; Shavit & Muller, 1998, 2000). Some research studies show that VET may not act as a safety net in certain contexts. For example Korpi, Graff, Hendrickx, and Layte (2003) show that though VET facilitates smooth transition from education to the labour force, there is no evidence that the unemployment rate is lower for VET trained manpower vis-à-vis comparable general education graduates. Psacharopoulos and Loxley (1985) in their seminal study under the patronage of the World Bank observed that in Tanzania and Colombia, graduates with both general education and VET take almost equal time to find employment (see also Tilak, 1988). Though these studies were not conducted to address the safety net proposition, the evidence from these studies does not bear out the proposition of the safety net.

These findings which contradict the proposition of the safety net can be attributed to the institutional design of the education system, and the education and labour market relation (Andersen & Werfhorst, 2010; Iannelli & Raffe, 2007; Shavit & Muller, 1998; Werfhorst, 2011). Shavit and Muller (1998) proposed and explained that two variables which make a difference in the labour market outcome for the VET trained manpower are: first, time duration for the course and extent of stratification of VET from general education; and second, occupational specificity of training and employer's participation in it. It is to be noted that long duration of training tends to make VET more stratified. On the other hand, high employer participation tends to make the courses more "vocational specific".

The term stratification refers to the extent and form of tracking in the education system. In a system which is highly stratified or which has long duration of training, students get separated early in the track and their curriculum is different from those in the general stream or other tracks, to a great extent. Generally, when this stratification resulting in early curriculum differences tends to be more prominent, inter-track mobility tends to be less likely (Nakamura, 2003; Shavit & Muller, 1998). Employer's participation in training tends to create a dynamic linkage with the labour market. Industry need is clearly reflected in the training programmes and in the curriculum, i.e. courses become more "vocational specific". High level of participation from the employers also tends to decide the scale of the training programmes, based on the market requirement. It also creates a direct placement linkage between industry and training programmes. Based on the hypothesis made by the seminal work of Shavit and Muller (1998), a substantial amount of comparative

[3] DGT is the institution which takes care of a significant part of the training programmes in the country and has been in existence in India for more than 60 years.

research has emerged (Andersen & Werfhorst, 2010; Iannelli & Raffe, 2007; Scherer, 2005; Werfhorst, 2011). Much of this research is in support of the hypothesis made by Shavit and Muller (1998).

In his empirical work, Anderson & Werfhorst (2010) has observed that employer's participation in training is considered as the indicator for labour market linkage with VET. It is also likely to make the curriculum more "occupation specific" (Anderson, 2010). Scherer (2005) observes that the strong linkage between VET and labour market reduces unemployment as employers have better information about the prospective employees. Using survivor function, this study shows that in Italy, getting the first job is much delayed whereas in Germany apprentices bag their first job immediately after their training[4] (Scherer, 2005). After controlling labour market regulation effect, it is observed that the difference in the labour market outcome between these two countries is due to vocational specificity of the courses and high employer participation in the training. In Germany, courses are highly vocation specific, whereas in Italy they are not so. This extent of vocational specificity is also reflected in the wages (Werfhorst, 2011). In case the education and training system is not vocation specific, the wage earned is explained less by acquired training and more by other factors.

Along with these factors, a third factor which can influence the labour market outcome for the formal VET trained manpower is explored, particularly keeping in mind the Indian labour market. There is a requirement to understand the labour market dynamics between different types of education which might be competing for similar jobs. In the Indian context, there is a large supply pool of engineers, which has been observed historically (Second Education Commission Report, 1966). It is quite likely that this large supply and consequent decrease in the reservation wage may lead to a scenario where engineers are preferred over the diploma or certificate holders, thereby leading to adverse labour market outcome for the diploma or certificate holders (Parameswaran, 1974). Thus, even if there is employer participation in training, long duration of training with "vocational specific" courses, there is a likelihood that the labour market would see a replacement of diploma/certificate holders by engineers when the job roles are similar. This feature of the Indian labour market is also explored.

In the next section, an attempt is made to illustrate the VET institutional structure in India which would provide an understanding of the impact of institutional structure on labour market outcome. This work does not make a full-fledged attempt to link labour market outcome of VET in India with different institutional features present in the VET system (as that could be another research work in itself). This work intends to explore the existing labour market incentive for the VET trained manpower. However, the work provides some details about the existing vocational education institutional structure in India. It explores various possibilities of linking the existing labour market incentives for the VET trained manpower in India with the institutional features. This would facilitate future research work in this direction.

[4] Stefani Scherer's (2005) work also shows the effect of labour market regulation on unemployment. However that is outside the ambit of this present work.

Vocational education and training institutions in India

Though the literature dedicated to VET is scanty in India, existing evidence suggests that the return from formal VET is positive (Tilak, 1988). Most of the existing studies are at micro and plant level and are focussed on in-firm training as against out-of-firm training. There are few studies analysing unemployment and wage from the perspective of comparison between general education and VET. In fact, until recently there was no national level data in India based upon which one could look into the macro picture.

The recent efforts to scale up and revamp the VET system have begun against the background of a very poor institutional context. Several studies (World Bank, 2008; ILO, 2003) have brought out the poor institutional design for VET in India. There were around 17 Ministries which used to conduct their own VET in silos. There was no established industry participation mechanism in these training programmes. The most important institution of VET in India is the Industrial Training Institute (ITI) and its disconnect with industry has been noticeable (World Bank, 2008; ILO, 2003). As an institutional innovation, under the DGT ecosystem,[5] the Institute Management Committee (IMC) was set up comprising industry representatives. However, a recent report by Confederation of Indian Industries (CII, 2013) suggests that IMCs are performing short of expectation. Under the NSDC ecosystem, mechanisms such as Sector Skill Councils (SSCs) have been set up for industry directed training programmes. Representatives from industry are chosen as the key personnel of the SSCs and they are responsible for curriculum development, choosing the training provider, setting up the evaluation/questions for the students, and assessment. They are also inspired to take care of the placement of the students coming out of the training. Under the DGT ecosystem, the Flexi-MoU[6] concept has been introduced where different firms can adopt ITIs and can introduce the curriculum they consider relevant. Simultaneously, in this ecosystem, in order to revamp the apprenticeship system, a new scheme called Apprenticeship Protsahan Yojana (APY) has been introduced where small firms are subsidised for training apprentices.[7] Also, the Apprenticeship Act 1961 has been amended in order to introduce many flexibilities, including provision for firms to introduce new course curriculum.[8] Thus, there is a rejuvenated attempt to create industry connect with the training in many forms. Also, industry involvement in curriculum development or in assessment of the students should lead to more vocational specificity of training over time. The courses run by the Ministry are of two types: short term and long term. Short term training courses are run under the NSDC ecosystem whereas long term training is run by the DGT ecosystem. Though DGT runs the long run training programmes, one of its short term schemes, Skill Development Initiative, has

[5] http://www.dget.nic.in/content/innerpage/industry-participation.php.
[6] http://www.dget.nic.in/content/innerpage/flexi-mou.php.
[7] http://dget.nic.in/upload/54b649349d259APPRENTICEPROTSAHANYOJANAGuidelineswithRDATaddresses.pdf.
[8] http://dget.nic.in/content/innerpage/apprenticeship-training-scheme-ats.php.

gained popularity across India. In the short term training courses, individuals can take a vocational course for around three months. On the other hand, under the DGT ecosystem, courses can run up to two or three years. Vocational specificity for the short term trainings is quite low whereas that for the long term trainings is quite high. Stratification is prominent for the courses under the DGT ecosystem. Also, inter-track mobility is a challenge, particularly for the long duration courses. There is a lack of alignment between different VET programmes and its hierarchies, and alignment of VET and general education. Thus, career progression for the candidates in VET has been uncertain (World Bank, 2008; ILO, 2003). The NSQF framework has been brought in to address this issue of career progression. However, NSQF is still in its early phase of implementation. The Skill University concept is being pondered upon by the Ministry in order to facilitate upward movement of individuals in the VET system.

In this context, this paper explores the existing incentive structure for the VET manpower in the labour market. An understanding of the incentive structure would help to shape the dialogue on the emerging institutional setup. The connection between the incentive structure and emerging institutional setup is explored further.

Research question

The paper probes whether the labour market outcome of formal VET in the Indian context reflects a low-risk low-payoff scenario as is observed in the emerging literature. It further explores the new policy initiative in the context of existing incentive structure for the VET manpower in the labour market.

Unemployment is measured using Usual Principal status. (This is detailed in a later section.) Apart from unemployment, wage outcome, and type of employment (i.e. salaried, casual, etc.) are measured. Analysing wage outcome for a particular group of candidates from a training/education system is a complex undertaking as it involves an understanding of several dimensions such as the existing job market scenario, possibility of selection bias, quality of training programmes etc. However, this work is focussed on examining the existing incentive structure. The reason for not examining the selection bias or impact of various trainings is the lack of a proper instrument and detailed data about training. In this sense, it is an exploratory study.

Type of employment data is explored in order to understand whether a higher proportion of manpower with formal VET is able to join salaried employment as compared to proportion of manpower from corresponding or higher level of general education. In the Indian context, obtaining salaried employment is considered to be more secure and possibly more prestigious. Desire for wage employment is very high in developing countries and it is well documented (Datta Chaudhuri, 1996; Foster, 1965; Grubb, 1995). This issue is particularly emphasised in the literature of segmented labour market theory. (For a detailed reading, see Harberger, 1970; De Soto, 1985; and Cain, 1976.) Types of occupation also help as a proxy variable of employment outcome. The emerging literature on the safety net theory analyses "occupational prestige" data. However, in the Indian context, we only have types of employment data which could be used appropriately for this purpose.

Methodology and data

The National Sample Survey Organisation (NSSO) 66th round unit level data and 61st round unit level data are analysed in order to understand the above phenomenon. In general, the Employment–Unemployment survey by NSSO is conducted by the Ministry of Statistics and Programme Implementation (MoSPI) of India quinquennially. Schedule 10 of both these quinquennial data deals with education and employment. In the Indian context, NSSO data is the most comprehensive data for studying employment and unemployment (Himanshu, 2011) despite its various shortcomings.[9]

A few pointers pertinent to this study are provided at the outset. First, the labour market outcome is obtained only for the formal training and the study does not make any distinction between school based VET or in-firm training. As per NSSO definition of formal training, both these categories are included in the "formal" category and no further distinction is made between them. (The definition of "formal" training is provided in the appendix.) It is to be noted that in the Indian context, the rate of return for people involved in in-firm training is, in general, better than the rate of return for people in institutional training (Tilak, 1988). Secondly, the standard Mincerian equation is used in order to find out the return from education. There is scope for incorporating the use of more sophisticated methodology in further research. Third, the 61st round VET related data is available only for the age group of 15 to 29. From the 66th round data, however, VET related data is available for the age group of 15 to 59. Fourth, there are other categories of vocational training also which belong to informal training categories. These include the categories "hereditary", "on the job", "self-learning" and so on. (Definitions of these categories are provided in the appendix.) These categories are included in the ambit of analysis.

However, data on the "hereditary", "on the job", and "self-learning" categories are provided in the 66th round whereas only "hereditary" category data is provided in the 61st round. We take these categories as provided by NSSO.

Observation from NSSO data

In general "safety net" is concerned with the measurement of wage, unemployment, and occupational prestige. In this work, the variables taken are unemployment rate, current weekly wage, and proportion of salaried employment in the total work force. With low unemployment rate, similar or low current weekly wage, and a high proportion of salaried employment—this being higher for VET trained manpower as against comparable general education graduates, then it is considered that VET in India is working as a safety net. (Table 1 provides the descriptive statistics for wage employment.)

[9] To look at the various shortcomings of these data so far as employment/unemployment is concerned, see Himanshu (2011).

Table 1 Descriptive Statistics (for wage employment).

	66th round NSSO data (from 15 to 59 year)	66th round NSSO data (from 15 to 29 year)	61st round NSSO data (from 15 to 29 year)
No. of observations	71658	22872	29979
Female (% of total)	48.6	48.3	49.2
Wage	1511 (1882.8)	1099 (1474)	928.5 (1087.4)
Maximum wage	69000	69000	26920
Minimum wage	0	0	0
Rural (% of total)	61.2	61.2	66.6
Age	33.2 (12.1)	21.5 (4.3)	21.7 (4.2)
General education (for students above class VIII)	10.6 (2.6)	10.4 (2.4)	9.9 (2.3)
Experience	15 (11.5)	5.8 (4.2)	7.2 (4.3)
Maximum experience	46	16	16
Minimum experience	0	0	0
Formal VET in the age group with graduate education and above (% of all in the education group)	2.54	3.25	3.66
Formal VET in the age group with secondary and below graduate education (% of all in the education group)	.32	.43	.47

Table 2 Employment status (as a percentage of labour force) using usual principal status as per 61st round NSS.

	Self-employment	Salaried employment	Casual	Unemployment
Formal VET	30.3	54.7	5.8	9.3
Hereditary	83.2	5.1	11.3	0.4
Self-learning	63.1	19.6	15.8	1.5
On the job	40.8	36.3	22.3	0.5
Other	55.1	26.5	13.6	4.8
Non-VET	49.2	24.5	22.0	4.2
Total	49.6	25.7	20.7	4.1

Unemployment

There are four ways of measurement used by NSSO for measuring employment and unemployment. They are, namely, usual principal status (PS), usual principal and subsidiary status (UPSS), current weekly status (CWS), and current daily status (CDS). Of these measures, PS is a measure of unemployment that reflects those who are in the labour force but not working in the majority period (more than 180 days) of the year. Once the broad usual principal activity status is determined, usual subsidiary activity is determined if a person is engaged in some activity for a minor period of time in the year (no less than 30 days in a year). Further, NSSO defines UPSS as a summation of principal and subsidiary status together. A person may work only in subsidiary status or principal status or in both, and is considered as engaged in usual status economic activity. Thus, "usual status" in this sense is a relaxed definition of employment. For this reason, only PS is considered in this paper. The employment and unemployment descriptions provided are proportions obtained from multiplier adjusted absolute figures (see Tables 2 and 3).

It is seen, from Tables 2 and 3, that unemployment among the formal VET trained manpower is tremendously high vis-à-vis others. This is true for both PS and UPSS. This is even more significant considering the way unemployment is measured in India, as the definition of unemployment is quite relaxed in India (Sen, 1976). The high level of unemployment for this category is consistent in both 61st and 66th level NSSO data. There is a slight decline in unemployment in the 66th round over the 61st round for formal VET. This can be considered as a reflection of overall decline in unemployment in the 66th round over the 61st round. Thus, it appears that the incentive for low unemployment for the VET trained manpower in the labour market is not reflected in the labour market of India. Instead of low risk, it appears that a high risk component due to unemployment is associated with the VET trained manpower in India.[10]

Several studies denote the unemployment problem among VET trained people in India (World Bank, 2008; ILO, 2003). Figs. 1 and 2 are representatives of the unemployment comparison between various levels of education and corresponding VET. The vertical axis represents percentage of unemployment according to PS. The horizontal axis represents levels of general education. The unemployment figures are obtained for VET with certain level of general education

[10] Looking at the figures of unemployment as obtained from various NSSO data so far as principal status is concerned, unemployment was never more than 5.4% (for rural males in 64th round) in different rounds and for different categories until the 66th round (Himanshu, 2011). For UPSS category, highest unemployment is observed in 64th round rural male category with 4.6% unemployment.

Table 3 Employment status (as a percentage of labour force) using usual principal status as per 66th round NSS.

	Self-employment	Salaried employment	Casual employment	Unemployment
Formal received	24.7	56.4	5.7	13.2
Hereditary	74.7	5.1	19.7	0.5
Self-learning	58.5	15.5	24.8	1.1
On the job	35.0	37.3	26.6	1.1
Other	57.6	25.1	13.4	3.9
non-VET	45.9	15.9	35.7	2.5
Total	46.1	17.3	34.0	2.6

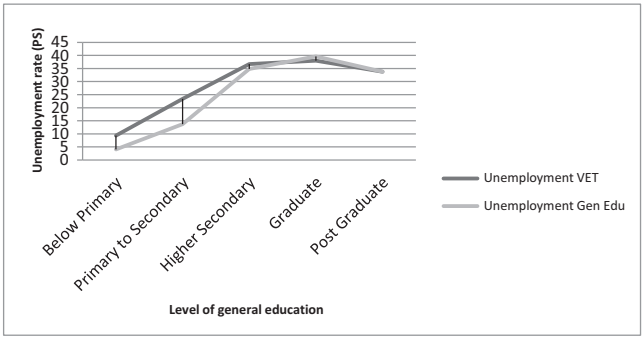

Figure 1 Unemployment and education (61st round NSSO data): 15 to 29 year age group.

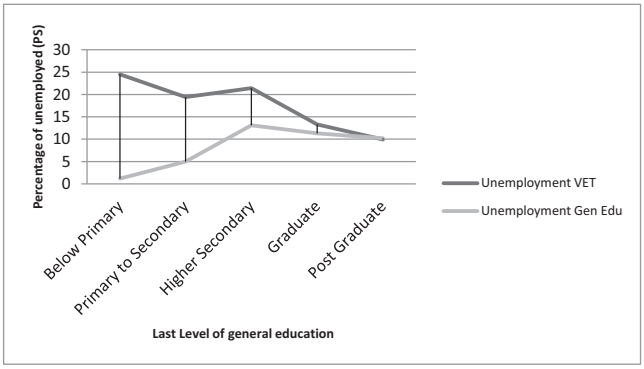

Figure 2 Unemployment and education (66through NSSO data): 15 to 59 year age group.

and for corresponding general education without VET. For 61st round, these figures are obtained only from the 15–29 years of age group whereas for 66th round, these figures are obtained for the 15–59 years of age group.

It can be observed from the figures that the unemployment from VET is very high particularly for those who join VET after completing a comparatively lower level of education as compared to the individuals who have completed only corresponding level of general education but with no VET. At the higher level of education—namely graduate and post graduate level—unemployment from VET is almost similar to that from general education at this level.

Type of work

Principal activity status is considered while looking at different types of employment. Self-employment, salaried employment, casual public work, and casual private work are the various categories of employment. As mentioned earlier, type of employment is important here since in a way it represents levels of occupational security and prestige. Foster (1965) in his seminal study on vocational school fallacy shows that students do not want to get skill training for being self-employed. To be self-employed, formal skill training or certification is neither a choice for the students nor is it required in the market in the Indian context. Looking at the trade union literature, it is employment security which is historically valued in the Indian labour market (Datta Chaudhuri, 1996). Among other concerns of the trade unions, it is employment security which is one of the most important issues. Also, in India a lion's share (93%) of the labour market is taken up by the informal sector, and the informal sector does not have the mechanism to recognise certificates and neither does it require certified trained people. Thus, it can be assumed that the main purpose of formal VET is to provide salaried and more secure employment.

It can be observed from Tables 2 and 3 that formally received VET category has the highest proportion of salaried employment among all other categories. This is consistent over both the rounds. In fact, there is a growth of salaried employment for formally received category VET in the 66th round over the 61st round of NSSO data. This is a positive growth so far as outcome of formal VET is concerned.

Wage

For the 66th round of NSSO data, two wage regressions are carried out. First regression is done taking the age group 15 to 59 years. Second regression is done taking the age group 15 to 29 years. The reason for taking the 15 to 29 year age group separately is for the purpose of comparison. In the 61st round, data are collected only up to 29 years for vocational education and training.

Selection of variables and filters

Income data are provided in NSSO only for wage or salaried employed people and not for the self-employed. Hence all other categories for which income data are not available are filtered out.

Table 4 Return from general and formal vocational education.

Dep. variable: log wage	66th round of NSSO data (up to 59 yr.)	66th round of NSSO data (up to 29 yr.)	61st round of NSSO data (up to 29 yr.)
Age	0.04 (24.20)**	0.06 (4.07)**	0.075 (6.30)**
Age sq.	–0.001 (10.73)**	–0.001 (1.4)	–0.001 (2.6)**
General education	0.09 (169.27)**	0.058 (58.60)**	0.078 (62.43)**
Formal vocational	0.151 (8.58)**	0.184 (6.71)**	0.172 (8.5)**
Hereditary	–0.145 (5.41)**	–0.058 (1.32)	–0.17(–7.9)
Self-learning	0.033 (1.43)	.06 (1.5)	-
On the job	0.05 (3.40)**	0.018 (0.85)	-
Other	0.025 (-0.66)	.07 (1.1)	–0.003 (1.8)
Female	–0.453 (67.57)**	–0.358 (31.10)**	–0.41 (41.2)**
Region	0.251 (44.65)**	0.234 (24.65)**	0.25 (29.25)**
Family based enterprise	–0.177 (29.70)**	–0.057 (5.93)**	–0.38 (24.6)**
Constant term	5.4 (177.26)**	5.1 (31.09)**	4.17 (31.8)**
Adjusted R square	0.47	0.29	0.31
No. of observation	68,661	21,911	29,194

**p < .01; *p < .05.

Generally, experience and experience square terms are used in the standard Mincerian wage equation. Normally, experience variable is defined as Experience = Age—5 years in general education. However, in the NSSO survey, the exact years of general education are not provided; instead levels of education (e.g. primary, secondary, etc.) are provided. Consequently, there could be a problem of many approximations—namely approximation of years of education, of experience, term, and so on. Hence age and square of age can be used in the regression equation as experience is a linear monotonic transformation of age. Many works based on NSSO data have used age instead of experience (Bhaumik & Chakrabarty, 2009; Dutta, 2006). In this work, age is used as a proxy of experience.

Among the independent variables, age, years of general education, dummy variables for formal vocational training, location, gender, and family based enterprises are included. Since the prime concern is to see the effect of VET, dummy variable for vocational training is included. In the dummy of VET, we have taken two values. For formal received VET dummy variable = 1 is taken. For no vocational training, dummy variable takes a value of 0. Dummy variable for location (rural and urban) and gender are also used. Another dummy is introduced in order to capture the effect of the enterprise size. Family based enterprise dummy is introduced for this as enterprise size = 1 if it is family based and 0 otherwise. Thus, for the smaller enterprise sizes, the dummy takes a value of 1 whereas for the larger one, it takes a value of 0. Logarithm of wage is used as dependent variable. Also, gender is included in the set of independent variables.

Interesting results can be observed if comparison of wage return for people with/without vocational training is made in the two rounds of data (Table 4).

Regression result for 61st round suggests that age and general education are significant at 1% level of significance. Interestingly, vocational training has significant effect on wage. At the same time, for 66th round, both general education and age are significant at 1% level of significance. Similar to 61st round, it shows that effect of vocational education is significant at 1% level of significance. With this observation, it can be argued that effect of formal VET on wage is positive. Other variables, as already mentioned, i.e. location and gender, have significant impact on both the rounds on wage. In both the regressions it can be observed that location and gender variables significantly influence the wage. Males get an advantage over females in the labour market. There is a significant advantage in wage for the participants who live in the urban area over their counterparts in the rural area. It is discernible that in all cases enterprise type variable is significantly negative. It indicates that wage is significantly low for smaller enterprises when compared with larger enterprises. Constant term is positive and is also significant for both the rounds.

Thus, general education, experience (age proxy), and location all behave in an expected manner in both the rounds. Dummy for the formal VET also has a positive significant impact on wage in all the rounds of data. These labour market outcomes are explained below in the Indian labour market context.

Explaining the Indian context

The effect of VET on wage, as discerned from both the rounds of NSSO data, is positive. Importantly, however, a high level of unemployment is associated with those trained in formal VET. Vocational education and training provides a higher percentage of salaried employment, and a better wage vis-à-vis general education. It has been observed that only the manpower trained in VET corresponding to a higher level of education has similar unemployment rate as compared to unemployment for the manpower in the labour market which is from corresponding general education. It appears that VET trained manpower in the labour market has an advantage over the corresponding general education trained manpower. However, so far as unemployment is concerned, safety net

proposition holds its ground only for the individuals with a high level of general education.

As argued above, the reasons for the high unemployment among the VETs could be explained through the two institutional designs specifically mentioned in the safety net theory and one additional factor included by author in this discussion.

This situation of high unemployment for VET in India needs to be explored. There can be three reasons for it. First, it could be the extent of stratification of courses and duration of training. Second, it could be due to the "vocational specificity" of the courses and employer participation. Third, it could be due to the external labour market condition particularly where engineering degree holders and VET trained manpower have similar job roles.

Extent of stratification and course duration

As mentioned earlier, the extent of stratification for various VET courses in India varies significantly. The NSDC ecosystem courses tend to be of short duration whereas DGT ecosystem courses are of long duration. The NSS data used in this paper does not distinguish different kinds of training based on the ecosystem they belong to. However, the data provide duration of various VET courses. We plotted Table 5 to see the extent of unemployment with different duration of trainings. However, we observe that for both 66th and 61st round data, there is no linear relationship between duration of training and the extent of unemployment as could be envisaged from the safety net proposition. Possibly we need to consider other factors which lead to unemployment as well in this context to understand to what extent the course duration is leading to unemployment.

Employer participation and vocational specificity

As discussed earlier, various mechanisms for employer participation in the training space are emerging. A few of the mechanisms of employer participation in training are through IMC, SSC, or through Flexi MoU, adoption of training centres, creating centres of excellence, and so on. These mechanisms are still in the process of emerging and would take time to crystallise. However, there is a significant difference in these various mechanisms with remarkable differences in the extent and mode of employer participation in training. In the IMCs, in their present form, employer participation is restricted to meetings at certain intervals about the functioning of the ITI; however, in case of Flexi-MoU the employer has more responsibility in terms of creating training curriculum, training of the candidate, and counselling for placement. On the other hand, employer participation in the SSCs is for vetting the curriculum developed by the SSCs, and providing inputs from industry for the concerned SSC on various other matters. Centre of excellence is being envisaged as a training centre which would be owned by a different industry. Thus, these different mechanisms for industry participation and curriculum development can lead to different types of labour market outcome. It is also possible that different modes and extents of industry participation could be quantified and used to understand the labour market outcome.

Also, the "vocational specificity" for the courses would vary from course to course and there is a likelihood that a higher education background can fetch a better premium. There is a clear shift globally as well as in India (Ahmed & Chattopadhyay, 2016; Duraisamy, 2002) towards a premium on higher education. Changing skill sets across countries now require more of higher general education than very specific niche technical education (Lloyd & Payne, 2002). This is even true for Germany (Culpepper, 1999; Thelen, 2004) which is famous for its sophisticated technical training. It is observed that on an average, educational requirement is higher in the services sector than the rest of the economy in the Indian context (Bhattacharjee & D'Souza, 2013). On an average, year of schooling is 68% higher in services sector than for the economy as a whole (Bhattacharjee & D'Souza, 2013). New occupations such as financial intermediaries or in real estate, retail, banking and finance, certain IT related courses, administration and social service related courses require higher levels of general education. The general education background of the participants in these trades would reveal that they have a higher level of general education as compared to others in other different trades (Ahmed, 2016). Thus, vocational specificity should be clearly defined for these courses and higher education component should be taken into account.

Labour market structure: top heavy structure of engineers over VET

There has always been a trend towards "over-supply" of the "over educated", i.e. engineering degree holders in the Indian labour market and thereby the lowering of the reservation wage (Blaug, Layard, & Woodhall, 1969).

Blaug et al. (1969) have shown that highly educated labour is used in jobs which do not require that level of education (also in Prasad, 1979). Though occasionally there has been emphasis on VET (Nayar, 1970; Zachariah, 1970), for various reasons, VET has not received the required importance in India (Nayar, 1970; Zachariah, 1970). Further, it has been

Table 5 Duration of training and unemployment.

Training duration	61st round (15 to 29 years of age)	66th round (15 to 59 years of age)	66th round (15 to 29 years of age)
Up to 3 months	24.3	9.15	18.7
3 months to 6 months	32.6	14.8	24.6
6 months to 1 year	31.9	16.1	30.3
1 year to 2 years	18.5	12.6	27.3
More than 2 years	33.1	10.8	24.4

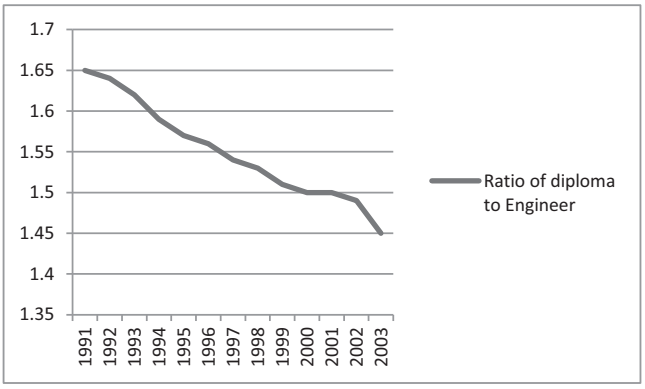

Figure 3 Ratio of diploma holders to engineers.

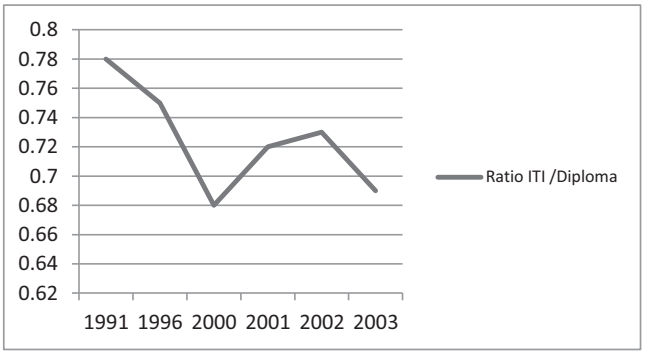

Figure 4 Ratio of ITI to diploma holders.

observed historically that there is very high unemployment among the VET trained manpower (Parameswaran, 1974). Also, the jobs which VET trained people do are often disconnected from the training they received (World Bank, 2008).

Different government reports have pointed out the anomalies of engineering related manpower profile in India. For example, the Second Education Commission (1966, p. 687) observes that manpower from engineering and related trades in India is top heavy in comparison with other countries. While in all developed countries a particular thumb rule regarding ratio of manpower has come into existence (Second Education Commission, 1966), India shows a reverse ratio. In developed countries the manpower has a pyramidal shape with a small number of engineers at the top and a large number of technicians/workers at the bottom. However in India, the situation is more like an inverted pyramid with more number of engineers on the top and comparatively less number of technicians/diplomas at the bottom. Similar observations have been made by the Meghnad Saha Committee, and the Zakir Hussain Committee as well (Second Education Commission, 1966). The Institute of Applied Manpower Research data (IAMR, 2009; IAMR, 2007) also reflects this trend in recent times.

With this manpower profile there is a possibility that engineers would encroach upon the jobs of those trained in polytechnics, ITI and other vocationally trained manpower. It has been observed that unemployment among diploma holders is more acute than unemployment among degree holders, and unemployment among ITI/Industrial Training Centre (ITC) trained manpower is more acute than unemployment among diploma holders (Parameswaran, 1974) (Figs. 3 and 4). A look at the present unemployment statistics will further confirm this scenario.

It can be discerned (from Tables 6 and 7) that there is a high level of unemployment for polytechnics/diploma holders as compared to engineers and ITI trained manpower. It is quite plausible that with the growth of a large number of private engineering colleges in this country and the corresponding growth of engineers, the polytechnics are finding it difficult to get opportunities in the job market. The ITI trained workers seem to be less vulnerable as compared to the polytechnic/diploma trained workforce due to the difference in the job roles offered to and performed by the manpower from ITIs and polytechnics. However, further research can bring out the dynamic relationship between the manpower in the labour market from ITIs, polytechnics and engineers.

Table 6 Principal status: 61st round NSSO data, 15 to 29 years.

61st round NSSO data	ITI	Polytechnic	Engineering
Employed	79.13	72.93	81.56
Unemployed	20.86	27.07	18.44

Table 7 Principal status: 66th round NSSO data, 15 to 29 years.

66th round NSSO data	ITI	Polytechnic	Engineer
Employed	82.65	78.51	83.45
Unemployed	17.35	21.51	16.54

Research suggests that while the Indian manufacturing sector continued to stagnate, the sector witnessed high mechanisation in the post liberalisation period (Chaudhuri, 2002; Kannan & Raveendran, 2008; Nagraj, 2004; Unni & Rani, 2004). This has led to fewer shop floor employments, whereas employment for engineers continued to grow (Nagraj, 2004). At the same time, the growth of contractual labour force might have a negative impact on the labour market outcome of the manpower out of VET. Unlike the earlier scenario, big firms are persistently introducing capital intensity across all manufacturing industries. The Industrial Dispute act, clause 5B stipulates that firms with a manpower size of 100 or above cannot fire a worker without the permission of the government, whereas they could do so for managers. This has resulted, in recent times, in firms recruiting fewer shop floor workers on their payroll. This can have a direct implication on the VET trained manpower. The above description holds good for the organised manufacturing sector.

There is also a vast unorganised manufacturing sector that drives the Indian manufacturing industry. However, the labour market for engineers, diploma holders, and technicians is mainly in the organised manufacturing sector.

In post liberalisation India, the information technology (IT) industry has been a major driving force in the Indian service industry (Arora & Athreye, 2002). This has resulted in the growth of IT training both in formal engineering colleges as well as in the domain of VET. There has been a huge growth

Table 8 Benefit obtained from different trainings: 66th round of NSSO data.

Field of training codes	Self-employment	Wage employment	Not benefitted
Mechanical	10.35	56.06	33.59
Electrical	23.27	45.71	31.02
Computer	7.07	32.55	60.38
Civil	19.58	58.2	22.22
Chemical	13.04	65.22	21.74
Leather	14.29	71.43	14.29
Textile	32.58	9.63	57.79
Catering, nutrition, hotels	5.13	61.54	33.33
Artisan	33.33	17.65	49.02
Creative arts	29.55	31.82	38.64
Agriculture	23.53	35.29	41.18
Non-crop based agriculture	9.52	28.57	61.9
Health and paramedical	21.35	58.47	20.19
Office and business related	8.81	41.41	49.78
Driving and motor mechanic	31.03	46.55	22.41
Beautician	37.5	8.82	53.68
Travel	10	50	40
Photography	63.64	9.09	27.27
Childcare, nutrition, pre-schools	1.69	66.95	31.36
Journalism, mass communication	21.43	57.14	21.43
Printing technology	14.71	50	35.29
Other	14.09	47.82	38.09

of private engineering colleges in this period. This growth has been primarily driven by the demand from the IT industry (Fuller & Narasimhan, 2006). The growth story can be traced by looking at the recent engineering colleges and the courses that they offer.[11] The consequence of this growth can be observed in daily newspaper reports.[12] With the tremendous growth in the supply side, a large number students remain unemployed and, as a consequence, a large number of seats in the engineering colleges remain vacant. This indicates a situation of oversupply of IT related manpower in India.

Looking at the two rounds of NSSO data, it can be observed that it is the IT related VET trained people who face the most adverse labour market consequences. In both rounds of data, over 50% of the IT related VET trained manpower report that they have not benefitted from the training they received. They form the highest number of non-beneficiaries among all types of VET. Table 8 shows the result obtained from the 66th round of NSSO data on the benefits obtained from the different trainings.

It is possible that oversupply of engineers in IT related courses causes poor labour market situation for the IT related VET courses. It is also likely that similar to IT courses in engineering, there are too many VET training centres with IT related courses being opened up. In fact, in both the rounds of NSSO data, it is observed that it is IT which has most number of students among all the VET courses.

The World Bank (2015) has conducted an evaluation study of five short term training schemes which includes Skill Development Initiative Scheme run by DGT, NSDC run short term training, short term training programmes such as Aajeevika scheme, the Rural Self Employment Training Institutes (RSETI) scheme run by Ministry of Rural Development, and the Step-Up programme run by Ministry of Housing and Urban Poverty Alleviation. This study is conducted in five states namely Andhra Pradesh, Assam, Orissa, Rajasthan and Madhya Pradesh. It has been observed that the employment rate from the programme is quite modest at around 27% overall for all the programmes. Though there are variations across the different trades and different states in the placement rates, it is never higher than 36% (Table 9). The young age of the recipients is also considered and in this study candidates who have been working for two years after having graduated from the training programme have been traced. It has been observed that even after two years of training, the employment rate is 28%. This study also observes that even though the students are placed after the training in different jobs, they do not necessarily continue in those jobs for a very long time. In fact, the rate of quitting is quite high. It indicates that though initial placement ensures insertion in the labour market, it by no means ensures a good job match or sustainability of employment (World Bank, 2015). This study also indicates that almost 30% of the recipients of the training indicate that they do not want to join the labour market immediately after training. Rather, they want to pursue higher education after the completion of their training.

[11] (http://wbut.ac.in/datas/users/0-college-list.pdf, http://wbut.ac.in/datas/users/0-college%20list-2012-13-23-07-12.pdf): Indicates the growth of engineering colleges in West Bengal. (http://wbut.ac.in/datas/users/0-placement_11.pdf): suggests that most of the recruiting companies are software firms.

[12] A. http://www.telegraphindia.com/1120909/jsp/7days/story_15955325.jsp#.Uf1F9NKmiME, B. http://articles.timesofindia.indiatimes.com/2012-09-16/hyderabad/33879470_1_colleges-face-closure-admissions-lakh-students C. http://articles.timesofindia.indiatimes.com/2013-08-02/coimbatore/41005482_1_vacant-seats-aicte-colleges.

Table 9 Placement rate at completion of short term training and job status 1–2 years later.

Programme	Initial placement rate	% working 1–2 years after training	of which (o/w) wage employment	o/w self-employment
NSDC	31	32	22	10
SDIS	23	26	18	8
STEP-UP	30	29	13	16
ASDP	24	25	10	15
RSETI	36	23	8	15

NSDC: National Skill Development Corporation; SDIS: Skill Development Initiative Scheme; ASDP: Aajeevika Skill Development Programme; RSETI: Rural Self Employment Training Institutes.Source: World Bank (2015).

Conclusion and further research

Thus, it is observed that VET is fetching a good wage premium whereas unemployment is quite high for the VET trained manpower. Also, after their VET course, individuals are more likely to join the salaried sector employment which is what is desired in the Indian context. Vocational education and training could bring labour market benefit for the individuals. However, rampant growth of VET may also lead to high unemployment. Appropriate labour market coordination is an absolute necessity in the Indian context. A measured growth of VET along with various innovative ways of industry participation into training could lead to desired labour market outcome and it can thereby increase the value of the training for the individuals.

There are several issues that bear further probing, which could not be addressed in this research. First, we need to understand further the nature of unemployment that affect individuals. Often, youth unemployment could be a reason which may inflate the unemployment figure. Also, the unemployment in developing and developed countries could be quite different (Ahmed, forthcoming). Second, we need to look into the various factors which are responsible for the labour market outcome for the VET manpower and which are specified in the literature. The extent of employer engagement, the extent of vocational specificity of the courses, duration of training and extent of stratification variable could be used to understand their effect on the labour market outcome for VET. Third, research is needed to be conducted about the competition between engineers, diploma holders and ITI certificate holders/technicians in the labour market. The pressure of huge supply of engineers in India and a corresponding decline of the reservation wage for them may lead to a decline of reservation wage and employers may prefer an engineer over a diploma holder or certificate holder unless the job role is specific for a diploma holder or a certificate holder. Fourth, we should conduct this analysis by considering different types of VET separately. Each of these VET courses is different in terms of duration, extent of stratification, vocational specificity and higher education component, and labour market orientation. Though in this work, an attempt is made to classify polytechnic/diploma, ITI/ technicians, this could be pared further.

Appendix

Definition of different types of vocational trainings: (as provided in the source of data)

Formal vocational training: Vocational training that took place in education and training institutions which followed a structured training programme and led to certificates, diplomas or degrees, recognised by State/Central Government, Public Sector and other reputed concerns was considered as formal vocational training. By structured training programme, it was meant that (i) the training programme had a definite title with prescribed syllabus and curriculum and a specified duration of the training, and (ii) the training had some entry level eligibility in terms of education and age.

Hereditary training: The expertise in a vocation or trade is sometimes acquired by the succeeding generations from other members of the household, generally the elders, through gradual exposure to such works as are involved in carrying out their ancestral profession. The expertise gained through significant hands-on experience enables the individual to take up activities in self-employment capacity or makes him employable. These were considered as non-formal vocational training acquired through hereditary sources.

On the job training: The expertise acquired by a person while in employment (current and/or past), either through informal training by the employer or organisation or through the exposure to the type of job that he/she was performing, was considered non-formal vocational training through learning on the job.

Other: "Other" sources included cases where the expertise for a vocation or trade was developed even from the household members, provided that the said vocation or trade was different from the one relating to their ancestral trade or vocation.

References

Ahmed, T. (2016). Socio-economic impact of VET: are students interested in joining vocational education and training in India—in the context of skilling mission in India. In M. Pilz (Ed.), *India: Preparation for world of work- education system and school to work transition*. Springer.

Ahmed, T. (forthcoming). Inverted U shaped curve for job search duration and level of education in India. Indian Journal of Labor Economics.

Ahmed, T., & Chattopadhyay, R. (2016). Return to general education and vocational education & training in Indian context—policy implications. *International Journal of Educational Management*, *30*(3), 370–385.

Andersen, R., & Werfhorst, H. G. (2010). Education and occupational status in 14 countries: the role of educational institutions and labor market coordination. *The British Journal of Sociology*, *61*(2), 336–355.

Antoninis, M. (2001). The vocational school fallacy revisited: Technical Secondary Schools in Egypt. European University Institute Working Papers. Robert Schumann centre for Advanced Studies, Mediterranean Programme Series. <http://www.iue.it/RSCAS/WP-Texts/01_22.pdf>.

Arora, A., & Athreye, S. (2002). The software industry and India's economic development. *Information Economics and Policy*, *14*(2).

Arum, R., & Shavit, Y. (1995). Secondary vocational education and the transition from school to work. *Sociology of Education*, *68*(3), 187–204.

Bhattacharjee, D., & D'Souza, E. (2013). Shortage amidst surplus. In J. Benson, H. Gospel, & Y. Zhu (Eds.), *Workforce development and skill formation in Asia*. Routledge.

Bhaumik, S. K., & Chakrabarty, M. (2009). Is education the panacea for economic deprivation of Muslims?: evidence from wage earners in India, 1987–2005. *Journal of Asian Economics*, *20*(2), 137–149.

Blaug, M., Layard, R., & Woodhall, M. (1969). *The causes of graduate unemployment in India*. London: Allen Lane.

Cain, G. G. (1976). The challenge of segmented labor market theories to orthodox theory: a survey. *Journal of Economic Literature*, *14*(4), 1215–1257.

Chaudhuri, S. (2002). Economic reforms and industrial structure in India. *Economic & Political Weekly*, *37*(2), 155–162.

Confederation of Indian Industries (CII) (2013). Upgrading Industrial Training Institutes under the Public Private Partnership Scheme: An Impact Assessment Study East and North East Region Report, Kolkata.

Culpepper, P. D. (1999). The future of the high-skill equilibrium in Germany. *Oxford Review of Economic Policy*, *15*, 43–59.

Datta Chaudhuri, M. (1996) "Labor markets as social institutions in India" Iris-India working paper no. 10, University of Maryland, College Park.

De Soto (1985). *The other path: The invisible revolution in the third world*. New York: Harper and Row.

Duraisamy, P. (2002). Changes in returns to education in India, 1983–94: by gender, age-cohort and location. *Economics of Education Review*, *21*(6), 609–622.

Dutta, P. V. (2006). Returns to education: new evidence for India, 1983–1999. *Education Economics*, *14*(4).

Foster, P. J. (1965). A. A. Anderson & M. J. Bowman (Eds.), *The vocational school fallacy in development planning* (pp. 142–166).

Fuller, C. J., & Narasimhan, H. (2006). Engineering colleges, 'exposure' and information technology: Professionals in Tamil Nadu. *Economic and Political Weekly*, 258–288.

Grubb, N. (1995). The convergence of educational system and the role of vocationalism. *Comparative Education Review*, *29*(4), 526–548.

Harberger, A. C. (1970) On Measuring the Social Opportunity Cost of Labor, Geneva: International Labor Office.

Himanshu (2011). Employment trends in India: a re-examination. *Economic & Political Weekly*, *XLVI*(37), 43–59.

Iannelli, C., & Raffe, D. (2007). Vocational upper secondary education & transition from school. *European Sociological Review*, *23*(1), 49–63.

IAMR (2007), Manpower Profile in India, Institute of Applied Manpower Research, New Delhi.

IAMR (2009), Manpower Profile in India, Institute of Applied Manpower Research, New Delhi.

International Labor Organisation (2003) "Industrial Training Institutes in India: The Efficiency Study Report", New Delhi.

Kannan, K. P., & Raveendran, G. (2008). Growth sans employment: a quarter century of jobless growth in India's organised manufacturing. *Economic & Political Weekly*, *44*(10), 80–91.

King, K., & Martin, C. (2002). The vocational school fallacy revisited: education, aspiration and work in Ghana 1959–2000. *International Journal of Educational Development*, *22*, 5–26.

Korpi, T., Graff, P. D., Hendrickx, J., & Layte, R. (2003). Vocational training & career precariousness in Great Britain, the Netherlands and Sweden. *Acta Sociologica*, *46*(1), 17–30.

Kuczera, M., Kis, V., & Wurzburg, G. (2009). Learning for Jobs OECD Reviews of Vocational Education and Training Korea; OECD.

Lloyd, C., & Payne, J. (2002). In search of the high skills society: some reflections on current visions, SKOPE. University of Warwick.

Nagraj, R. (2004). Fall in organised manufacturing employment: a brief note. *Economic& Political Weekly*, *39*(30), 3387–3390.

Nakamura, T. (2003). Education aspiration and the warming-up/cooling-down process: a comparative study between Japan and South Korea. *Social Science Japan Journal*, *6*, 199–220.

Nayar, D. P. (1970). Problems of technical education. *Economic and Political Weekly*, *5*(12), 533–539.

Parameswaran, M. P. (1974). Manpower planning in India. *Social Scientist*, *2*(10), 55–66.

Prasad, K. V. E. (1979). Education and unemployment of professional manpower in India. *Economic & Political Weekly*, *14*(20), 881–888.

Psacharopoulos, G., & Loxley, W. (1985). *Curriculum diversification in Colombia and Tanzania: an evaluation*. Johns Hopkins University Press.

Ryan, P. (2001). The school-to-work transition: a cross-national perspective. *Journal of Economic Literature*, *39*, 34–92.

Scherer, S. (2005). Patterns of labor market entry—long wait or career instability? An empirical comparison of Italy, Great Britain and West Germany. *European Sociological Review*, *21*(5), 427–440.

Second Education Commission (1966), Ministry of Education, Government of India, New Delhi.

Sen, A. (1976). *Employment development and technology*. New Delhi: Oxford University Press.

Shavit, Y., & Muller, W. (1998). *From school to work a comparative study of educational qualifications and occupational destinations* (pp. 1–48). Oxford University Press.

Shavit, Y., & Muller, W. (2000). Vocational secondary education—where diversion & where safety net? *European Societies*, *2*(1), 29–50.

Thelen, K. (2004). *How institutions evolve: the political economy of skills in Germany, Britain, the United States and Japan*. Cambridge: Cambridge University Press.

Tilak, B. G. J. (1988). Economics of vocationalization: a review of the evidence. *Canadian and International Education*, *17*, 45–62.

Tilak, B. G. J. (2002). Vocational education and training in Asia. In J. P. Keeves & R. Watanabe (Eds.), *Handbook on educational research in the Asia Pacific Region*. Kluwer Academic Publishers.

Unni, J., & Rani, U. (2004). Unorganised and organised manufacturing in India: potential for employment generating growth. *Economic & Political Weekly*, *39*(41), 4568–4580.

UNESCO (2011) Global Education Digest: Comparing Education Statistics across the World, Montreal.

Werfhorst, H. G. (2002). Fields of study, acquired skills and the wage benefit from a matching job. *Acta Sociologica*, *45*(4), 287–303.

Werfhorst, H. G. (2011). Skill and education effects on earnings in 18 countries: the role of national educational institutions. *Social Science Research*, *40*, 1078–1090.
World Bank (2008) "Skill Development in India—The Vocational Education and Training in India", New Delhi.
World Bank (2015), "Labor Market Impacts and Effectiveness of Skills Development Programs in India", New Delhi.
Zachariah, M. (1970). The durability of academic secondary education in India. *Comparative Education Review*, *14*(2), 152–161.