European Journal of Training and Development

Human capital, HRD and VET: the case of India

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Received 6 October 2014
Revised 29 July 2015
Accepted 7 August 2015

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Abstract

Purpose – This paper aims to analyze the role of human capital (HC), human resource development (HRD) and vocational educational and training (VET) in the emerging Indian economy. How may we define the HC, HRD and VET in India? To what extent and how as HRD investments in India contributed to India's recent economic development? What were the investments and what were the returns? Who invested and who obtained the returns? Is India really different from other countries?

Design/methodology/approach – To achieve that goal, the authors use a model of the HC, HRD and VET national market. Specifically, they divide the analysis in four broad stages: stocks, investments and outcomes; supply, demand, price and quantity; needs; and private and public forces.

Findings – The authors conclude that the India's HC, HRD and VET have been growing and will have to grow even more, for India to become developed. Currently, the urgency is even greater in the HRD and VET side than in the education side. The government goals for 2022 are immense, and the raise in the HRD and VET in India that is aimed will effectively change India's economy and society.

Research limitations/implications – The authors only use secondary data. They believe that a deeper and very detailed study on all the States of India could be made, following this paper. Also, the analysis could be replicated for the other BRICS.

Practical implications – India HRD and VET market is described as being one of the major India's problems of today and promises of tomorrow.

Social implications – Today, only around ten million of India's citizens receive HRD and VET annually. This number is to be multiplied between 20 and 50 times. This change will change India's economy and society.

Originality/value – Also, the authors believe that the paper is original because it analyzes India's HC, HRD and VET with a new conceptual model.

Keywords India, Development, Human resource development, BRICS, Vocational education and training, Market forces

Paper type Case study

Introduction

In today's world economy, India stands as a sleeping giant. Its dimension is continental, in terms of population and size. Politically, India is considered to be the largest democracy in the world. Socially, India is an extremely complex society, with one thousand languages, one thousand gods and a still important structure of casts. In terms of the world economy, India is a founder member of the BRICS (O'Neil, 2001; BRICS, 2013).

However, in terms of socio-economic rankings, India is still at a very low position, which corresponds to very weak levels in terms of ratings – for an estimated population

European Journal of Training and Development
Vol. 39 No. 7, 2015
pp. 586-609

2046-9012
DOI 10.1108/EJTD-10-2014-0069

of 1.2 billion people. India has a gross domestic product (GDP)/capita of $5,000 only, Human indicator of 0.586 and a knowledge economy indicator of 3.06 – these three indicators being concurrently low in world terms.

In the context of the globalized world we live in, the most interesting thing about India's situation is that the key for India's development lies in the human capital (HC), human resource development (HRD) and vocational educational and training (VET) systems. Only when India's population will be educated, in generic terms and in what concerns training, will the country fulfil its immense potential. Indeed, today, India's low levels on HC, HRD and VET are the county's Achilles heel to achieve higher levels of economic and social well-being and prosperity. This situation is, as we will see in the paper, well-known and acknowledged by important political figures in India's establishment.

From a scientific point of view, we believe that it is important if not decisive, to have a clear idea of the main features about HC, HRD and VET in India. That study would be important to understand what has been happening in India and to suggest policy measures, on human resource (HR), HRD and VET. Therefore, specifically, in this context, the paper analyses some specific questions about HR, HRD and VET in India, according to a methodology which is defined. The very specific questions are the following:

RQ1. What is the stock of HC, HRD and VET in India; what has been the investment in HC, HRD and VET; and what are the perceived outcomes of that investment and of the use of that stock?

RQ2. What is the supply of HC, HRD and VET in India, and what is the demand for HC, HRD and VET? Having in mind that supply and that demand, what can be said about the price of HC in India?

RQ3. What are India's needs in terms of HC, HRD and VET to transform India in a developed country?

RQ4. What are the main forces/actors in the HR, HRD and VET scene in India?

For all the questions in this paper, we begin by addressing HC and then specify for HRD and VET.

We sincerely believe that the paper is relevant for HRD researchers because it provides a description of HC, HRD and VET in India which is important to know. As it will be shown in the literature review and in the methodological section, it is important to consider HC, HRD and VET as stocks for which there is an investment and outcomes. Also, it is important to define supply, demand, price and quantity for those goods. In addition, the country needs those goods which are provided and used by main actors. It is important to answer our research questions to know India, and the research questions open large and long venues for research in such a big country as India.

For doing so, we divide the paper in six main parts. First, we present the literature review; we address the concepts of HC, HRD and VET as we will use them in the paper, and we expose the main theoretical ideas that base the investment on HC, HRD and VET, for individuals, organizations, countries and regions in a national and in an international perspective. Second, we summarize known studies on HRD and VET in India. Third, we describe in detail the methodology we use to analyse HC, HRD and VET in India. Fourth, the results of the analysis are shown and are discussed. Finally, the

paper ends with a Conclusions section which also includes suggestions to further research.

Literature review

HC is a very broad concept in the literature. It means, by and large all the characteristics that an individual possesses and that may be of interest to an organization to give that person a job (Bannock *et al.*, 2011). More specifically, HC includes not only learning-related constructs like education and training, work experience, competences, skills but also other more psychological and social ideas like ability, attitudes and motivation. Additionally, we may add that fitness, physical strength and even beauty may be considered as HC.

In economic terms, HC may be considered as a good, which is demanded by people and some organizations and which is provided by the same or other organizations. The provision and the demand may be made by the private sector, the public sector or the third sector. Particularly, in an increasingly technological and globalized world, the outside world has an influence as provider or demander of HR in a given country. Also, in less developed and averagely poor economies, like India, the existence of an informal sector should also not be overlooked. The provision of the good is never cost free, but the use of the good has also to be funded, at a price. The funding can be made by the individual, the organization, the State or the outside world. Finally, it is crucial not to forget that for any given country, HR represents the stock of HC. When people and organizations purchase HC, they make an investment. The investment is made because there is the forecast of a worthy return. In any given country, the situation regarding the HR may influence decisively the country's global economic outlook, as we will explain in the next section also. In the economic analysis the market of HC is formed by the supply (made by providers), and the demand (made by buyers and users), which both operate at different prices.

Crucially, within the broad HC notion of good, the specific notions of HRD and VET have been defined in the literature. Namely, in organizational theory, HRD is defined as "*the organizing term for discussion and analysis of workplace learning*" (Gibb, 2008, p. 4) or as "a *process of developing and unleashing human expertise through organization development and personnel training and development for the purpose of improving performance*" (Swanson and Holton, 2008, p. 8). Also, HRD has been analysed as having the following four interrelated functions:

(1) organization development;

(2) career development;

(3) training and development; and

(4) performance improvement (McGuire and Cseh, 2006; Wang and McLean, 2007; Abdullah, 2009).

VET is a similar concept to HRD. It describes formal or informal learning operations which directly relate with the workplace (Mulder *et al.*, 2006).

From a microeconomic point of view, it is well-known that the investment in HC, HRD and VET may benefit the individual and the organization that make the investment (Becker, 1993). The investment may benefit the individual's wage and employment prospects and the organizations' productivity, product quality and even exports level

(Becker, 1993). The effect of the investment in the individual's situation may be detected by the age-earning profiles (Psacharopoulos and Patrinos, 2002).

Specifically, on HRD and training, major discussions exist on the "competence profile" needed by individuals to perform in the labour market (Jackson, 2010). Training can be divided in specific, general (Becker, 1993) or transferable (Stevens, 1996) with different market structures and implications. In the first two cases, the market tends to be competitive, in the third oligopolistic. In the first two, an agreement may be reached between the worker and the company without the government intervention. In the third case, a market failure on provision is very likely to exist due to poaching practices. But, in all cases, there is little doubt that HRD and VET may have a very positive influence in the persons' and organizations' situations in the labour market.

One of the major issues on the investment on HC is that markets are not perfect. Discrimination issues exist because people are not perceived by profit-seeking companies as equal, those who send the good signs being rewarded with more opportunities and better rewards (Spence, 1973). In countries like India in which the cast system is still a major issue, discrimination may be a very relevant issue. Other major issue in markets is dualization, resulting in very different situations regarding big companies and small or micro ones, the former giving opportunities to training and rewarding HC, but not the later (Piore, 1970). In such a diverse and big country as India, dualization is a form of social inequality.

Other market failures exist, like lack of information that call for the public presence in the market (Brunello and Paola, 2004). That public presence, in turn, may originate public failures, related to bureaucracy, or political objectives, for example. A balance should be achieved between public and private interventions to minimize the failures and maximize the social outcome of the market. In this context, it is very interesting to note that the developed countries are the ones that have the more advanced schemes of private or public investment in HC, HRD and VET.

Much of the analysis on HC is made in what economists classify as "partial equilibrium", meaning that only one part of the HC scene is analyzed; this type of analysis is normal when the object of the analysis are individuals or organizations and their specific situations. However, when we want to analyze countries, the so-called "general equilibrium" approach becomes necessary.

There is little doubt that the increase in HR, HRD and VET can benefit and increase the level of economic development of a given country (Becker, 1993). The rationale behind this assertion is straightforward: a country in which people are more educated, skilled and competent can produce more valuable goods and services than one country with a less educated, skilled and competent labour force. That competence is acquired in schools and universities but also through VET and HRD, by on-the-job and life-long learning investments. HRD and VET develop, complement, enlarge and cement the competencies individuals acquire through education. The mentioned possibility of better and higher production derived from HR, HRD and VET should, in turn, be easily translated in income and welfare. Additionally, in fact, in general terms, the countries which have the highest levels of education and training and also the highest levels of student performance and even the highest levels on the knowledge indicators are the ones which also have the highest levels of income, and the highest levels of human development (World Bank, 2013; UNDP, 2013).

One explanation for the differences in situations between the different set of countries resides in the existence of high equilibriums associated with virtuous cycles and low equilibriums associated with vicious cycles about the investment in HR in different countries (Ashton and Green, 1996). In a virtuous cycle, companies create vacancies for skilled jobs because they know the competent labour force is available. That fact, in turn, creates a willingness to invest in HR by the individuals and by the State. Big, stable and long-lasting returns tend to reward big societal investments in HC (Ashton and Green, 1996). From those mutual desires of companies and individuals results a high equilibrium regarding skills, competences and HR in general. This is the case of the Nordic countries par excellence, but also, by and large of the Organisation for Economic Co-operation and Development (OECD), and Europe, with few exceptions. Quite crucially the virtuous cycle relates not only to education but also to HRD and VET. Companies only invest in jobs that demand high levels of HRD and VET if they believe they will have available the educated labour force that will fill those vacancies. Therefore, the best HRD and VET systems tend to exist where the better educated, skilled and competent workers exist, and where organizations and companies try to locate their best unities.

In the reverse situation (low equilibrium with vicious cycle), companies only create low-skilled jobs because they assume that only workers with little education or low levels of HRD and VET are available. This fact constitutes a disincentive to invest in HR and creates a vicious cycle defined by low investment and low returns (Ashton and Green, 1996). This one is basically the situation in the non-developed world, and also can be found in some parts of the developed world in what is called the "low skill bad job trap" (Snower, 1994) which is also related to the emergence and maintenance of poverty (Galbraith, 1980). Therefore, in the poor and not developed part of the world, the market for HC, HRD and VET tends to be very weak and small. People do not invest in education, HRD and VET, and companies and organizations also do not create vacancies for skilled jobs. India was basically in this sort of situation in the twentieth century, and is only slowly coming out of it, as we will see in this paper.

Rather curiously, the emergent countries are characterized by a third type in situation. In fact, those are the countries which are managing to break the vicious cycle of poverty and disinvestment. Also, crucially, they did it, in a sustained way, because they invested in HC and, namely, in education, HRD and VET. Furthermore, the investment in HC must be made in the form of a societal agreement. That agreement should involve the government, the employers, the employees, the educational sector and even the social elites, to foster decisively the investment in HR in the mentioned countries (Ashton and Green, 1996, pp 100-4). For us, the BRICS constitute the best example of emergent countries. In addition, in the scope of this paper, this idea is decisive because India is precisely an emergent country, a member of the BRICS and a country with current very low levels of HR, HRD and VET. Therefore, the consideration of macroeconomic equilibriums explains the importance not only of education but also of HRD and VET in India's development. Very high investments in HRD and VET will be needed in India to create a world-class workforce, and as we will see, they are at least being foreseen.

In Table I, we list the main ideas on HC we just exposed and refer to their importance in the context of the paper.

Topic	Implication	Methodology section
HC is possessed by individuals, organizations and regions	It is important to know who are the players in the HC scene of a country	Market forces
A market with different submarkets for HC exists in which investors are rewarded in the long run	It is important to come to terms with those markets and submarkets and their supply, demand, price and quantity	Supply, demand, price and quantity
The investment in HC has microeconomic origin and outcomes	It is important to analyze as an investment, from which there is an outcome and that also generates a stock	Investment, stocks and returns
Market failures (related to discrimination, dualism or information, etc.) exist in the HC market, but also public failures (as those related to red tape, political objectives, etc.)	It is important to analyze the intervention of the state within the market of HC	Government presence in the market as a market force
Macroeconomic equilibria derive from the aggregation of microeconomic efforts) low- (in poor countries), middle- (in emergent countries) and high-skills (in rich countries) equilibria	Needs exist to bring low-skilled or middle-skilled equilibria to become a high-skilled, and those needs should be socially accounted and addressed	Needs and global equilibria in the market

Source: Our work

Table I.
Main ideas on HC investment in the context of the paper

Moreover, and specifically, HRD carries with it the benefit of economic development for the society at large, besides its effects on individuals and organizations. Hagen (1986) and Loehr and Powelson (1981) have suggested six primer causes of economic development, namely, foreign trade, resource allocation, technology transfer, structural transformation, human capital formation and savings and investment.

VET helps the workforce orient better with respect to the world of work and acquire employable skills. It helps nations to train the skilled and entrepreneurial workforce to create wealth and emerge out of poverty. VET has an advantage that it can be designed for different levels of sophistication which helps the nations respond to needs of different industries and also to different training needs of learners spread across diverse socio-economic backgrounds. Thus, HRD and VET holders play a pivotal role in emergence of nations, as they help drive the engine of industrial and economic growth of nations.

More specifically, in this globalized world, HRD and VET are perceived as having a very big influence on competitiveness. In fact, every country has a certain competitiveness level based on its natural disposition of HR in different industries. Porter (1990) indicated that USA has a large workforce of high-tech talents and senior managers who possess high-tech knowledge and management skills. The workforce makes US companies predominant in the fields of patenting, design, marketing and services, among others; it makes US companies the most competitive in the computer science, software and bio-tech industries; and it makes US companies unchallenged in the defence and aviation industries.

The analysis can be extended to other countries:

- The UK possesses excellent talent in services, consulting, software and publishing and is predominant in these industries around the world.
- Germany possesses a large body of professional and skilled workers in the chemistry, plastic, machinery manufacturing and precision instruments industries, and it is predominant in research and development (R&D) and control of complex production process.
- Japan has a large number of engineers and scientists in applied R&D and is the most competitive in the transportation, office equipment, metals, industrial robots, cameras, fax machines and automobile industries.
- Newly industrial areas, which include Singapore, Korea and Taiwan of China, are strongly predominant in the fields of ultimate consumer goods, assembly and warehousing and transportation because they have highly educated employees and engineers. India has a large market share in the fields of software R&D and after-care services due to its large numbers of English speakers and computer talents.

In this context, it becomes imperative for the emerging nations (O'Neil, 2001) to work on strategies for HRD to ensure sustained growth so as to emerge on the global map. VET is one of the most effective strategies in the field of HRD, which are helping the merging nations to help modernize and train their large workforce for sustained growth. Vocational education has helped the nation in rapid industrialization that has catalysed the national development.

It is well-known that these theories are verified in practice. We just give to examples to illustrate:

- According to estimations, from 1929 to 1982, school education gained before entering into the workplace increases US production by 26 per cent, and learning in workplace increases American production by 55 per cent (Gummer, 1990).
- In a 2005 investigation, the American Society for Training and Development reported that various organizations invested 2.2 per cent of employees' compensation in training and development, the average time for annual employee's training was 41 hours and most HR managers in USA believed HRD to be the most important function in the HR department (Werner and Desimone, 2011).

These practices illustrate that HRD is seen as an important strategy for establishing the competitiveness of enterprises and nations.

Table II summarizes what has been written about the influence of HC, HRD and VET in the international success of countries.

Finally, as a note, in Table III, we list the existing concepts which may define the emergence of an economy, and, namely, growth, economic development, sustained development, human development and sustainable development.

Known case studies on HRD and VET in India

With the rise of the economy, HRD and VET issues in India became more and more a scientific topic. Not surprisingly, the first type of analysis reflected on the country's

Countries	HRD and VET	Specialization	Indicators
Africa	Less than primary	Agriculture	Low income, low Human Development Index
Asia and Latin America	Primary and lower secondary	Traditional low labour costs industry	Lower medium to medium income and Human Development Index
Eastern and Southern Europe	Secondary	High value-added industry	High income and Human Development Index
USA, UK, Japan. Nordic and Central Europe	Third level	Services	World top

Source: Own analysis

Table II.
HRD, VET and the specialization in the world economy

Concept	Meaning	Source (Author/Date)
Growth	GDP increase	Post World War II
Economic development	GDP ph increase	1960s
Sustained development	Long-run GDP ph increase	1970s
Human development	Human development indicator increase, considering GDP ph, illiteracy and life expectancy	UNDP, 2013
Sustainable development	Economic, social and environmental protection	United Nations (1987, 2005)

Table III.
Major concepts on development and their meaning

cultural heritage and political past (Singh, 2001). More recently, Kuruvilla and Ranganathan (2008), while analyzing the fast-growing outsourcing industry, detected macroeconomic problems (current skill shortages and the inability of the country to produce higher levels of skills for the long-term growth and sustainability of the industry) and also microeconomic problems (very high levels of employee turnover and rapidly increasing employee costs). At the same time, Srimannarayana (2009) concluded that business managers evaluated HR using physical indicators but not impact ones. Furthermore, Srimannarayana (2010) concluded that HR experts were currently performing predominately administrative expert and employee champion roles; but in the organizations of the future, those experts' predominant roles should be related to strategy and change. Another author analyzed the cultural challenge that productivity enhancement devoted programmes may bring (King, 2012a). The same author questioned whether the massive raise in VET in India will mean a change in paradigm (King, 2012b). Agrawal (2012) concluded that quite a high rate of unemployment existed (11 per cent) for VET holders in the age group 15-29 years. Although the unemployment rate of VET holders was higher than the overall unemployment rate in the same age group, the rate was lower than the one of general secondary graduates. Jain *et al.* (2013) edited a Special Issue on the topic in a prestigious journal on HRD, with analysis related to innovation, the private and public sector, engagement and multinationals. In another journal, the HRD climate was also analyzed, with an enquiry on 403 managers, and six factors were found to be important: top management belief and commitment to HRD, employee development; autonomy, openness and authenticity; rewards, potential and

performance appraisals; superior–subordinate relationship; and true, collaboration and team spirit (Chaudhary *et al.*, 2013). In this context of investment and improvement, positive VET implemented through the attitude–skill–knowledge model was tested in the automobile sector with positive results (Nagendra *et al.*, 2013). Furthermore, three invited papers on VET appeared in an Issue of the *Indian Journal of Industrial Relations* from January 2014: the first paper described a pilot study to assess the transition to the labour market of people who worked in the informal sector and received training in five the trades of motor mechanic, mason, plumber, television repair and carpenter (Sodhi, 2014); the second paper analyzed the importance of VET to shape India's socio-economic landscape (Rashml, 2014); the third paper reflected on the fact that half of India's population has less than 25 years of age, and two-thirds below 35 years; that population needs to have a non-agricultural VET; therefore, regarding the VET system, India faces two massive and twin challenges on quality and quantity (Mehrotra, 2014). Finally, quite recently, a study defended the need of India to follow the German example and promote skills training for young people which reflect the needs of the market and help integrate those youngsters successfully (Pilz and Pierenkemper, 2014).

As a conclusion to this subsection, we consider that, although India's economy is not yet booming, science on India's HRD and VET is already expanding very fast. That expansion will in itself contribute positively to the development of India's HRD and VET (see Discussion).

Methodology

The methodology we use in the paper is based on HC analysis and Human Resource Economics. To analyze the HC, HRD and VET in India, we divide the analysis in the following four broad stages:

(1) stocks, investments and outcomes;

(2) supply, demand, price and quantity;

(3) needs; and

(4) market forces.

The dimensions followed the basic notions described in the literature review above:

- A first dimension is linked with the idea of stock, which is generated by investments and should produce returns, or outcomes. This is a very performance-oriented dimension.
- A second dimension is based on the idea of market, which in economics is defined by supply, demand, price and quantity. This dimension is very market-oriented, and its idea is to know who and how much provides, and buys HC, HRD and VET. It is also a dimension which analyses the cost of buying and providing HC and also the quantities bought and provided.
- A third dimension is required, however, to address a very specific question: what is the need of HC a country needs to become developed? The idea is that in a given country, demand may be weak (if the organizations do not currently ask for high levels of HC) but need may be high (if to make the country developed much HC should be used and a big increase in the level of HC should happen) – and crucially, this situation may apply to a country like India.

- Finally, a fourth dimension is about the most important players in the HC, HRD and VET market or scene. This dimension directly relates to the second dimension but is also indirectly related to the first and the third. Namely, the supply of and demand for HC, HRD and VET are made by actors, and it is not indifferent who these players are, and what is their relative and absolute strength.

The four stages are defined in a logic succession. The easiest way to think about HR is a stock, for which an investment exists and which generates outcomes. This approach is the simplest and is somehow rooted in accountancy. However, when we consider that the only way to make sense of HC in a country is to try (at least) to define the big market forces of supply and demand that exist, and also the price and quantity of HC that is purchased in a given moment. However, sometimes, the country falls short of what it should have in HC terms, and so we have to consider what are the needs of HC from a national perspective. In addition, as all the movements described in the first two stages have to be materialized, and also because the correction of any need has to be made using social actors, in the last part of the Methodology, we aim at describing the major players in the HC scene for each country.

A more theoretically based detailed description of the model is presented next:

On stocks, investments and outcomes

HC (or we may call it human resources, HR) is a stock for which there is an investment. HC is an individual, organizational and social asset, for which there is a stock (Frank, 2011). That stock may be increased by investments (Frank, 2011). The stock of HR/HC may be depreciated by retirements or obsolescence of skills (Frank, 2011).

For some well-known authors, the stock/investment and return analysis is like the two faces of a coin. To have a good level of HR should be good for a person, organization, region or country. But this is only the easiest part of the problem. The second side, however, is as important as the first and is related to outcomes. Therefore, crucially, the investment in HC must generate returns (Frank, 2011). Those returns, socially speaking, should be linked with wages and employment probability (for persons), productivity and product quality (for organizations) income, wealth, employment and trade balance (for societies) (Frank, 2011).

On supply, demand, price and quantity

To analyze the national situation on HC, HRD and VET, it is not only necessary to look at reality by the "assets" perspective as described in Item 1 in the Methodology Section. We also must consider that a national market of HC, HRD and VET exists, in which HR is supplied, and demanded, and for which there is a price and a quantity (Becker, 1993). The demand of HC, HRD and VET is made by individuals, families and organizations (public, profit seeking or from the third sector). It may be measured in hours, courses or any monetary metric. The supply of HR, HRD or VET is made by specific entities like the schooling system and the training system; those systems may include private, public or third sector organizations; they may also include multinationals. Some organizations may try to supply the HC, HRD and VET they need, whereas others may try to find the same HC, HRD and VET. Consultants have an important role in this market because they may provide training and may facilitate training operations.

As HC, HRD and VET are possessed, they have to be acquired. The acquisition is done using funds. Those funds may be from the individual, the company or

organization, the banking system or the public sector. The price of HC, HRD or VET can be measured by the amount of money that is needed to achieve a skill or a competence. That amount may include fees for individuals, productivity loss, material and funding for organizations and income for countries.

Needs

We believe that for a country, the need for HC, HRD and VET can be defined by benchmarking the current level in relation with the world leaders. Therefore, the need for HR, HRD and VET in any country should be defined comparing its own values on HC, HRD and VET supply or demand, with the levels of top of those variables for the world leading countries like the USA, Japan or the Nordic European States. We assume that the notion of need is related with the necessity of catching up.

Market forces

The functioning of any given market requires that a set of economic actors are present in that market. In the HC, HRD or VET markets, several types of agents evolve: individuals and their families; the banking system; the educational bodies; public bodies; companies; the third sector; consultants; unions and representatives of companies. Also, in an increasingly globalized world, migrations and international bodies such as multinationals, inter-governmental agencies and non-governmental organizations play a vital world in defining the investment in HC, HRD or VET in any country. Those actors define and materialize the HR policy in each country. It is very important to define what those HR policies are, in discourse and in practice. At the end of the day, the consequences of the investment in HR are all consequences of policies. The market forces are similar to what has been defined in social theory as the "Welfare Mix" (Esping-Andersen, 1994).

To sum up: the actors (market forces, welfare mix) define the supply and the demand, which generate a price for a quantity; the price is important to know to make the investment; the investment increases the stock and should have a return that would make it worth; needs would be reduced with the investment.

Table IV summarizes the methodology we just exposed, and links to the research questions and to the results section.

Finally, when applying the methodology, we address HC when we need to define the broad picture and after we focus more specifically on HRD and VET. We use secondary data, mainly collected from statistical institutions from India, the United Nations and the World Bank.

Results

In this section, we describe the results of the application of our model to HC, HRD and VET in India. The section is divided in the following four subsections:

(1) on stocks, investments and outcomes;

(2) on supply, demand, price and quantity;

(3) needs; and

(4) market forces.

Dimensions	Focus and research questions	Variables	Statistics in the results section
Profitability	How much is invested, what exists and what is the outcome of the effort in and for the country?	Stock, investments, outcomes	Percentage of population by level of education, percentage of people with training, expenditures in education and training, wages, income and employment levels
Market	What, how much and at what cost is provided, purchased and used in the country	Supply, demand, price quantities	Attendance by education levels and in training, skill levels of employed workers, private and social cost of education and training
Needs	What HC needed to develop the country	Needs	Expected evolution of the country in future years on education and training capacity
Markets forces	Who is who in the country's HC market	Market forces	Most important providers and users of HRD and VET in the country

Source: Own analysis

Table IV. Methodology in detail

On stocks, investments and outcomes

India's HC stock has traditionally been low in quality even if the country is one of the largest in population, only second to China. In fact, India is more of a continent than a country, as to be fair, three of the other four BRICS (China, Brazil and Russia) also are. The most recent data on the topic state that in 2010, of the population with more than 25 years of age, only 16.6 per cent completed primary education, 0.8 per cent completed secondary education and 4.1 per cent completed the tertiary education (World Bank, 2014). Another recent study (Mehrotra *et al.*, 2014) states that for 2009-2010 and an estimated labour force of 420 million aged between 15 and 59 years, 125 million were not literate, 103 million had primary or below primary qualifications, 74 million had 6-8 years of education, 50 million had 9 or 10 years of studies and 67.5 million had 11 or more. Moreover, regarding training, 7.9 million people had received formal training, and 10.5 million had received technical education. Therefore, we may conclude that the stock of HR in India's population is not high, and only a small fraction of the population seems to be skilled. Quite critically, the numbers are even less regarding HRD or VET (barely 19 millions) than regarding education (67.5 millions). Given that education and training interact as sources of competences, we have grounds to reinforce the notion that in India, a low-skilled equilibrium exists.

India's investment in education and training has been rising. But, overall, the figures are still low by world standards and even lower if we consider that point of departure and what has to be achieved. Therefore, currently (World Bank, 2014b), as of 2011, the

country's public expenditures in education are of about 3.9 per cent of the GDP and represent 10 per cent of the country's budget expenditures. The investment in training, particularly the public one, has been small (World Bank, 2006, p. 70). Exact financial figures for recent years do not exist, but given that the public capacity to train is only of about 10 million, and the goal, for 2020, is to reach a target of 500 million (Australian Education International, 2014, p. 24), we have reasons to consider that the investment in HRD and VET in India has been small and even smaller than the investment in education. The weak investment, in turn, led to the low levels of the stock of HC, HRD and VET measured in terms of education or training.

However, according to the last available data, and as mentioned in Table V, the results of that investment were important in terms of GDP per head (GDP ph) and considerable regarding the employment.

The figures on income and employment are quite good and positive. In the meantime, however, India dropped in the World Competitiveness Report from 42 in 122 countries in 2006 to 60 in 148 countries in 2013 (World Economic Forum, 2014).

Also, we have good reasons to believe that the investment in HC increased inequality, as the Gini index of the country increased from 31.1 in 1983 to 33.9 in 2010 (World Bank, 2014b).

On supply, demand, price and quantity

The supply of education in India increased sharply in the past 20 years as the enrolment rates of students presented in Table VI do attest. The increase was seen in all the categories of schooling, and at the current moment, four years of schooling is an achieved standard; secondary studies are the next goal, and tertiary is becoming a reality for more and more students each year.

In relation with vocational education, it is estimated that only 5 per cent or less of the Indian's youth received vocational education (B-able, 2014). Very few of India's youngsters enter the labour market, having received any kind of vocational preparation (Government of India, 2006, p. 87). In 2003, only 4 per cent of the labour force aged 20-24 years had received vocational training, a figure that compared very badly with Mexico

Year	Gross national income in power purchase parity per head (1)	Employment (millions) (2)
1990	870	440
1997	1,280	560
2003	1,830	600
2010	3,430	640

Table V.
Outcomes from HRD

Source: World Bank, 2014b (1); ILO, 2014 adapted (2)

Education	1990	1997	2003	2010
Primary	91	93	102	111
Secondary	NA	46	50	63
Tertiary	6	6	11	18

Table VI.
Supply of HC: attendees in primary, secondary and tertiary education in %

Source: World Bank, 2014b

(around 30 per cent) and the OECD countries (around 80 per cent). Training has been provided by pubic industrial training institutes (ITIs) and industrial training centres, whose numbers grew from around 1,000 in 1982 to 2,500 in 1992; 4,000 in 1997; and 5,000 in 2002 (World Bank, 2006, p. 22). The Craftsmen Training Scheme (CTS) and the Skills Development Training Scheme (SDIS) train about 2.2 million people annually (Australian Education International, 2014, p. 11). Private providers also exist, although in smaller numbers – a study in 2003 found 364 providers, 212 privately owned and 152 non-governmental organizations; public provision related to engineer-related trades and private provision to non-engineer-related (World Bank, 2006, pp. 54-55). Nowadays, the non-public provision is made by industrial associations, international bodies, private players and other countries (Australian Education International, 2014, p. 12).

We tried to define a demand for HC by analyzing the number of workers in skilled-related occupations as defined by the International Labour Organization (ILO, 2014). The database only reflects 26 million individuals working in paid employment. The number was remarkably stable between 1990 and 2005. Of those, 19 million work in services, 6 million in manufacturing and 1.5 million in agriculture. We do not consider these data to be accurate on the demand of education or VET in India. However, they show the difficulty in managing such an immense country. According to those data, even if the supply of education increased since the 1990s, the use of skills by the companies was absolutely stable. We also believe that these data reflect mainly the situation in India's formal sector of the economy. Given that India's labour force is defined at around 420 million (Mehrotra *et al.*, 2014) and that the distribution of the labour force by sectors is of 60 per cent in the agriculture, 15 per cent in industry and 25 per cent in services, the figures for the actual labour force would be of 252, 63 and 105 million, respectively. These figures would define a major demand for VET in the agricultural sector, and less in the services and in the industry, respectively. The difference between the total figures and the figures of paid labour is in itself a crucial feature of the HC, HRD and VET market of India.

Given these data, we assume that the quantity of HC and HRD, measured by education or training indicators, augmented in India in the past two decades.

In what concerns the price, education and training in India are cheap in world terms but are not cheap for Indians. Furthermore, the investment by Indian nationals in the education abroad is very expensive, and many times, it is made by using international funding or international grants and applications.

Needs

The existence of massive needs of VET and HRD in India's economy is well depicted by three sets of figures. In one hand, the government intends to increase the training capacity from the current 10 to 500 million in 2022 (Australian Education International, 2014, p. 24). Furthermore, Mehrotra *et al.* (2014, p. 17) estimated that by 2022, 136 million people would have to have received formal vocational training (from the current 8 million). Also, 55 million in the informal sector should have vocational training (10.5 currently) and 100 million would have more than 11 years of education (from 67.5 in 2009-2010). Finally, it has been written that in the next five years, India will create around 75 million of new jobs, 75 per cent of them will need vocational education (B-able, 2014).

Furthermore, we believe that the best way to assess the needs of a country is to compare with a top world country. In this specific case, we decided to compare India with the USA (Table VII). In what concerns the supply of HC, we may see that the level of attendance in the USA is still 20 and 10 percentage points higher in the secondary and tertiary education than in India, but it is much larger – 55 percentage points – considering VET (OECD, 2014) We also know that some European countries have even higher attendance rates. Therefore, the need India is very clearly demonstrated in this analysis, being particularly acute for vocational education.

When we analyze the demand side of the market, the divergence in relation with the USA was accentuated in the course of the past 30 years. In fact, according to the ILO, in the USA, between 1990 and 2008, the employment level increased from 118 to 145 million, and almost all the increase was due to services, administrative or highly knowledge-oriented jobs. Regarding paid economic activity, the change is from 109 to 136 million, and the services-related jobs are responsible for a change between 50 and 67 million.

Therefore, according to official data, the need of HC in India has increased in the demand side, but decreased in the supply side.

Market forces

Because of its importance and complexity, this subsection will itself be divided into two parts, the first about education and the second about vocational education.

Education in India. According to reports from the National Skill Development Corporation, around 1.3 million schools exist in India with enrolment totalling over 227 million students right from the primary school (constituting Standards I-V) to higher secondary schools (constituting Standards XI and Standard XII). According to a report from the Ministry of Human Resource Development (MHRD), in 2005-2006, pre-primary and primary schools constituted over 65 per cent of the institutions in India. The middle secondary schools constituted over 22 per cent, and the rest of the higher grade schools constituted just 13 per cent of the institutions in India. As per the study by the same report, it was found that a large percentage of students dropped out at the middle school level and primary school level. Thus, the statistics indicate over large capacity of enrolment at these levels.

About 60 per cent of the enrolment is in the level of primary education of over 227 million students enrolled across different levels of education. The study shows a steady increase in the gross enrolment ratio and in the enrolment in the education in the country. It also brings out the steady decrease in drop-out rates in the country. According to the study, the drop-out rates of the students between Standards I-X have fallen from about 67 per cent in 2000 to about 62 per cent in 2006. This is also strengthened by the fact that the enrolment in education in India has shown a compounded annual growth rate (CAGR) of about 3.3 per cent, with higher secondary education (Standards IX-X and Standards XI-XII, respectively) recording a higher

Country	Attendance in primary	Attendance in secondary	Attendance in tertiary	Attendance in VET
USA[b]	100	85	27	59[c]
India[a]	111	63	18	5

Table VII.
Need of HC–2010

Source: [a]World Bank, 2014b; [b]United States Census Bureau, 2014; [c]OECD, 2014

growth rate of 5.4 per cent. The Vocational Education Program offered through the National Institute of Open Schooling has a capacity of only about 22,000 students and, thus, contribute a minimal portion of the enrolment as compared to regular schooling with no vocational component involved.

Higher education in India comprises the following field of study: Arts, Science, Commerce, Engineering, Architecture, Medicine, Teacher Training, Polytechnics and others which include management and law from education directly delivered by universities and institutions such as Indian Institutes of Technology and other Research Institutions. The total enrolment in higher education (taking in account different years of study) in India is about 14.3 million students. The number of higher education institutions enrolment in India has shown a CAGR of 11.1 per cent between 2002 and 2006, whereas a CAGR of 13 per cent is seen in the enrolment in higher education.

Education statistics from the Indian MHRD show that the ratio of students to teachers is much above the recommended norm of 15:1 for higher education, which is currently at 26:1. It is also above the acceptable levels of 30:1/35:1 in school education, the highest being in the primary schools, which the report states to be 46:1.

Indian citizen's rising incomes and the changing demographic profile has led to increase in overall spending of houses on education and also has led to increased proportion of private sectors and, thus, growth in the education sector. The private final consumption expenditure on education is expected to grow at a CAGR of over 13 per cent. However, this large portion of investment has only been witnessed in institutions of higher education schooling levels. A major portion of the infrastructure of the primary schooling has been developed either by the government or government-aided bodies. Thus, all these data help us point towards an immediate need to strengthen the vocational education stream of the HRD component also.

Vocational education in India. India has a greatly detailed structure for vocational training focusing upon meeting different needs at different levels, with Ministry of Labour and Employment (MoLE) and MHRD being primarily responsible for making key decisions. MHRD is assisted by All India Council of Technical Education (AICTE) and National Council of Educational Research and Training (NCERT). AICTE is responsible for preparing curriculum for vocational higher education through polytechnic institutes giving diplomas in Engineering and some other fields, and NCERT takes care of vocation at school level through open schools. MoLE is assisted by the Directorate General of Employment and Training which imparts vocational training through the CTS and the SDIS. CTS is responsible for providing training to more than 1.2 million semi-skilled workers and school leavers through 8,800 ITIs in around 116 trades. The courses in ITIs are of six months to four years duration. The trainees are required to appear for All India Trade Tests, and successful trainees receive certificates from the National Council for Vocational Training (NCVT) which can be used to apply to Central Government. SDIS is responsible of providing training to workers seeking skill upgrades or certification of skills acquired informally to more than one million people through 6,400 vocational training providers in 1,257 courses. The courses focus on modular employable skills ranging from four weeks to six months, and certificates are provided by the NCVT (Figure 1).

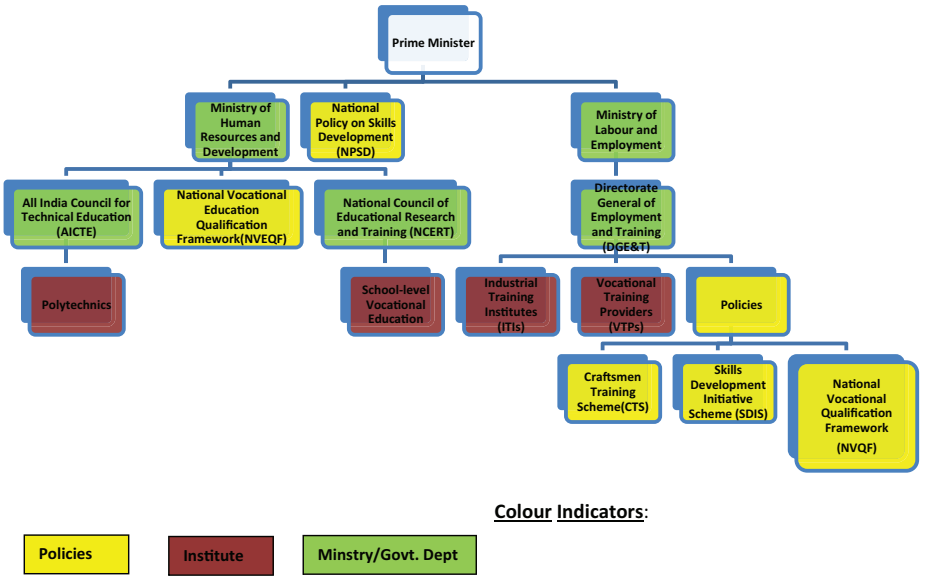

Figure 1.
Describes the current organigram for training policies in India

Source: Australian Education International, 2014

With a growing demand for skills to fuel and sustain the fast economic growth of the country, National Skill Development Council under a public–private partnership has been set-up in India and acts one of the main policy drivers. It aims to provide skills training to 150 million people by 2022 and has plans to set-up Sector Skill Councils (SSCs) for identified 21 high growth sectors and other areas with six SSCs already established with facilitation, funding and advocacy taken care of by the respective SSCs. A separate framework called National Vocational Qualification Framework and National Vocational Educational Qualification Framework is also being developed, following a competency-based modular approach with provision of credit accumulation and transfer for curriculum design, standardization and certification to facilitate vertical and horizontal mobility of students and provide them options of multiple entry and exit through schools, colleges and institutes of vocational education.

The "Survey on emerging skill shortages in the Indian Industry (2007)" by the Federation of Indian Chambers of Commerce and Industry (FICCI) (FICCI, 2007) is one of the many industry surveys that highlight significant skill gaps in important sectors like food processing, pharmaceuticals, education, retail, health and automotive. The current set-up is failing to address the needs of multiple skills training in the system and, thus, not enabling the population with the option of being able to meet skill demands of multiple industries. The current VET framework also needs to work upon the flexibility in course designs and integrate vocational training with necessary technology to meet the growing demands. The training programmes need to anchor linkages to local skill demand and help increase employability of the people around the region and, at the same time, meet local industry demands. Some other major problems that the current

set-up faces are a lack of proper teacher training programmes and a system to ensure their retention at a time when the country faces shortage of teachers.

VET in India is also being strengthened by various other partners including international bodies, foreign governments and private players. International institutions like World Bank and European Union provide huge financial assistance as well as consultative help for skills development through programmes like development of Labour Market Information System, upgrade ITIs, training of instructors and exchange of personnel for know-how transfer. Private players like Educomp, Manipal education, Bharti and IL&FS are also helping the cause of VET in India by providing industry-relevant skills training and certifications aimed at increasing the productivities of business and address requirements of small and medium enterprises. India's VET programme is also boosted by engagements with other countries, especially Germany, UK, Canada and Switzerland. Such engagements help in delivering skills training in sectors like agro-processing, pharmaceutical, manufacturing and tourism, develop English language skills for better employability and provide linkages to employment. Another example of a great engagement is the "Swiss-Indian VET initiative" in partnership with the Swiss Federal Office for Professional Education and Technology, Swiss Federal Institute for Vocational Education and Training and The Swiss Mechanical and Electrical Engineering Industries. The programme is helping to introduce the Swiss dual-track vocational system to India to address the shortfall of skilled factory labour and is running few ITIs from Maharashtra and Karnataka with four Swiss companies, Bobst India, Burckhardt Compressions India, Bühler India and Rieter India participating in the project.

Despite a lot of focus and a large number of institutions taking care of the implementation of VET, India faces a large number of problems. Training provided by VET institutions in India is not aligned with the increasing demand for specialized skills from the rapidly globalizing market. Mismatch exists in the high unemployment level of VET graduates and the shortage in skill demand for various sectors of the Indian economy.

New business requirements have posed immense challenges, and to achieve the goals, there has to be great improvements realized in the quality of education and trainings at all levels for raising employability and productivity. Indian Government targets to build a training capacity of 500 million people per annum by 2022, a sharp increase from the current 9.9 million people, and this is only possible if all these challenges are worked upon and greater engagements pursued with local industry, foreign governments, international bodies and private players.

To sum up: in India, a "low-skills" equilibrium related to poverty existed for centuries, with political and social roots. Only a very small number of individuals could afford investing in HRD due to the low level of wages. The large extension of the informal sector also partly explained this situation. The government and the public sector had also funding difficulties, and only recently, massive education became a fact in the country. The same happened with vocational training – only in the past decade, many institutes and organizations were put in place. In this context, Indian-based companies and organizations lately began to demand HC, be it education or training. Having in mind India's dimension, the absolute values that characterize the market tend to be immense. Having all these facts in consideration, we would like to stress the importance of the international sector, in promoting directly or indirectly HC and HRD

in India. That promotion takes place in several forms: companies working in or outsourcing to India, Internet contact, imitation due to competitive needs by India's companies, international funding, migration of India's young population and social policies like the Millennium Goals. We conclude that India's emergence as a country will need to be done with the change from a low-skill to a middle-skills equilibrium, and India's Government is willing to make that change happen (Australian Education International, 2014, p. 24).

Discussion

The main idea that emerges from the previous analysis of immensity; the second of complexity; and the third of diversity. Finally, there is also a need for HR to develop the country.

Immensity is reflected in the numbers of educated people, of trainees, even if they are low in relative terms and of needs, that are huge and mind-boggling. Complexity is described by the detailed network of organizations that are currently under the administration and provision of education, HRD and VET as described in the previous section under the item Market Forces. Diversity is also a feature because in such a diverse country, HRD and VET will have to adjust to that social diversity. Finally, the data about the needs, in the short term (the aim is to build a training capacity for 550 million in 2022), are so big that it is hard to believe.

In this context, having in mind the theories exposed in the literature review and the results obtained in the last section, some lessons can be learnt from India's case on HRD.

First, India is the most striking example in the world on how HRD is decisive to develop a country. The very low levels of education and training in India account and are responsible for the low levels of economic and social development. With high levels of education and training, HRD and VET, India would be one of the world leaders. Without those high levels, India is still middle table in world terms of GDP ph despite its enormous dimension. India's fortunes are also currently worse than those of all the other BRICS, including Brazil or China, because India has lower levels of HRD in any of the ways we might account them.

Second, India is also the definitive example of the need of a complete scheme of HRD, from the lower levels of primary education to the higher levels of university education, mixing up and complementing with an important and crucial network of vocational education. India has almost relied on primary education with a small part of the population doing secondary and tertiary studies and vocational training, but nowadays, the government is well aware of the need to invest massively in VET and is planning to do so until 2022. Without that comprehensive even if very diversified system, India will never fulfil its immense potential. The aim in this case is as decisive as it is difficult to achieve.

Third, India is also the defining example about how difficult it may be to organize HRD in any country. Regarding India, data are as scarce as they are mind-boggling because they are so huge. In addition, governance is a major problem, due to the diversity and dimension of the country. Therefore, India's HRD situation is defined like no other by the adage "*arts longa vita brevis*" meaning that what is at stake will be extremely difficult to achieve, will probably take longer than expected, but will be extremely important because what is at stake, directly, is the destiny of one-sixth of Humanity […].

Finally, and in fourth place, India is also the definitive example of how the implementation of HRD and its success is a factor of a conjugation of efforts, by companies, public bodies, families and international organizations. Only if and when those entities succeed in joining forces, HRD investment will reach the desired levels and HRD returns will be significant. Without that societal agreement, India will never have a good HRD level and its development will be seriously compromised.

All what was previously said calls for policies and has deep policy implications. The first implication is the need for strong political goals and guidance. We believe that this has begun to happen in the past few years, and that nowadays, the government wants that by 2030, India will be a middle-skills equilibrium, and not a low-skills equilibrium as it always happened before (Government of India, 2006).

The second implication is the need to develop an extremely detailed network of training centres. Those training centres would be public, but may also be private or non-profit.

The third implication is that the investment in HRD should be done very quickly, benefiting from the age distribution of India's population. India's population is extremely young, half of the Indians being less than 30 years of age, and this young population has to be used to solve the country's economic problems. Therefore, the aforementioned training centres would promote training to 500 million people each year in the next decade.

The fourth implication is the need to develop large and detailed networks on the goal setting, implementation, organization, control and evaluation of policies. Those networks are difficult to implement but decisive to move the HRD policy, and ultimately India, forward.

A fifth implication relates to the agriculture sector. One of the specificities about India's VET future development is that training in the agriculture sector will have a decisive part of it. This is due to the fact that India is an extremely large country and, even nowadays, a majority of the country's labour force still works in the agricultural sector. In addition, this national urgency from India's point of view should concern the HRD community because in current HRD and VET research, there is almost no work on agriculture (Wiggens-Romensburg, 2015), probably due to the fact that in developed countries, the sector is residual in GDP and employment terms.

Finally, the success of HRD and VET in India will need that the country builds basic infrastructures, like roads, water supply and energy delivery – things Western countries take for granted, but that are essential to change from the current low-skills equilibrium to the desired middle skills one (Government of India, 2006).

The emergence of such a vast network of HRD and VET would also have deep social and practical consequences in India. The most immediate one is, we believe, the growth of a sector of paid employment. Paid employment is statistically residual in India, as in fact is training. Without paid employment training is not interesting. Therefore, VET and training will be decisive to the implementation of a formalized market economy in India. Nowadays, a large part of India's economy is still informal.

The emergence of HRD will also create a network of national, regional and local providers; those providers will create an industry, and that industry will have an extremely important social and economic meaning. It is a sign of the way India is moving in that direction that in the recent years, more and more academic studies have

been done about the country's VET, but having in mind the political goals that have been stated, the process seems to be in its beginnings only.

The emergence of VET and life-long learning as common activities will probably change the everyday life time use of the ordinary citizen. Additionally, it also changes the occupations and jobs of those ordinary citizens. These two changes will probably not only increase income but also change India's life style, creating potential problems relating to spirituality (Ghosh, 2015).

Finally, for researchers, the implementation of an extensive VET and HRD scheme in India will provide tremendous opportunities. India is a culturally specific country. Indigenous research will have an opportunity like no other in India.

Conclusions

India is an emerging economy, and it is so large that it is bound to be a major force in the world economy. The strength, the speed and the way by which India's emergence will be achieved will depend massively on India's HC. Currently, India is a low-skilled economy, and therefore, investment in education should also be considered as HRD, and not only VET and training. Only 67.5 million Indians have 11 or more years of education, and only 20 million have had VET. Those low levels of stocks reflect low investments which, in turn, originate low levels of income, as it is expected in a low-skills equilibrium, even if recently, the GDP ph and employment figures have been rising. In fact, the supply of education has been rising, but the supply of VET is yet to be massively increased in the next decade, whereas on the demand side, the figures for paid labour are very low and doubtful and the figures on the labour market point to the importance of the primary sector. The price of India's HC is high for Indians but low in world terms. Quantities have been on the rise. India's current huge figures on needs of VET are perhaps the most striking demonstration of the country's current situation, and are only matched by the government's intentions of improving and enlarging the provision of skills, which, in turn, is a sign of hope because it refers to the need of a social contract to break the vicious cycle of investment which characterizes low-skills equilibriums. Finally, we believe the foreign sector will always be very important in the HC market, particularly in VET. India's development will have to be obtained in the international scene and within a context of international competitiveness, and VET will be decisive for that development to become a reality.

This was a first attempt to apply our model to India's economy. In-depth studies should follow, to specify and clarify the picture of India's HC, HRD and VET we defined here.

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